

CURRICULUM AND SYLLABI

(AY 2019-2020)

B. Tech. Computer Science and Engineering and Business Systems (in collaboration with TCS)

B. Tech. Computer Science and Engineering and Business Systems (in collaboration with TCS)

CURRICULUM AND SYLLABI

(AY 2019-2020 Admitted Students)



Index

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VISION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

> Transforming life through excellence in education and research.

MISSION STATEMENT OF VELLORE INSTITUTE OF TECHNOLOGY

- World class Education: Excellence in education, grounded in ethics and critical thinking, for improvement of life.
- Cutting edge Research: An innovation ecosystem to extend knowledge and solve critical problems.
- Impactful People: Happy, accountable, caring and effective workforce and students.
- Rewarding Co-creations: Active collaboration with national & international industries & universities for productivity and economic development.
- Service to Society: Service to the region and world through knowledge and compassion.



VISION STATEMENT OF THE SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

To be a world-renowned centre of education, research and service in computing and allied domains.

MISSION STATEMENT OF THE SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

- To offer computing education programs with the goal that the students become technically competent and develop lifelong learning skill.
- To undertake path-breaking research that creates new computing technologies and solutions for industry and society at large.
- To foster vibrant outreach programs for industry, research organizations, academia and society.



B. Tech. Computer Science and Engineering and Business Systems

(in collaboration with TCS)

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- Graduates will be engineering practitioners and leaders, who would help solve industry's technological problems.
- Graduates will be engineering professionals, innovators or entrepreneurs engaged in technology development, technology deployment, or engineering system implementation in industry.
- Graduates will function in their profession with social awareness and responsibility.
- Graduates will interact with their peers in other disciplines in industry and society and contribute to the economic growth of the country.
- Graduates will be successful in pursuing higher studies in engineering or management.
- Graduates will pursue career paths in teaching or research.



B. Tech. Computer Science and Engineering and Business Systems (in collaboration with TCS)

PROGRAMME OUTCOMES (POs)

- PO_01: Having an ability to apply mathematics and science in engineering applications.
- PO_02: Having a clear understanding of the subject related concepts and of contemporary issues.
- PO_03: Having an ability to design a component or a product applying all the relevant standards and with realistic constraints.
- PO_04: Having an ability to design and conduct experiments, as well as to analyze and interpret data.
- PO_05: Having an ability to use techniques, skills and modern engineering tools necessary for engineering practice.
- PO_06: Having problem solving ability-solving social issues and engineering problems.
- **PO_07:** Having adaptive thinking and adaptability.
- PO_08: Having a clear understanding of professional and ethical responsibility.

- > **PO_09:** Having cross cultural competency exhibited by working in teams.
- > **PO_10:** Having a good working knowledge of communicating in English.
- PO_11: Having a good cognitive load management [discriminate and filter the available data] skills.
- > **PO_12:** Having interest in lifelong learning.



B. Tech. Computer Science and Engineering and Business Systems (in collaboration with TCS)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- The ability to apply theoretical foundations of Computer Science and problem-solving skills through programming techniques for complex real time problems using appropriate data structures and algorithms.
- The ability to design/develop hardware and software interfaces along with database management to meet the needs of industry.
- The ability to demonstrate personal, organizational and entrepreneurship skills through critical thinking, engage themselves in life-long learning by following innovations in business, science & technology.



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CREDIT STRUCTURE

Category Wise Credit Distribution

Category	Credits
Programme Core (PC)	72
Programme Elective (PE)	21
University Core (UC)	52
University Elective (UE)	6
Specialization Elective	9
Non-Credit Course	-
Total Credits	160



(Dee

CBS3005

CBS3006

CBS3007



ed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Programme	Programme	University	University	Specialization	Total
Core	Elective	Core	Elective	Elective	Credits
72	21	52	6	9	160

Course Code	Course Title	Course Type	L	Т	Р	J	С
	PROGRAMME CORE			•	•		
CBS1003	Data Structures and Algorithms	ETL	2	0	2	0	3
CBS1004	Computer Architecture and Organization	ETL	2	0	2	0	3
CBS1005	Software Engineering Methodologies	ETL	2	0	2	0	3
CBS1006	Principles of Operating Systems	ETL	2	0	2	0	3
CBS1007	Database Systems	ETL	2	0	2	0	3
CBS1008	Operations Research	ETL	2	0	2	0	3
CBS1009	Computational Statistics	ETL	2	0	2	0	3
CBS2002	Formal Languages and Automata Theory	TH	3	0	0	0	3
CBS2003	Design Thinking	ETL	2	0	2	0	3
CBS3001	Computer Networks	ETL	2	0	2	0	3
CBS3002	Information Security	ETL	2	0	2	0	3
CBS3003	Design and Analysis of Algorithms	ETL	2	0	2	0	3
CBS3004	Artificial Intelligence	ETL	2	0	2	0	3
CBS3011	Usability Design of Software Applications	ETL	2	0	2	0	3
CBS3012	IT Project Management	ETL	2	0	2	0	3
EEE1001	Basic Electrical and Electronics Engineering	ETL	2	0	2	0	3
MAT1004	Discrete Mathematics	TH	3	0	0	0	3
MAT2004	Linear Algebra	TH	3	1	0	0	4
MAT2005	Data Science and Statistical Modelling	ETL	2	0	2	0	3
MGT1064	Financial and Cost Accounting	TH	3	0	0	0	3
MGT1065	Fundamentals of Management	TH	2	0	0	0	2
MGT2002	Marketing Research and Marketing Management	TH	3	0	0	0	3
MGT2003	Financial Management	TH	3	0	0	0	3
MGT3016	Services Science and Service Operational Management	ETL	2	0	2	0	3
Course Code	Course Title	Course Type	L	Т	Р	J	С
	PROGRAMME ELECT	IVE					
CBS1011	Programming in Python	ETL	2	0	2	0	3
CSE1007	JAVA Programming	ETL	3	0	2	0	4

Cloud, Microservices and Applications

Machine Learning

Data Mining and Analytics

4

4

4

2

2

2

0

4

0

3

2

3 0

0

0

ETL

ETLP

ETL





Course Code	Course Title	Course Type	L	Τ	Р	J	С
CBS3008	Introduction to Internet of Things	ETL	3	0	2	0	4
CBS3009	Advanced Social, Text and Media Analytics	TH	3	0	0	0	3
CBS3010	Mobile Computing	ETL	3	0	2	0	4
CBS3013	Conversational Systems	ETL	3	0	2	0	4
CBS3014	Modern Web Applications	ETL	3	0	2	0	4
CBS3015	Information Systems Audit and Control	TH	3	0	0	0	3
CBS3016	Cognitive Science and Analytics	ETL	3	0	2	0	4
CBS4001	Robotics and Embedded Systems	ETL	3	0	2	0	4
CBS4002	Cryptology and Analysis	TH	3	0	0	0	3
CBS4003	Quantum Computation and Quantum Information	ETL	3	0	2	0	4
CBS4004	Image Processing and Pattern Recognition	ETP	3	0	0	4	4
CBS4005	Enterprise Systems	ETL	3	0	2	0	4
	1						

Course Code	Course Title	Course Type	L	Т	Р	J	С
	UNIVERSITY CORE						
CBS1002	Object Oriented Programming	ETL	3	0	2	0	4
CBS1901	Technical Answers for Real World Problems (TARP)	ETP	1	0	0	4	2
CBS1902	Industrial Project	РЈТ	0	0	0	0	1
CBS1903	Comprehensive Examination	РЈТ	0	0	0	0	1
CBS1904	Capstone Project	РЈТ	0	0	0	0	12
CHY1701	Engineering Chemistry	ETL	3	0	2	0	4
CSE1008	Programming in C	ETL	3	0	2	0	4
ENG1013	Business Communication and Value Science - I	ETL	1	0	2	0	2
ENG1014	Business Communication and Value Science - II	ETL	1	0	2	0	2
ENG1017	Business Communication and Value Science- III	ETL	1	0	2	0	2
ENG1018	Business Communication and Value Science- IV	ETL	1	0	2	0	2
ENG1901	Technical English - I	LO	0	0	4	0	2
ENG1902	Technical English - II	LO	0	0	4	0	2
ENG1903	Advanced Technical English	ELP	0	0	2	4	2
HUM1021	Ethics and Values	TH	2	0	0	0	2
MAT1017	Probability and Statistics	TH	3	0	0	0	3
MGT2001	Introduction to Innovation, IP Management andEntrepreneurship	TH	3	0	0	0	3
PHY1005	Modern Physics	ETL	3	0	2	0	4
FLC4097	Foreign Language Course Basket	CDB	0	0	0	0	2
ESP1001 - ESP	ANOL FUNDAMENTAL – TH						



ESP2001 - ESPANOL INTERMEDIO – ETL
FRE2001 - Francais progressif – ETL
GER1001 - Grundstufe Deutsch – TH
GER2001 - Mittelstufe Deutsch – ETL
GRE1001 - Modern Greek – TH
JAP1001 - Japanese for Beginners – TH
RUS1001 - Russian for Beginners – TH

Course Code	Course Title	Course Type	L	Т	Р	J	С
	SPECIALIZATION ELE	CTIVE					
HUM1046	Behavioral Economics	TH	3	0	0	0	3
HUM1047	Engineering Economics	TH	3	0	0	0	3
HUM1048	Industrial Psychology	TH	3	0	0	0	3
MGT3001	Business Strategy	TH	3	0	0	0	3
MGT3002	Advanced Finance	TH	3	0	0	0	3
MGT4004	Human Resource Management	TH	3	0	0	0	3
MGT4005	Computational Finance and Modelling	ETL	3	0	2	0	4
	•	•		•	•		
Course	Course Title	Course Type	L	Т	Р	T	С

Course Code	Course Title	Course Type	L	Т	Р	J	С
	NON-CREDIT COURS	SES					
CHY1002	Environmental Sciences	TH	3	0	0	0	3
ENG1000	Foundation English - I	LO	0	0	4	0	2
ENG2000	Foundation English - II	LO	0	0	4	0	2
EXC4097	Co-Extra Curricular Basket	CDB	0	0	0	0	2



of UGC Act. 1

CURRICULUM (2019 - 2020) B. Tech Computer Science and Engineering and Business Systems

PROGRAMME CORE

(AY 2019 - 2020)

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Sl.No.	Course Code	Course Title	Page No.
1.	CBS1003	Data Structures and Algorithms	13
2.	CBS1004	Computer Architecture and Organization	15
3.	CBS1005	Software Engineering Methodologies	17
4.	CBS1006	Principles of Operating Systems	19
5.	CBS1007	Database Systems	22
6.	CBS1008	Operations Research	24
7.	CBS1009	Computational Statistics	26
8.	CBS2002	Formal Languages and Automata Theory	29
9.	CBS2003	Design Thinking	31
10.	CBS3001	Computer Networks	33
11.	CBS3002	Information Security	35
12.	CBS3003	Design and Analysis of Algorithms	37
13.	CBS3004	Artificial Intelligence	39
14.	CBS3011	Usability Design of Software Applications	41
15.	CBS3012	IT Project Management	43
16.	EEE1001	Basic Electrical and Electronics Engineering	45
17.	MAT1004	Discrete Mathematics	47
18.	MAT2004	Linear Algebra	49
19.	MAT2005	Data Science and Statistical Modelling	51
20.	MGT1064	Financial and Cost Accounting	53
21.	MGT1065	Fundamentals of Management	55
22.	MGT2002	Marketing Research and Marketing	57
		Management	
23.	MGT2003	Financial Management	59
24.	MGT3016	Services Science and Service Operational Management	61



VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

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Course Code	Course Title	L	Т	Р	J	С
CBS1003	Data Structures and Algorithms	2	0	2	0	3
Pre-requisite	NIL	5	Syllal	ous v	ersio	n
				v. 1.0)	
Course Objective						
	symptotic performance of algorithms.					
-	inear and non-linear data structures and their applications.					
3. To Perform sear	rching and sorting using various techniques and Graphs.					
Expected Course	e Outcome:					
A	of this course, students will be able to:					
1	c terminologies in data structures.					
	ures of linear data structures and their applications.					
	rious types of nonlinear data structures and their applications i	n real	world	-1		
	riate sorting and searching technique for the given problem.	ii icai				
	sing files and understand various access methods					
-	t algorithmic solution and data structures to real-world probler	20				
	algorithmic solution and data structures to real-world probler	115.				
Module:1	Introduction to Algorithm & Data Organization				3 h	our
Module.1						
Algorithm specific	ation Recursion Performance analysis Asymptotic Notation	The	Big	$\cap C$	mag	00
	ation, Recursion, Performance analysis, Asymptotic Notation					
	cation, Recursion, Performance analysis, Asymptotic Notation Programming Style, Refinement of Coding - Time-Space '					
Theta notation, I						
Theta notation, I Abstraction	Programming Style, Refinement of Coding - Time-Space '					
Theta notation, I Abstraction Module:2	Programming Style, Refinement of Coding - Time-Space '	Trade	Off,	Test	ting, 4 h	Dat our
Theta notation, I Abstraction Module:2 Array, Stack, Que	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures rue, Linked list and its types, Various Representations, Ope	Trade	Off,	Test	ting, 4 h	Dat our
Theta notation, I Abstraction Module:2 Array, Stack, Que	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures rue, Linked list and its types, Various Representations, Ope	Trade	Off,	Test	ting, 4 h	Dat our
Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures rue, Linked list and its types, Various Representations, Ope ures.	Trade	Off,	Test	ting, 4 h cation	Dat nour
Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures eue, Linked list and its types, Various Representations, Ope ures. Basic Non-Linear Data Structures	Trade rations	Off,	Test Appli	4 h cation	Dat nour
Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures rue, Linked list and its types, Various Representations, Ope ures.	Trade rations	Off,	Test Appli	4 h cation	Dat nour
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Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures Eue, Linked list and its types, Various Representations, Ope ures. Basic Non-Linear Data Structures e, Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures	Trade rations /L Tre	Off,	Test Appli lay T1	4 h cation 5 h cee).	Dat
Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4 Graphs (Directed,	 Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures Evue, Linked list and its types, Various Representations, Operations. Basic Non-Linear Data Structures Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures Undirected), Various Representations, Operations (search article) 	Trade rations /L Tre	Off,	Test Appli lay T1	4 h cation 5 h cee).	Dat
Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4 Graphs (Directed,	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures Eue, Linked list and its types, Various Representations, Ope ures. Basic Non-Linear Data Structures e, Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures	Trade rations /L Tre	Off,	Test Appli lay T1	4 h cation 5 h cee).	Dat
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Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4 Graphs (Directed, complexity analysis Module:5 Sequential Search,	 Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures Eue, Linked list and its types, Various Representations, Opeures. Basic Non-Linear Data Structures Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures Undirected), Various Representations, Operations (search arts) & Applications of Non-Linear Data Structures Searching And Sorting On Data Structures Binary Search, Comparison Trees, Breadth First Search, De 	Trade rations /L Tre nd trav	Off, s & e, Sp ersal rst So	Test Appli lay T1 algor earch,	4 h cation 5 h cee). 5 h ithms 5 h	Dat noun noun noun s an noun rtio
Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4 Graphs (Directed, complexity analysis Module:5 Sequential Search, Sort, Selection Sor	 Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures eue, Linked list and its types, Various Representations, Opeures. Basic Non-Linear Data Structures e, Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures Undirected), Various Representations, Operations (search arts) & Applications of Non-Linear Data Structures Searching And Sorting On Data Structures 	Trade rations /L Tre nd trav	Off, s & e, Sp ersal rst So	Test Appli lay T1 algor earch,	4 h cation 5 h cee). 5 h ithms 5 h	Dat nour nour nour nour s an nour rtio
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Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4 Graphs (Directed, complexity analysis Module:5 Sequential Search, Sort, Selection Sor to Hashing	 Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures sue, Linked list and its types, Various Representations, Operators. Basic Non-Linear Data Structures Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures Undirected), Various Representations, Operations (search art s) & Applications of Non-Linear Data Structures Searching And Sorting On Data Structures Binary Search, Comparison Trees, Breadth First Search, Dert, Shell Sort, Divide and Conquer Sort, Merge Sort, Quick Sort 	Trade rations /L Tre nd trav	Off, s & e, Sp ersal rst So	Test Appli lay T1 algor earch,	4 h cation 5 h cee). 5 h ithms 5 h , Inset	Dat ns c nour s an our ctio
Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4 Graphs (Directed, complexity analysis Module:5 Sequential Search, Sort, Selection Sor to Hashing Module:6	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures Prue, Linked list and its types, Various Representations, Operations. Basic Non-Linear Data Structures e, Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures Undirected), Various Representations, Operations (search articles) & Applications of Non-Linear Data Structures Searching And Sorting On Data Structures Binary Search, Comparison Trees, Breadth First Search, Deet, Shell Sort, Divide and Conquer Sort, Merge Sort, Quick Sort File Organization	Trade rations /L Tre ud trav pth Fi rt, Hea	Off, s & e, Sp ersal rst So up So	Test Appli lay T1 algor earch, rt, Int	4 h cation 5 h cee). 5 h ithms 5 h ithms trodu 3 h	Dat nour ns c nour nour nour ctio
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Theta notation, I Abstraction Module:2 Array, Stack, Que Linear Data Struct Module:3 Trees (Binary Tree Module:4 Graphs (Directed, complexity analysis Module:5 Sequential Search, Sort, Selection Sor to Hashing Module:6	Programming Style, Refinement of Coding - Time-Space ' Linear Data Structures Prue, Linked list and its types, Various Representations, Operations. Basic Non-Linear Data Structures e, Threaded Binary Tree, Binary Search Tree, B & B+ Tree, AV Advanced Non-Linear Data Structures Undirected), Various Representations, Operations (search articles) & Applications of Non-Linear Data Structures Searching And Sorting On Data Structures Binary Search, Comparison Trees, Breadth First Search, Deet, Shell Sort, Divide and Conquer Sort, Merge Sort, Quick Sort File Organization	Trade rations /L Tre ud trav pth Fi rt, Hea	Off, s & e, Sp ersal rst So up So	Test Appli lay T1 algor earch, rt, Int	4 h cation 5 h cee). 5 h ithms 5 h , Inse trodu 3 h emes.	Dat nour ns c nour nour nour nour nour ctio





Mo	dule:8	Contemporary Issues				2 hours			
Gue	st lecture by	V Industry Experts or R&D organi	zation						
				Total	Lecture hours:	30 hours			
Tex	t Book(s)								
1.	E Horow	itz and S Sahni, "Fundamentals of	f Data Struc	tures", Seco	ond Edition, Galg	otia Booksource,			
	2008.								
2.	Alfred V. Aho, John E. Hopperoft, Jeffrey D. Ullman, "Data Structures and Algorithms", Firs								
	Edition, I	Pearson Publishers, 1983.							
Ref	erence Boo	-							
1.	Knuth I	Donald E, "Art of Computer	Programm	ing: Fund	lamental Algorit	hms Volume 1			
		ntal Algorithms", Third Edition, P	0	0	0				
2	Thomas	H. Cormen, Charles E. Leiserso	on, Ronald	L. Rivest,	Clifford Stein,	"Introduction to			
		ns", Third Edition, PHI Publishers	,	,	,				
3	0	n, Open Data Structures: An Int		Open Path	s to Enriched Le	earning), 31st ed.			
		JBC Press, 2013.	(• P • • • • • • • • •					
Mo	,	ation: CAT / Assignment / Qu	uiz / FAT /	Project /	Seminar				
1120			, , , , , ,	110,0007					
List	t of Challer	iging Experiments (Indicative)							
1.		of Hanoi using user defined stacks.							
2.		writing, and addition of polynomi							
3.		ors with line count, word count sh		e screen.					
4.		h all operations.							
5.	Graph al	gorithms.							
6.	Saving /	retrieving non-linear data structure	e in/from a						
					boratory Hours	30 hours			
Mo	de of Asses	ssment: Assesments/ Mid Tern	n Lab/ FA	[/ Project	t				
Rec	ommende	d by Board of Studies	07.06.201	9					
App	proved by A	cademic Council	No. 55	Date	13.06.2019				



Course Code	Course Title	L	Т	Р	J	С
CBS1004	Computer Architecture and Organization	2	0	2	0	3
Pre-requisite	NIL	Sy	llabu			n
			V	7. 1.0		
Course Objectives:						
-	lge on overview of IAS computer function and addressingmo					
and division.	vare implementation of arithmetic unit to solve addition, sul				iplica	ation
3. To provide knowled	lge of memory technologies, interfacing techniques and sub sy	sten	n devi	ces.		
Expected Course Ou	atcome:					
1. Provide fundamenta	als on machine instructions and addressing modes.					
2. Comprehend the va	rious algorithms for computer arithmetic.					
3. Analyse the perform	nance of various memory modules in memory hierarchy.					
4. Compare and contra	ast the features of I/O devices and parallel processors.					
	on of memory organization.					
	nance of Arithmetic logic unit, memory and CPU.					
J 1	, , , , , , , , , , , , , , , , , , ,					
Module:1 Intr	oduction to Computer Architecture				4 h	ours
Functional blocks of a	a computer: CPU, memory, input-output subsystems, control	unit.				
Instruction set archi	tecture of a CPU: Registers, instruction execution cycle,	RTI	inte	rpre	tatio	n of
instructions, addressir	ng modes, instruction set. Outlining instruction sets of some c	omn	non C	PUs		
	a representation				3 h	ours
Signed number repres	entation, fixed and floating-point representations, character re-	epres	entati	ion.		
Module:3 Cor	nputer arithmetic				5 h	ours
	subtraction, ripple carry adder, carry look-ahead adder, etc. m	ıltipl	icatio	n – s		
_	, carry save multiplier, etc. Division restoring and non-restor	-				
point arithmetic, IEE	E 754 format.	_		-		_
	U control unit design				4 h	ours
Hardwired and micro	-programmed design approaches, design of a simple hypothet	ical (CPU.			
Memory system desig	n: Semiconductor memory technologies, memory organization	1.				
	ipheral devices and their characteristics					ours
	ems, I/O device interface, I/O transfers – program controlle					
	d non-privileged instructions, software interrupts and exc	-		rogr	ams	and
processes – role of int	terrupts in process state transitions, I/O device interfaces – So	CII, I	JSB.			
Madalar(D'					4 1	
•	elining	40.5		T.a.t		ours
1 11	elining, throughput and speedup, pipeline hazards. Parallel P Concurrent access to memory and cache coherency.	roce	ssors:	Intr	odu	cuon





Mo	dule:7	Memory organization				3 hours
Me	mory inter	leaving, concept of hierarch	nical memory org	anization, ca	iche memory, cache	size vs. block
size	e, mapping	functions, replacement algor	rithms, write poli	cies.		
	dule:8	Contemporary issues				1 hour
Gu	est lecture	by Industry Experts or R&I	O organization			
				Total Le	cture hours:	30 hours
Te	xt Book(s)					
1.	M. M. N	lano, Computer System Arc	hitecture, 3rd ed.,	Prentice Ha	ll of India, 1993.	
2.	David	A. Patterson and John	L. Hennessy,	Computer	Organization and	Design: The
	Hardwa	re/Software Interface, 4 th Ed	dition, Elsevier, 2	012.		
3.	Carl H	amacher, ZvonkoVranesic	, SafwatZaky, Na	raigManjikia	n, Computer Org	anization and
	Embedo	led Systems, McGraw-Hill P	ublishing, 2011			
Ref	ference Bo	ooks				
1.	John P.	Hayes, Computer Architect	ure and Organizat	ion, McGrav	w-Hill, 1998	
2.	William	Stallings, Computer Organi	zation and Archit	ecture: Desig	gning for Performan	ce, 8 th Edition,
	Prentice	Hall, 2006.				
Mo	de of Eval	uation: CAT / Assignmen	nt / Quiz / FAT	/ Project /	Seminar	
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
List		nging Experiments (Indic	cative)			
1.		ic Logic Unit				
2.	Memory	0				
3.	CPU De	0				
4.	Combina	tional Multipliers				
					oratory Hours	30 hours
		ssment: Assessments/ M	-	AT / Proje	ct	
Ree		ed by Board of Studies	16-09-2019			
		Academic Council	No.56	Date	24-09-2019	



#### VIT® Vellore Institute of Technology

#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Course code	Course Title	L	Т	Р	I	С
CBS1005	Software Engineering Methodologies	2	0	2	0	3
Pre-requisite	NIL	Syl	labu	s ve	rsio	n
			V	r. 1.0		
Course Objective						

#### **Course Objectives:**

- 1. To introduce the fundamental concepts of Software development process.
- 2. To teach the concepts of system analysis and design for system requirement specification
- 3. To introduce the principles of Coding, Testing, documentation, and project Management

#### **Expected Course Outcome:**

- 1. Apply the system development life cycle for any Business system.
- 2. Establish software project management activities such as planning, scheduling and Estimation for the business system.
- 3. Specify the business requirements through appropriate system analysis and design.
- 4. Adapt good programming and documentation standards
- 5. Implement and demonstrate any business system software from specification to validation and verification.

#### Module:1 Introduction

Programming in the small vs. programming in the large; software project failures and importance of software quality and timely availability; of software engineering towards successful execution of large software projects; emergence of software_engineering as a discipline, Software Engineering Historical Development from Jackson Structured Programming to Agile Development.

#### Module:2 Software Project Management

4 hours

4 hours

Basic concepts of life cycle models – different models and milestones; software project planning – identification of activities and resources; concepts of feasibility study; techniques for estimation of schedule and effort; software cost estimation models and concepts of software engineering economics; techniques of software project control and reporting; introduction to measurement of software size; introduction to the concepts of risk and its mitigation; configuration management.

#### Module:3Software Quality Management and Reliability4 hours

Software quality; Garvin's quality dimensions, McCall's quality factor, ISO 9126 quality factor; Software Quality Dilemma; Introduction to Capability Maturity Models (CMM and CMMI); Introduction to software reliability, reliability models and estimation.

Module:4	Software Requirements Analysis, Design and Construction	4 hours
Introduction	n to Software Requirements Specifications (SRS) and requirement elicit	ation techniques;
techniques t	for requirement modelling - decision tables, event tables, state transi	tion tables, Petri
nets; require	ments documentation through use cases; introduction to UML, introdu	ction to software
metrics and	metrics-based control methods; measures of code and design quality.	





~	dule:5	<b>Object Oriented Analys</b>	is, Design and Con	struction	4 hours
Cor	ncepts -t	he principles of abstraction	on, modularity, speci	fication, encapsulation	and information
hidi	ng; cond	cepts of abstract data type	; Class Responsibilit	y Collaborator (CRC)	model; quality of
desi	ign; desią	gn measurements; concepts	of design patterns; I	Refactoring; object-orie	ented construction
prin	nciples; o	bject-oriented metrics.			
Mo	dule:6	Software Testing			4 hours
Intr	oduction	to faults and failures; ba	sic testing concepts;	concepts of verification	on and validation;
blac	k box a	nd white box tests; white b	ox test coverage $-cc$	de coverage, condition	coverage, branch
		sic concepts of black-box	_	-	_
	-	g use cases; transaction ba	-		-
		e and efficiency; concept	0 0	-	
-		Acceptance Testing.	1 /	0, 0	0, ,
	0	1 0			
Mo	dule:7	Agile Software Enginee	ring		4 hours
0		vare Engineering: Conce	0	s, Extreme Programm	ing; Agile Process
Moo	del - Scru	ım, Feature; Scenarios and	Stories.		
Mo	dule:8	Contemporary Issues			2 hours
Gue	est lectur	e by Industry Experts or R	&D organization		1
		, , , ,	0	Total Lecture hours:	30 hours
Тех	t Book	(s)			
1.		S. Pressman, Software eng	ineering: a practition	er's approach, Palgrave	macmillan, 7 th
	Edition		0 1	11 / 0	,
1					
Ref	erence ]				
	erence I The Es	Books	re Engineering: Free	the Practices from the	e Method Prisons.
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Course Code	Course Title	L		P J	C
CBS1006	Principles of Operating Systems	2	-	2 0	3
Pre-requisite	NIL			us ver	sion
Course Objectives:				v. 1.0	
	Operating system concepts and designs to provide the skill	s rec	mired	to im	lemen
the OS services.	operating system concepts and designs to provide the skin.	5 100	lanca		Jenen
	ade-offs between contradictory objectives in large scale OS s	veter	m desi	σn	
	nowledge for application of the various OS design issues and	-		8 ^{11.}	
5. To develop the ki	lowledge for application of the various of design issues and	301 V	ices.		
Expected Course Ou	tcome:				
	ous OS functionalities, structures and layers.				
	calls related to OS management and interpreting different s	tage	s of v	arious	proces
states.		0			1
3. Design CPU sche	duling algorithms to meet and validate the scheduling criteria	l.			
ē	e the communication between inter process and synchronizat		techni	ques.	
5. Implement memo	bry placement strategies, replacement algorithms related to m	nain	memo	ory and	l virtua
memory techniqu	es.			-	
6. Differentiate the	file systems; file allocation, access techniques along with vir	tuali	zation	conce	pts and
designing of OS w	with protection and security enabled capabilities.				
designing of OS w	with protection and security enabled capabilities.				
Module:1 Intro	duction to OS and System Structure				
Module:1 Introduction: Concept	duction to OS and System Structure pt of Operating Systems (OS), Generations of OS, Type			OS S	ervices
Module:1 Introduction: Concept	duction to OS and System Structure			OS S	ervices
Module:1     Introduction:       Interrupt handling and	duction to OS and System Structure pt of Operating Systems (OS), Generations of OS, Type			OS S	
Module:1Introduction:Introduction:ConceptInterrupt handling and Resource Manager view	duction to OS and System Structure of Operating Systems (OS), Generations of OS, Type ISystem Calls, Basic architectural concepts of an OS, Conc w, process view and hierarchical view of an OS.			OS S rtual N	ervices Iachine
Module:1Introduction:Introduction:ConceptInterrupt handling and Resource Manager viewModule:2Procetor	duction to OS and System Structure of Operating Systems (OS), Generations of OS, Type dSystem Calls, Basic architectural concepts of an OS, Conc w, process view and hierarchical view of an OS.	cept	of Vin	OS S rtual M	ervices Iachine 6 hour
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Module:1Introduction:Introduction:ConceptInterrupt handling and Resource Manager viewModule:2ProceProcesses:DefinitionProcesses:DefinitionProcess ControlBloc objectives, Types ofWaiting Time, Respor RR; Multiprocessor sciModule:3ProceInter-processComr Conditions, Mutual EThe Producer / Consu Reader's & Writer IProgramming:Critica sequential process (CS Various states, Benefit	duction to OS and System Structure of Operating Systems (OS), Generations of OS, Type ISystem Calls, Basic architectural concepts of an OS, Conc w, process view and hierarchical view of an OS. <b>Ess Management and Scheduling Algorithms</b> A, Process Relationship, Different states of a Process, Pro- tek (PCB), Context switching. <b>Process Scheduling:</b> Four Schedulers, Scheduling criteria: CPU utilization, Through ase Time. <b>Scheduling algorithms</b> : Pre-emptive and non-p neduling: Real Time scheduling: RM and EDF. <b>Ess Synchronization, Threads and Deadlocks</b> <b>munication</b> : Concurrent processes, precedence graphs, xclusion, Hardware Solution, Semaphores, Strict Alternation and Philosopher Problem, Barber's shop al region, conditional critical region, monitors, concurrent lat P); Deadlocks - prevention, avoidance, detection and recover ts of threads, Types of threads, Concept of multithreads.	roces ndati put, pre-e Crit on, Clas pro ngua ery.	of Vin ss Sta on ar Turn mptiv ical S Peters ssical I oblem. ges, c <b>Threa</b> adlock	OS S rtual M te tran ad Sch arounce e, FCH Section on's S PC Pro Concornuus ad: De: ss: De:	6 hour 6 hour 1 sitions 1 Time 7 hour 7 hour 7 hour 0 lution 1 cating finition
Module:1Introduction:Introduction:ConceptInterrupt handling and Resource Manager viewModule:2ProceProcesses:DefinitionProcesses:DefinitionProcesses:DefinitionProcess Control Bloc objectives, Types of Waiting Time, Resport RR; Multiprocessor scileModule:3ProceModule:3ProceInter-processCommConditions, Mutual EThe Producer / Consu Reader's & Writer IProgramming:CriticationSequential process (CS)Various states, Benefi Necessary and suffici	duction to OS and System Structure of Operating Systems (OS), Generations of OS, Type ISystem Calls, Basic architectural concepts of an OS, Conc w, process view and hierarchical view of an OS. <b>Ess Management and Scheduling Algorithms</b> a, Process Relationship, Different states of a Process, Pro- k (PCB), Context switching. <b>Process Scheduling</b> : Four Schedulers, Scheduling algorithms: Pre-emptive and non-pro- neduling: Real Time scheduling: RM and EDF. <b>Ess Synchronization, Threads and Deadlocks</b> <b>nunication</b> : Concurrent processes, precedence graphs, xclusion, Hardware Solution, Semaphores, Strict Alternation imer Problem, Event Counters, Monitors, Message Passing, Problem, Dinning Philosopher Problem, Barber's shop al region, conditional critical region, monitors, concurrent lat P); Deadlocks - prevention, avoidance, detection and recover	roces ndati put, pre-e Crit on, Clas pro ngua ery.	of Vin ss Sta on ar Turn mptiv ical S Peters ssical I oblem. ges, c <b>Threa</b> adlock	OS S rtual M te tran ad Sch arounce e, FCH Section on's S PC Pro Concornuus ad: De: ss: De:	6 hour 6 hour 1 sitions 1 Time 7 hour 7 hour 7 hour 0 lution 1 collems curren finition



#### VIT® Vellore Institute of Technology

CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Module:4	Memory Management	6 hours
Memory M:	anagement: Basic concept, Logical and Physical address maps, M	emory allocation:
Contiguous N	Iemory allocation - Fixed and variable partition- Internal and External f	ragmentation and
Compaction.	Virtual Memory: Basics of Virtual Memory – Hardware and control struct	ures – Locality of
reference, Pag	ge allocation, Partitioning, Paging, Page fault, Working Set, Segmentation,	, Demand paging,
Page Replace	nent algorithms: Optimal, First in First Out (FIFO), Second Chance (SC),	Not recently used
(NRU) and Le	east Recently used (LRU).	
<u> </u>		
Module:5	File Systems Management and Implementation	2 hours
U	ment: Concept of File, Access methods, File types, File operation, Direct	
•	ure, Allocation methods (contiguous, linked, indexed), Free-space manage	•
linked list, gro	puping), directory implementation (linear list, hash table), efficiency and perf	ormance.
	buping), directory implementation (linear list, hash table), efficiency and perf         I/O and Device Management	
Module:6		2 hours
Module:6 I/O Hardwa	I/O and Device Management	<b>2 hours</b> s of I/O. <b>Disk</b>
Module:6 I/O Hardwa Managemen	I/O and Device Management         are: I/O devices, Device controllers, Direct Memory Access, Principle	<b>2 hours</b> s of I/O. <b>Disk</b>
Module:6 I/O Hardwa Managemen formatting, Bo	I/O and Device Management         are: I/O devices, Device controllers, Direct Memory Access, Principle         t: Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN, Dispot-block, Bad blocks.	<b>2 hours</b> s of I/O. <b>Disk</b> k reliability, Disk
Module:6 I/O Hardwa Managemen formatting, Bo Module:7	I/O and Device Management         are: I/O devices, Device controllers, Direct Memory Access, Principle         t: Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN, Dispot-block, Bad blocks.         Case Study	<b>2 hours</b> s of I/O. <b>Disk</b> k reliability, Disk <b>2 hours</b>
Module:6 I/O Hardwa Managemen formatting, Bo Module:7	I/O and Device Management         are: I/O devices, Device controllers, Direct Memory Access, Principles         t: Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN, Dispot-block, Bad blocks.         Case Study         UNIX OS file system, shell, filters, shell programming, programming with	<b>2 hours</b> s of I/O. <b>Disk</b> k reliability, Disk <b>2 hours</b>
Module:6 I/O Hardwa Managemen formatting, Be Module:7 Case study:	I/O and Device Management         are: I/O devices, Device controllers, Direct Memory Access, Principles         t: Disk structure, Disk scheduling - FCFS, SSTF, SCAN, C-SCAN, Dispot-block, Bad blocks.         Case Study         UNIX OS file system, shell, filters, shell programming, programming with	<b>2 hours</b> s of I/O. <b>Disk</b> k reliability, Disk <b>2 hours</b>

Text Book(s)

 Abraham Silberschatz, Peter B. Galvin, Greg Gagne-Operating System Concepts, Wiley, 10th Edition, 2019.

Total Lecture hours:

 Tanenbaum, Andrew S., and Albert S. Woodhull. Operating systems: design and implementation. Vol. 68. Englewood Cliffs: Prentice Hall, 1997.

Reference Book(s)

- 1. Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau, Operating Systems, Three Easy Pieces, Arpaci-Dusseau Books, Inc, 2015.
- 2. Dhamdhere, Dhananjay M. Operating systems: a concept-based approach, 2E. Tata McGraw-Hill Education, 2006.
- 3. Deitel, Harvey M., Paul J. Deitel, and David R. Choffnes. Operating systems. Delhi. Pearson Education: Dorling Kindersley, 2004.
- 4. Milenkovič, Milan. Operating systems: concepts and design. McGraw-Hill, Inc., 1987.

Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

1.	Study of Linux commands – System Information, Files and Directories, Process, Text Processing
	and Scripting, Programming.
2.	Shell scripting (I/O, decision making, looping)
3.	Creating Child process (using fork), Zombie, Orphan. Displaying system information using C.

30 hours





	le of Assessment: Assessments/ Mid Term Lab/ FAT / Project
	Total Laboratory Hours: 30 hours
10.	Disk Scheduling Algorithms.
9.	Page Replacement Algorithms. (FIFO, LRU, Optimal)
8.	Dynamic Memory Allocation Algorithms (First fit, Best fit, Worst fit)
	semaphores)
7.	Process synchronization (Producer Consumer / Reader Writer/Dining Philosopher using
6.	IPC (Threads, Pipes)
5.	Deadlock Avoidance Algorithm (Bankers algorithm)
4.	CPU Scheduling Algorithms (FCFS, SJF, RR, Priority)

Recommended by Board of Studies	16-09-2020		
Approved by Academic Council	No. 59	Date	24-09-2020



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

CBS1007 Pre-requisite	Course Title	L	Τ	Р	J	С
Dro roquisito	Database Systems	2	0	2	0	3
rie-requisite	NIL		Sylla	bus v	ersio	n
				v. 1.(	)	
Course Objectives:						
-	laint students the significance of Database design and ER		0			
-	students with concepts of good database design and	norm	alizat	ion o	f rela	tiona
schemas.		-				
3. To teach students	the different concurrency control and recovery techniques	s for t	ransa	iction	s.	
Expected Course O	utcome					
<b>.</b>	nderstanding of the architecture and functioning of databas	se mai	nager	nent s	system	ns.
	ct an ER model and derive the relational schemas from the		0		<i>y</i> = = = = = = = = = = = = = = = = = = =	
-	the principles and practices of good database design.		-			
	of data normalization to analyse, measure and evaluate the	perfo	orma	nce of	f a dat	abas
application.		1				
	d revoke privileges and comprehend database recovery tec	hniqu	ies.			
	t SQL queries to retrieve and manipulate data as required.	1				
Module:1 Intro	duction				31	hour
Introduction: Introdu	iction to Database. Hierarchical, Network and Relational	l Moc	dels.	Datab	base s	ysten
architecture Data Ab	straction, Data Independence, Data Definition Language	(DDI	) D	ata M	aninu	lation
Language (DML).		(221	_), _		un pu	
Language (DML).						
Module:2 Data	Models				41	hour
Entity-relationship m	odel, network model, relational and object-oriented data m	nodels	, inte	grity	constr	raints
data manipulation ope	erations.					
					( )	
	tional database design and Query languages	E		-1 D		nour
	esign: Domain and data dependency, Armstrong's axioms idency preservation, Lossless design.	, run	cuon	ai Dej	pende	ncies
	uages: Relational algebra, Tuple and domain relational		C	01.2	וחח	
· •	<b>EVALUATE AND AND AND AND AND AND AND AND AND AND</b>	coloul				
Relational query lang						an
Relational query lang	en source and Commercial DBMS - MYSQL, ORACLE, E					_ an
Relational query lang DML constructs, Ope					•	
Relational query lang DML constructs, Ope Module:4 Que	en source and Commercial DBMS - MYSQL, ORACLE, D	DB2, S	SQL 9	server	4 1	hour
Relational query lang DML constructs, Ope Module:4 Que	en source and Commercial DBMS - MYSQL, ORACLE, E ry processing and Optimization	DB2, S	SQL 9	server	4 1	hour
Relational query lang DML constructs, Ope Module:4 Quer Evaluation of relation algorithms.	en source and Commercial DBMS - MYSQL, ORACLE, E ry processing and Optimization onal algebra expressions, Query equivalence, Join strat	DB2, S	SQL 9	server	4 1	hour
Relational query lang DML constructs, Ope Module:4 Quer Evaluation of relational algorithms. Module:5 Tran	en source and Commercial DBMS - MYSQL, ORACLE, E ry processing and Optimization onal algebra expressions, Query equivalence, Join strat saction Processing	DB2, S	QL s	ery o	4 1 ptimiz 6 1	hour zatio: hour
Relational query lang DML constructs, Ope Module:4 Quer Evaluation of relational algorithms. Module:5 Tran Concurrency contro	en source and Commercial DBMS - MYSQL, ORACLE, E ry processing and Optimization onal algebra expressions, Query equivalence, Join strat saction Processing l, ACID property, Serializability of scheduling, Lock	DB2, S regies,	QL s	ery o	4 1 ptimiz 6 1	hour zatio
Relational query lang DML constructs, Ope Module:4 Quer Evaluation of relational algorithms. Module:5 Tran Concurrency contro	en source and Commercial DBMS - MYSQL, ORACLE, E ry processing and Optimization onal algebra expressions, Query equivalence, Join strat saction Processing	DB2, S regies,	QL s	ery o	4 1 ptimiz 6 1	hour zatio: hour
Relational query lang DML constructs, Ope Module:4 Quer Evaluation of relational algorithms. Module:5 Tran Concurrency contronschedulers, multi-vers	en source and Commercial DBMS - MYSQL, ORACLE, E ry processing and Optimization onal algebra expressions, Query equivalence, Join strat saction Processing I, ACID property, Serializability of scheduling, Lock ion and optimistic Concurrency Control schemes, Databas	DB2, S regies,	QL s	ery o	ptimiz 61 tamp-	hour zatio hour base
Relational query langDML constructs, OpeModule:4QueryEvaluation of relationalalgorithms.Module:5TransConcurrency controsschedulers, multi-versModule:6Data	en source and Commercial DBMS - MYSQL, ORACLE, E ry processing and Optimization onal algebra expressions, Query equivalence, Join strat saction Processing l, ACID property, Serializability of scheduling, Lock	DB2, S	QL s	erver ery o times	9 4 1 9 timiz 6 1 tamp- 4 1	hour zatio





	lule:7	Advanced Topics				2 hours
		d and object relational data	bases, Logical dat	abases, We	b databases, Di	istributed databases,
Data	warehous	ing and data mining.				
	1 0	<b>C</b> / <b>I</b>				4 11
	lule:8	Contemporary Issues	· .			1 Hour
Gues	st lecture b	y Industry Experts or R&D	organization	71 / 11	. 1	20.1
Mad	o of Errol	ation CAT / Assignment			cture hours:	30 hours
	Book(s)	uation: CAT / Assignmer	it / Quiz / FAI	/ Project /	Seminar	
1.		atz, A., Korth, H. F., and	d Sudarshap S I	Jatabasa Sr	Testom Concont	McCrow Hill 7th
1.	Edition.		i Sudarshan, S. I	Jalabase Sy	ystem Concepts	s, meoraw-rim, 7
2.		P. Data warehousing fund	lementals for IT r	rofossional	s John Wilow 8	& Song 2nd Edition
2.	2012.	1. Data watchousing func		5101055101141	s. John whey c	x 30115, 2 Edition,
3.		A., & Smith, S. J. Data ware	housing data mini	ing and OI	AD McCrow L	Jill Inc. 2017
<i>J</i> . 4.		R., &Navathe, S. B. Fur	8	0		
7.	-	ng Edition, 2017.	idamentais of da	labase syste	lins, 4 Editio	ii, Addisoli westey
Dofo	rence Bo	0				
1.		ur, A. K., and Bhattacharyya	P. Database Mar	agement St	stems McGraw	v-Hill 2017
2.	,	amakrishnan, Database Mat				
	Ragina R	amakiisiman, Database wa	lagement Systems	, megraw-m		-015
List	of Challer	nging Experiments (India	cative)			
1	Data Det	inition Language, Data Mar	nipulation Langua	ge and Data	. Control Langu	lage commands
	using SQ					
2		th and without Constraint i				
3		l Algebra – Select, Project,	Union, Intersectio	n, Set differ	rence , Join, Car	tesian Product
4	Normaliz					
5	PL/SQL					
6	SQL inje	ction				
7	Object of	riented and object relational	databases			
					tory Hours:	30 hours
Mod	le of Asse	ssment: Assessments/ M	id Term Lab/ F	AT / Proje	ct	
		d by Board of Studies	16-09-2020			
Арри	roved by A	Academic Council	No. 59	Date	24-09-2020	





B. Tech Computer Science and Engineering and Business Systems

Course Code	Course Title	L	Т	Р	J	С
CBS1008	Operations Research	2	0	2	0	3
Pre-requisite	NIL	S	yllabı	us V	ersio	n
-				v. 1.0		
<b>Course Objectives</b>	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;					

The course is aimed at

- The course emphasizes the application of Operations Research for solving Engineering problems. 1.
- Understand the meaning, purpose, and tools of Operations Research. 2.
- 3. Critically analyze a problem, identify, formulate and solve problems in any engineering field using operations research principles, considering current and future trends.
- The students are expected to know and understand common and important engineering problems. 4.
- 5. Students will develop problem modeling and solving skills and learn how to make intelligent decisions from the point of view of optimization.
- 6. The students will use optimization techniques to enhance systems and to manage enterprise resources using current tools, frameworks and reusable resources.

#### **Expected Course Outcome:**

At the end of the course, the student will be able to

- 1. Apply operations research techniques like L.P.P, scheduling and sequencing in industrial optimization problems.
- 2. Solve allocation problems using various OR methods.
- 3. Analyze various OR models like Inventory, Replacement, Queuing, Decision etc., and apply them for optimization.
- 4. Understand the concepts of integer linear programming.
- 5. Gain knowledge on current topics and advanced techniques of Operations Research in a wide range of applications in industries.

Module:1 Linear Programming Problems	7 hours
An overview and scope of Operations Research and Introduction to	Linear Programming (LP) -
Illustration of LP Problems - Formulation exercises on LP Problems - Grap	phical Method of solving LPP -
Simplex Method - Unboundedness - Multiple Optimum Solutions - Dege	neracy and Cycling Problems -
Artificial Variables : Big-M Method - Sensitivity Analysis.	

Module:2	Special Types of Linear Programming Problems	5 hours
Formulation of	Transportation Problems - Sensitivity Analysis in Transpo	rtation Problems - Assignment
Problems.		

**Integer Programming Problems** Module:3 Formulation, Cutting Plane Method - Branch and Bound Method - Applications.

Module:4	Goal Programming Problems
Single and Multi	ple Goal Programming Problems.

Module:5	Markov Chains	4 hours
Concepts, Trans	ition Probabilities - Steady-State Probabilities - Application	s.

4 hours

3 hours



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Mod	ule:6	Game The	eory				5 hours
Intro	duction -	Characterist	ics of Game	Theory - Two I	Person, Zero	sum games - Pure	strategy -
Dom	inance theo	ory - Mixed s	trategies - Alge	braic and graphic	al methods.		
						T	
	ule:7	-	orary issues				2 hours
Indu	stry Expert	Lecture					
				Total I	ecture hours		30 hours
				1000012			50 1100115
Text	Book(s)						
1.	Kanti Swa	ırup, Gupta I	P.K., and Manr	nohan, (2008), Op	perations Rese	arch, S. Chand & sons	3.
Refe	rence Bool	ks		, , , ,			
1.	Hamdy Ta	aha, (1999), (	Operations Res	earch, PHI.			
2.	,		1	arch , Kedamanth	Ramnath & C	Co.	
3.	Hira and C	Gupta, (2001)	), Operations I	Research, S.Chand	& Sons.		
4.		1 1	, 1	Research, Prentice		Pvt Ltd.	
			// 1				
Mod	e of Evalua	ation : Digit	al Assignments	(Solutions by usi	ng soft skills),	Continuous Assessme	ent Tests,
Quiz	, Final Asse	essment Test					
List	of Challen	ging Experi	iments (Indica	ative)			
1.	Introducti	on to the sc	oftware (R/LIN	IGO/CPLEX/an	y suitable soft	tware packages) and	2 hours
	general Sy	ntaxes					
2.	Plotting ar	nd visualizinş	g curves and su	rfaces – Symbolic	computations	3	2 hours
3.	Evaluating	g LPP using S	Simplex Metho	d			2 hours
4.	Evaluating	g LPP using 1	Big M Method	and Sensitivity An	nalysis		2 hours
5.	Evaluating	g Transporta	tion Problems	and Sensitivity Ar	alysis in Trans	sportation Problems	2 hours
6.	Evaluating	g Assignmen	t Problems				2 hours
7.	Evaluating	g Integer Pro	gramming Pro	blems			2 hours
8.	Evaluating	g problems a	bout transition	probabilities and	steady-state pr	robabilities	2 hours
9.			bout Game the	-			2 hours
10.	Applying	optimization	techniques to	real world probler	ns		2 hours
					Total	Laboratory Hours	20 hours
						¥	
			kly Assessmer		ment Test		
		1 by Board o		16-09-2020			
App	roved by A	cademic Co	ouncil	No. 59	Date	24-09-2020	





B. Tech Computer Science and Engineering and Business Systems

Course Code	Course Title	L	Т	Р	J	С
CBS1009	Computational Statistics	2	0	2	0	3
Pre-requisite	NIL	Syl	labu	s Ve	ersio	n
				v. 1	.0	
Course Obiostimos	•					

#### **Course Objectives:**

- 1. This course Introduce and understand modern computational methods used in statistics. Included are methods for simulation, estimation and visualization of statistical data. Understand the role of computation as a tool of discovery in data analysis.
- 2. This enables the students to understand and use the applications of statistics in the real-time problems.
- 3. The aim of this course is to give graduate students a solid foundation of computational statistics, which they will use in other courses and their research. This course introduces some computational methods in statistics with emphasis on the usage of statistical software packages, statistical simulation, numerical methods, and related topics.

#### **Expected Course Outcome:**

- 1. At the end of the course the student should be able to:
- 2. Analyse and interpret statistical data using multivariate normal distributions.
- 3. Learn the approaches to point estimation of parameters.
- 4. Understand the concept of multivariate regression, by using multivariate analysis and interpreting experimental data.
- 5. Understand the concept of statistical analysis.
- 6. Learn about the data aggregation, group operations and time series.

#### Module:1 Multivariate Normal Distribution

5 hours

5 hours

4 hours

Multivariate Normal Distribution Functions - Conditional Distribution and its relation to regression model - Estimation of parameters.

#### Module:2 Multiple Linear Regression Model

Standard multiple regression models with emphasis on detection of collinearity – outliers - non-normality and autocorrelation - Validation of model assumptions.

#### Module:3 Multivariate Regression

Assumptions of Multivariate Regression Models - Parameter estimation - Multivariate Analysis of variance and covariance.

Module:4	Discriminant Analysis and Principal Component Analysis	4 hours
Statistical backor	ound - linear discriminant function analysis - Estimating linear discriminant fu	inctions and

Statistical background - linear discriminant function analysis - Estimating linear discriminant functions and their properties.

Principal components - Algorithm for conducting principal component analysis - deciding on how many principal components to retain - H-plot.

# Module:5Factor Analysis and Clustering and Segmentation Analysis5 hoursFactor analysis model - Extracting common factors - determining number of factors - Transformation of<br/>factor analysis solutions - Factor scores.5 hours

26



4

5

7

CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems Vellore Institute of Technology Introduction - Types of clustering - Correlations and distances - clustering by partitioning methods hierarchical clustering - overlapping clustering - K-Means Clustering-Profiling and Interpreting Clusters. Data Aggregation, Group Operations and Time series Module:6 5 hours GoupBy Mechanics - Data Aggregation - Group wise Operations and Transformations - Pivot Tables and Cross Tabulations - Time Series Basics - Data Ranges - Frequencies and Shifting. **Contemporary Issues** Module:7 2 hours Industry Expert Lecture Total Lecture hours: 30 hours Text Book(s) Applied Multivariate Statistical Analysis, (2007), Richard A. Johnson, Dean W. Wichern, Pearson 1. Prentice Hall. 2. An Introduction to Multivariate Statistical Analysis, (2003), T.W. Anderson, John Wiley, N.Y. Mark Lutz, "Programming Python", O'Reilly Media, 4th edition, 2010. 3. Magnus Lie Hetland, "Beginning Python: From Novice to Professional", Apress, Second Edition, 4. 2005. **Reference Books** Regression Diagnostics, Identifying Influential Data and Sources of Collinearety, (1980), D.A. 1. Belsey, E. Kuh and R.E. Welsch 2. Applied Linear Regression Models, (1989), J. Neter, W. Wasserman and M.H. Kutner, Homewood, Illinois. The Foundations of Factor Analysis, (1972), A.S. Mulaik, McGraw Hill, N.Y. 3. Introduction to Linear Regression Analysis, (2012), D.C. Montgomery and E.A. Peck, John Wiley, 4. N.Y. 5. Cluster analysis for Applications, (1973), M.R. Anderberg, Academic Press, N.Y. Multivariate Statistical Analysis, (1990), D.F. Morrison, McGraw Hill, N.Y. 6. Python for Data Analysis, (2013), Wes Mc Kinney, O'Reilly Media, 2012. 7. Mode of Evaluation : Digital Assignments, Continuous Assessments, Final Assessment Test List of Challenging Experiments (Indicative) Introduction to Python – Keywords, identifiers, I/O statements. 2 hours 1. Sequence and File operations, Functions, loops, Modules, errors and exceptions. 2 hours 2. 3. Data Manipulation- Basic Functionalities, Merging, Concatenation of data objects, 2 hours Exploring a Dataset and Analyzing a dataset. Data visualization - Matplotlib package, Plotting Graphs, Controlling Graph, Adding 2 hours Text, More Graph Types, Getting and setting values, Patches. Python Concepts, Data Structures - Interpreter, Program Execution, Statements, 2 hours Expressions, Flow Controls, Functions. Numeric Types, Sequences and Class Definition, Constructors, Text & Binary Files -6. 2 hours Reading and Writing Data Wrangling: Combining and Merging Datasets, Reshaping and Pivoting, Data 2 hours





	Total Laboratory Hours	20 hours
	Analysis.	
10	Model Sampling from multivariate normal distribution; MANOVA; Discriminant	2 hours
9	Factor Analysis and Cluster Analysis.	2 hours
	Analysis.	
8	Multivariate Analysis: Graphical representation of multivariate data; Principal Component	2 hours
	Transformation, String Manipulation, Regular Expressions	

Mode of Evaluation : Weekly Assessments	s, Final Assessmen	t Test	
Recommended by Board of Studies	16-09-2020		
Approved by Academic Council	No. 59	Date	24-09-2020



#### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course Coo		Course The	L	Т	Р	J	С
CBS2002			3	0	0	0	3
Pre-requisi	te	NIL	Sylla	abus		ion	
				V	. 1.0		
Course Objective							
0	0	formal methods and languages					
0		computing models and classify their respective types					
3. Show a comp	etent une	derstanding of the basic concepts of complexity theory					
Expected Course	Outcor	me					
-		owledge of mathematical models of computation and describe	e ho	w the	vrel	ate te	)
formal langu		swiedge of mathematical models of computation and descript	<b>c</b> 110	w en	J'ICI		,
e	0	te model of computation for a given language and vice versa.					
-		e of languages described using different automata or grammar					
-		putability power of automata and their limitations	13.				
		putability power of automata and then initiations					
Module:1	Intro	duction				5 h	ou
		grammars, productions and derivation, Chomsky hierarchy of	f lan	011206	25	0 11	
Inpinuoet, ningen	See une g		I mil	Sand			
Module:2	Regu	lar languages and finite automata				8 h	oui
Regular expressi expressions, non equivalence with	ons and determin finite au	<b>lar languages and finite automata</b> languages, deterministic finite automata (DFA) and equinistic finite automata (NFA) and equivalence with DFA, re utomata, properties of regular languages, Kleene's theorem, Nerode theorem and its uses minimization of finite automat	egul: , pur	ar gra	amm	reg ars :	ulan anc
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Regular expressi expressions, non equivalence with regular languages <b>Module:3</b> Context-free gr nondeterministic pumping lemma <b>Module:4</b> Context-sensitive	ons and determin finite au , Myhill- <b>Conte</b> ammars pushdo for conte gramma	l languages, deterministic finite automata (DFA) and equi nistic finite automata (NFA) and equivalence with DFA, re- utomata, properties of regular languages, Kleene's theorem, -Nerode theorem and its uses, minimization of finite automat ext-free languages and pushdown automata (CFG) and languages (CFL), Chomsky and Greiba wn automata (PDA) and equivalence with CFG, parse trees ext-free languages, deterministic pushdown automata, closure ext-free languages, linear bounded automata and equiva	egul: , pur ta. oach es, an e pro	ar gra npiną nor nbigu operti	amm g len mal iity i es o:	reg ars mma 7 hc for n CI f CF 4 h SG.	ulan for our ms FG Ls.
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Regular expressi expressions, non equivalence with regular languages Module:3 Context-free gr nondeterministic pumping lemma Module:4 Context-sensitive Module:5 The basic model decidable (recurs TMs and equive machines, TMs a Module:6 Church-Turing t	ons and determin finite au , Myhill- Conte ammars pushdor for conte gramma gramma for conte gramma for conte gramma for conte gramma l for Tu ive) lang alence v s enume Unde hesis, ur	I languages, deterministic finite automata (DFA) and equi nistic finite automata (NFA) and equivalence with DFA, re- utomata, properties of regular languages, Kleene's theorem, Nerode theorem and its uses, minimization of finite automata ext-free languages and pushdown automata (CFG) and languages (CFL), Chomsky and Greiba wn automata (PDA) and equivalence with CFG, parse trees ext-free languages, deterministic pushdown automata, closure ext-sensitive languages ars (CSG) and languages, linear bounded automata and equiva- ing machines ring machines (TM), Turing recognizable (recursively enur- guages and their closure properties, variants of Turing machine with deterministic TMs, unrestricted grammars and equiv- rators.	regula , pur ta. pach es, ar e pro raleno mera ines, ivale	ar gra npiną nor nbigu operti ce wi lble) nonc	amm g len mal iity i es o: th C: and deter with	reg ars : nma 7 ho for n CI f CF 4 h SG. 7 h Turi Turi Turi <b>6 ho</b>	ula: and fo: our ms FG Ls. ou ng stie cing
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#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Mo	dule:7	Basic Introduction to Co	omplexity			6 hours	
Intr	oductory idea	as on Time complexity of de	terministic and nor	ndetermini	stic Turing mach	ines, P and	
NP,	NP- complet	eness, Cook's Theorem, othe	er NP -Complete p	oroblems.			
Mo	dule:8	Contomportative Laguage				2 hours	
		<b>Contemporary Issues</b> Industry Experts or R&D or	anization			2 nours	
Out	ist feeture by	industry Experts of Red of	0	Total Lect	ure hours:	45 hours	
Tex	t Book(s)						
1.	. /	John E., Rajeev Motwani, a	and Jeffrey D. Ull	man. Intro	duction to Auto	omata Theory,	
	- · ·	and Computation, Pearson E	5				
2.	Martin, J. C	C. Introduction to Languages	and the Theory of	f Computa	tion. New York:	McGraw-Hill,	
	4 th Edition,	8 8	,	1		,	
Refe	rence Book(	s)					
1.	``````````````````````````````````````	R., and Papadimitriou, C. H.	. Elements of the	Theory of	Computation. P	rentice Hall of	
	India Private Limited, 2015.						
2.	Dexter C. Kozen. Automata and computability. Springer Science & Business Media, 2012.						
	Sipser, M. Introduction to the Theory of Computation. Cengage learning, 2012.						
3.	oipsei, m. 1		1	00	U/		
3.	1 ,	on: CAT / Assignment / (	Quiz / FAT / Pro	oject / Sen	ninar		
3. Mod	e of Evaluati	ion: CAT / Assignment / ( y Board of Studies	Quiz / FAT / Pro 16- 09-2020	oject / Sen	ninar		

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#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course Code	Course Title	L	Т	Р	J	С
CBS2003	Design Thinking	2	0	2	0	3
Pre-requisite	NIL		Syl	labu	s ver	rsion
				v. 1.	0	
<b>Course Objectives:</b>						
1. Recognize the imp	portance of design thinking and its various phases					
	king phases to create successful prototypes					
3. Understand that b	ooth agile and design thinking process complement each other					
Expected Course Or	itcome.					
	ompletion of the course the student should be able to					
	nportance of design thinking and its different phases					
	ser situations and be able to define clear problem statements					
-	ideation methods and come with different feasible and viable i	deas	fors	olvi	ng th	P
problem statements.		ucas	101 (	,0111	18 11	C
4. Create prototypes	for clear understanding of the problem statement.					
	prototypes and be able to iterate if the design does not meet the	e cus	tome	er rec	quire	ment
=	e process with design thinking for efficient delivery process.				1	
	· · · ·					
	luction to Design Thinking					ours
Importance of Design	h Thinking – Phases in design thinking process – Five stage m	odel	– N	on-li	neari	ity of
the five-stage model -	Applications of design thinking in various domains.					
	thize Phase					ours
	e with the users - Steps in empathize phase – Developing emp					
	s mindset – Ask What? And Why? – Immersion Activity – Step	08 in	ımm	ersic	on ac	tıvıty
- Body Storming – Ca	se studies.					
Module:3 Defin	e Phase				5 h	ours
	and interpret the result – Analysis and synthesis – Perso	onas	_ ]	Four		
-	nas – Steps to creating personas – Problem statement – Affini					
	iew – "How might we" questions – Why-how laddering – Case	•	0		F	Juliy
Module:4 Ideate					6 h	ours
What is ideation – Ne	eed for ideation – Uses of ideation – Ideation Methods – Bra	insta	ormi	ng –	Rule	s for
brainstorming - Mine	1 maps – Guidelines to create mind maps – Ideation games	- Siz	x Th	inkir	ng Ha	ats –
Doodling – Use of do	odling in expressing creative ideas – Case studies.					
Module:5 Protor						ours
, i 0 , i	of prototyping - Guidelines for prototyping - Story telling -					0
—	isers through stories - Importance of prototyping in de	sign	thin	king	- 1	Value
proposition - Guidelin	nes to write value proposition – Case studies.					
		1			4 1	
Module:6 Test					4 h	ours



Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

Need	to test -User feedback - Conducting a user test - Guidelines for planning a test -	How to test -
Desi	able, feasible and viable solutions – Iterate phase.	
Mod	ale:7 Role of Design Thinking	3 hours
Softw	are and good design - Design thinking and coding – Agile Methodology – Difference	es between agile
	esign thinking - Complementing agile with design thinking	C
Mod	Ile:8 Contemporary Issues	1 hour
Gues	: lecture by Industry Experts or R&D organization	
	Total Lecture hours:	30 hours
Text	Book(s)	
1.	Tim Brown, Change by Design: How Design Thinking Transforms Organizations ar	d Inspires, 1 st
	Edition, HarperCollins, 2009.	
2.	Eli Woolery, Design Thinking Handbook, Invision, 2019.	
Refe	ence Books	
1.	Nir Eyal , Hooked: How to build habit-forming, 2014	
2.	Rod Judkins, The Art of Creative Thinking, Sceptre; 1st edition, 2015.	
Mod	e of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar	
List o	of Challenging Experiments (Indicative)	
1	Immersion Activity	
2	Problem Definition	
3	Different Points of View	
4	Brainstorming session	
5	Drawing Mind Maps	
6	Ideation Games	
7	Creating Prototype	
8	Planning and working on video storyboard	
9	Completing the prototype as per schedule	
10	Testing the prototype	
	Total Laboratory Hours:	30 hours
	e of Assessment: Assessments/ Mid Term Lab/ FAT / Project	
	mmended by Board of Studies 29-01-2021	
	oved by Academic Council No. 61 Date 18-02-2021	





Course code	Course Title L	_	Р	J	С
CBS3001	Computer Networks 2	0	2	0	3
Pre-requisite	NIL	Sy]	llabus		n
011			v. 1.(	)	
Course Objectives:		1 .		. 1	
	standing of the fundamental concepts of computer network	vorkii	ng, pr	otocol	s,
architectures, and	11	م <b>د</b> ا	<u> </u>	CT lav	o no d
Architecture	in design, implement and analyze performance perspective	OLI	.50-0	SI lay	erea
	jor issues of the layers of the model.				
5. Dear with the ma					
Expected Course O	utcome:				
1. Interpret the diff	erent building blocks of Communication network and its archi	tectur	e.		
2. Contrast differen	t types of switching networks and analyse the performance of a	netwo	ork		
3. Implement vario	us error detection and correction mechanisms, flow contr	ol m	echani	sms ar	nd
various routing p					
	g and analyse the performance of network layer, Construct a	ind e	xamine	variou	15
routing protocols					
5 Understand the f	unctionality of various layer and its associated protocols				
	Introduction to Computer Networks			1 h	01140
Module:1     Introduction: Con       Preliminaries of lay	Introduction to Computer Networks nputer networks and distributed systems, Classifications of rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode	nts: ]	Represe	netw entatic	orks n o
Module:1     Introduction: Con       Preliminaries of lay	nputer networks and distributed systems, Classifications of rered network structures. Data communication Componer	nts: ]	Represe	netw entatic ion M	orks n o ediA
Module:1IIntroduction:ConPreliminaries of laydata and its flow, VaModule:2	nputer networks and distributed systems, Classifications of rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode Network Topology and Bandwidth	nts: 1 I, Tra	Represe	netw entatio ion M <b>3 h</b>	orks n o ediA ours
Module:1Introduction:ComPreliminaries of laydata and its flow, VaModule:2LAN:Wired LAN,	nputer networks and distributed systems, Classifications of rered network structures. <b>Data communication Componer</b> rious connection topology, Protocols and Standards, OSI mode <b>Network Topology and Bandwidth</b> Wireless LAN, Virtual LAN. <b>Techniques for Bandwidth util</b>	nts: 1 el, Tra izatio	Represe	netw entatio ion M <b>3 h</b>	orks n o ediA ours
Module:1Introduction:ComPreliminaries of laydata and its flow, VaModule:2LAN:Wired LAN,	nputer networks and distributed systems, Classifications of rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode Network Topology and Bandwidth	nts: 1 el, Tra izatio	Represe	netw entatio ion M <b>3 h</b>	orks n o: ediA ours
Module:1IIntroduction:ConPreliminaries of laydata and its flow, VaModule:2ILAN:Wired LAN,Frequency division, '	nputer networks and distributed systems, Classifications of rered network structures. <b>Data communication Componer</b> rious connection topology, Protocols and Standards, OSI mode <b>Network Topology and Bandwidth</b> Wireless LAN, Virtual LAN. <b>Techniques for Bandwidth util</b> Time division and Wave division, Concepts on spread spectru	nts: 1 el, Tra izatio	Represe	netw entatic ion M <b>3 h</b> iltiplex	orks n o ediA ours
Module:1IIntroduction:ConPreliminaries of laydata and its flow, VaModule:2ILAN:Wired LAN,Frequency division, 'Module:3I	nputer networks and distributed systems, Classifications of the rered network structures.       Data communication Componer rered network structures.         rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN.         Time division and Wave division, Concepts on spread spectrue         Data Link Layer and Medium Access SubLayer	nts: 1 l, Tra izatio ım.	Repress nsmiss	netw entatic ion M 3 h Iltiplex 5 h	orks ediA ours ing
Module:1IIntroduction:ConPreliminaries of laydata and its flow, VaModule:2ILAN:Wired LAN,Frequency division,Module:3IFundamentals of End	nputer networks and distributed systems, Classifications of the rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         ror Detection and Error Correction, Block coding, Hamming	nts: 1 el, Tra izatio im.	eprese nsmiss on: Mu	netw entatic ion M <b>3 h</b> iltiplex <b>5 h</b> CRC;	ours ours ing - ours Flow
Module:1Introduction:ConPreliminaries of laydata and its flow, VaModule:2ILAN:Wired LAN,Frequency division,Module:3IFundamentals of EnControl and Error c	nputer networks and distributed systems, Classifications of the rered network structures.       Data communication Componer rered network structures.         rered network structures.       Data communication Componer rered network topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth       Mireless LAN, Virtual LAN.         Wireless LAN, Virtual LAN.       Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectrum         Data Link Layer and Medium Access SubLayer         rror Detection and Error Correction, Block coding, Hamming         wortrol protocols - Stop and Wait, Go-back–N ARQ, Selective	nts: 1 il, Tra izatio um. g Dist e Rep	eprese nsmiss	netw entatic ion M 3 h Iltiplex 5 h CRC; S	orks n o ediA ours ing ours
Module:1IIntroduction:ComPreliminaries of laydata and its flow, VaModule:2ILAN:Wired LAN,Frequency division,Module:3IFundamentals of EnControl and Error ofWindow,Piggyback	nputer networks and distributed systems, Classifications of the rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         tror Detection and Error Correction, Block coding, Hamming         control protocols - Stop and Wait, Go-back–N ARQ, Selective         ing, Random Access, Multiple access protocols - Pure ALO	nts: 1 il, Tra izatio um. g Dist e Rep	eprese nsmiss	netw entatic ion M 3 h Iltiplex 5 h CRC; S	orks n o ediA ours ing flow
Module:1Introduction:ConPreliminaries of laydata and its flow, VaModule:2ILAN:Wired LAN,Frequency division,Module:3IFundamentals of EnControl and Error c	nputer networks and distributed systems, Classifications of the rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         tror Detection and Error Correction, Block coding, Hamming         control protocols - Stop and Wait, Go-back–N ARQ, Selective         ing, Random Access, Multiple access protocols - Pure ALO	nts: 1 il, Tra izatio um. g Dist e Rep	eprese nsmiss	netw entatic ion M 3 h Iltiplex 5 h CRC; S	orks n o ediA ours ing flow
Module:1       I         Introduction:       Con         Preliminaries of lay       data and its flow, Va         Module:2       I         LAN:       Wired LAN,         Frequency division,       I         Module:3       I         Fundamentals of Encontrol and Error of Window, Piggyback       CSMA/CD, CDMA	nputer networks and distributed systems, Classifications of the rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         tror Detection and Error Correction, Block coding, Hamming         control protocols - Stop and Wait, Go-back–N ARQ, Selective         ing, Random Access, Multiple access protocols - Pure ALO	nts: 1 il, Tra izatio um. g Dist e Rep	eprese nsmiss	netw entatic ion M <b>3 h</b> Iltiplex <b>5 h</b> CRC; I RQ, SI ALC	orks n o ediA ours ing flow Flow
Module:1       I         Introduction:       Con         Preliminaries of lay       data and its flow, Va         data and its flow, Va       I         Module:2       I         LAN:       Wired LAN,         Frequency division,       I         Module:3       I         Fundamentals of Ea       Control and Error of         Window, Piggyback       CSMA/CD, CDMA         Module:4       I	nputer networks and distributed systems, Classifications of the rered network structures.       Data communication Componer trious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth       Wireless LAN, Virtual LAN.         Wireless LAN, Virtual LAN.       Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         tror Detection and Error Correction, Block coding, Hamming control protocols - Stop and Wait, Go-back–N ARQ, Selectiving, Random Access, Multiple access protocols - Pure ALO L/CA	nts: 1 l, Tra izatio m. g Dist e Rep HA,	on: Mu	netw entatic ion M 3 h iltiplex 5 h CRC; 1 RQ, SI ALC 5 h	orks n o ediA ours ing Flow Flow ours ours
Module:1       I         Introduction:       Con         Preliminaries of lay       data and its flow, Va         Module:2       I         LAN:       Wired LAN,         Frequency division, '       I         Module:3       I         Fundamentals of Encontrol and Error of Window, Piggyback       I         CSMA/CD, CDMA       I         Module:4       I         Switching, Logical       I	nputer networks and distributed systems, Classifications of the rered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         rror Detection and Error Correction, Block coding, Hamming         control protocols - Stop and Wait, Go-back–N ARQ, Selective         ing, Random Access, Multiple access protocols - Pure ALO         /CA	nts: 1 l, Tra izatio m. g Dist e Rep HA,	on: Mu	netw entatic ion M 3 h iltiplex 5 h CRC; 1 RQ, SI ALC 5 h	orks n o ediA ours ing Flow Flow ours ours
Module:1       I         Introduction:       Con         Preliminaries of lay       data and its flow, Va         Module:2       I         LAN:       Wired LAN,         Frequency division,       I         Module:3       I         Fundamentals of Ea       Control and Error of Window, Piggyback         CSMA/CD, CDMA       I         Module:4       I         Switching, Logical       DHCP–Delivery, Formation	puter networks and distributed systems, Classifications of ered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         ror Detection and Error Correction, Block coding, Hamming control protocols - Stop and Wait, Go-back–N ARQ, Selectiving, Random Access, Multiple access protocols - Pure ALO /CA         Network Layer         addressing – IPV4, IPV6; Address mapping – ARP, prwarding and Unicast Routing protocols.	nts: 1 l, Tra izatio m. g Dist e Rep HA,	on: Mu	netw entatic ion M 3 h Iltiplex 5 h CRC; 1 RQ, SH ALC 5 h DOTP	orks n o ediA ours ing Flow ding DHA ours an
Module:1       I         Introduction:       Com         Preliminaries of lay       data and its flow, Va         Module:2       I         LAN:       Wired LAN,         Frequency division, frequency d	nputer networks and distributed systems, Classifications of the red network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         tror Detection and Error Correction, Block coding, Hamming         control protocols - Stop and Wait, Go-back–N ARQ, Selectiving, Random Access, Multiple access protocols - Pure ALO         /CA         Network Layer         addressing – IPV4, IPV6; Address mapping – ARP, orwarding and Unicast Routing protocols.         Transport Layer	nts: 1 el, Tra izatio im. g Dist e Rep HA, RAR	epresense nsmiss on: Mu ance, O eat AF Slotted	netw entatic ion M <b>3 h</b> iltiplex <b>5 h</b> CRC; I RQ, SI ALC <b>5 h</b> DOTP <b>6 h</b>	orks n o ediA ours ing ours ours an ours
Module:1       I         Introduction:       Con         Preliminaries of lay       data and its flow, Va         Module:2       I         LAN:       Wired LAN,         Frequency division, '       I         Module:3       I         Fundamentals of Encontrol and Error of Window, Piggyback       I         CSMA/CD, CDMA       I         Module:4       I         Switching, Logical       DHCP–Delivery, Formation         Module:5       '         Process to Process       I	puter networks and distributed systems, Classifications of ered network structures. Data communication Componer rious connection topology, Protocols and Standards, OSI mode         Network Topology and Bandwidth         Wireless LAN, Virtual LAN. Techniques for Bandwidth util         Time division and Wave division, Concepts on spread spectru         Data Link Layer and Medium Access SubLayer         ror Detection and Error Correction, Block coding, Hamming control protocols - Stop and Wait, Go-back–N ARQ, Selectiving, Random Access, Multiple access protocols - Pure ALO /CA         Network Layer         addressing – IPV4, IPV6; Address mapping – ARP, prwarding and Unicast Routing protocols.	nts: 1 l, Tra izatio im. g Dist e Rep HA, RAR	epresensmiss	netw entatic ion M 3 h iltiplex 5 h CRC; 1 RQ, Sh ALC 5 h DOTP 6 h Protoc	orks n o ediA ours ing Flow iding DHA ours ar



#### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Mo	dule:6	Application Layer				3 hours
DN	S, DDNS, TI	ELNET, EMAIL, FTP, W	WW, HTTP, SI	NMP, Bluet	ooth, Firewalls.	
Mo	dule:7	Network Security				2 hours
Elec	ctronic mail, o	lirectory services and netw	ork managemer	nt, Basic con	ncepts of Cryptograp	phy.
Mo	dule:8	Contemporary issues				2 hours
Gue	est lecture by I	Industry Experts or R&D	organization			
				Total Le	ecture hours:	30 hours
Text	Book(s)					
1.	Tanenbaum	n, Computer Networks, Po	earson Educatio	on, 5th Editi	on, 2013.	
2.	William Sta	lings. Data and computer	communication	is. Pearson	Education India, 20	13.
Refe	ence Book(	3)				
1.	Perlman, R	., Kaufman, C., and Spec	iner, M. (2016)	. Network	security: private con	mmunication
	in a public	world. Pearson Education	India.			
2.	Stevens, W.	R., Fenner, B., and Rudo	ff, A. M. (2018)	. UNIX Ne	etwork Programming	g Volume
	1. SMIT-SN	IU.				
Mode	e of Evaluati	on: CAT / Assignment	/ Quiz / FAT	/ Project /	' Seminar	
List o	of Challengi	ng Experiments (Indica	tive)			
1.	Demo sessio	on of all networking hardw	are and Functio	nalities		
2.	Network Sy	stem Administration: Und	lerstanding swite	ches and ro	uters	
3.	Network co	onfiguration commands us	ing Linux			
4.	Error detec	tion and correction mecha	inisms			
5.	Flow contro	ol mechanisms				
6.	Simulation	of unicast routing protoco	ls			
7.	Observing 1	Packets across the networ	k and Performa	nce Analysis	s of Routing protoco	ols
8.	Socket prog	ramming (TCP and UDP)	) – Multi client (	chatting		
9.	Develop a I	DNS client server to resolv	ve the given hos	t name or I	P address	
10.		tion of Layers for security				
	<u> </u>			Т	otal Laboratory H	ours 30 hours
Mode	e of Assessm	ent: Assessments/ Mid	Term Lab/ FA			I
-		y Board of Studies	16-09-2020	,		
	oved by Aca		No. 59	Date	24-09-2020	



#### VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course code	Course Title	L	Т	Р	J	С
CBS3002	Information Security	2	0	2	0	3
Pre- requisite	NIL	Syl	labus	sversi		
				v. 1.0		
Course Objectives:						
	actice fundamental techniques in developing secure application					
2. To understand t	he policy, procedures and guidelines to protect the computin	ng re	sourc	ces		
Expected Course Ou	itcome.					
*	security parameters and access control methods.					
	he fundamental policies and design principle of computing r	esou	rces			
	stem design, logic based system	<b>C</b> 30U	1003			
	curity architecture of database, operating system and associate	ed w	lner	bilitie	S	
	and association of the associati				0	
Module:1			4 ho	urs		
Overview of Securi	ty Parameters: Confidentiality, integrity and availability;	Sec	curity	viola	tion	and
	cy and procedure; Assumptions and Trust; Security Assurar					
Operational Issues; S			-			
Module:2			3 ho	urs		
Access Control Mod	lels: Discretionary, mandatory, role-based and task-based m	nodel	s, un	ified 1	nodel	s,
access control algebr	a, temporal and spatio-temporal models.					
Module:3			5 ho			
	nfidentiality policies, integrity policies, hybrid policies, non	-inte	rfere	ncean	d poli	су
composition, interna	tional standards.					
Module:4			5 ho	1#0		
	esign principles, representing identity, control of acces				tion	low
•	n. Assurance: Building systems with assurance, formal method					
Module:5			6 ho			
	Malicious logic, vulnerability analysis, auditing, intrusion					
1 1	rk security, operating system security, user security, program	secui	ity.S	pecial	Topic	:s:
Data privacy, introdu	action to digital forensics, enterprise security specification.					
Module:6			3 ho			
	ecurity: Security Architecture, Analysis of Security in Linux/					
Operating systems s	centry. Security Arcinecture, Analysis of Security in Linux/	w 1110	uows	•		
Module:7			2 ho	urs		
	ecurity Architecture, Enterprise security, Database auditing.					
	, autility, Enterprise secondy, Enterprise autility.					





T.T.	odule:8	Contemporary issues			2 hours
Jue	est lecture by Ind	ustry Experts or R&D organiza	tion		
			Total Leo	cture hour	rs: 30 hours
Te	ext Book(s)				
l.	Anderson, R. S	Security engineering. John Wile	ey & Sons, 2008.		
2.	Bishop, M. Co	mputer Security: Art and Scien	ce. Pearson Educa	tion, Bost	on, US, 2003.
3.	Stamp, M. Infe	prmation security: principles an	nd practice. John W	'iley & Sor	ns, 2014.
Re	eference Book(	5)			
1.	Pfleeger, C. P.	, Pfleeger, S. L., and Margulies,	, J. Security in Con	nputing,Pr	oQuest Safari Tech Books
	Online, 2017.				
2.	Wheeler, D. A	. Secure programming HOWTO	O, 2017.		
3.	Zalewski, M. C	Google browser security handbo	ook, 2009.		
4.	Gertz, M., & J	ajodia, S. (Eds.). Handbook of	database security: a	pplication	s andtrends. Springer
	Science & Busi	ness Media, 2007.			
M	ode of Evaluati	on: CAT / Assignment / Qu	iiz / FAT / Proje	ct / Semi	nar
Li	<u> </u>	ng Experiments (Indicative)			
1.		ecurity in Unix/Linux.			
2.	Administratio	on of users, password policies, 1	privileges and roles		
<u>~</u> .	Security asses		•	nated tools	
	Security asses	sment of information security s	ystems using autom	14104 10010	
2. 3. 4.	-	sment of information security s Identification and Prioritization	. 8		
3.	Vulnerability		. 8		
3. 4.	Vulnerability	Identification and Prioritization	. 8		
3. 4. 5.	Vulnerability Web Applica	Identification and Prioritization	Total Laborat	tory Hour	
3. 4. 5. <b>M</b>	Vulnerability Web Applicat	Identification and Prioritization tion Security Configuration	Total Laborat	tory Hour	



#### VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1936)

#### CURRICULUM (2019 - 2020)

Course Code	Course Title	L	Т	Р	J	С
CBS3003	Design and Analysis of Algorithms	3	0	2	0	4
Pre-requisite	NIL		Sylla	ıbus	vers	ior
			v	r. 1.0		
Course Objectives:						
•	ymptotic performance of algorithms.					
11,2,1	ant algorithmic design paradigms and methods of analysis.					
3. Synthesize eff	icient algorithms in common engineering design situations.					
Expected Course C	Dutcome:					
	-case running times of algorithms using asymptotic analysis.					
2. Identify suitab	le algorithmic paradigm for solving the given problem					
	nd apply various graph-based algorithms					
4. Understand th	e classes of complexity					
5. Introduction t	o approximation, randomized and quantum algorithms					
	ous algorithmic strategies, analysis and their implementation					
	oduction to algorithmic analysis				8 ho	
		nnlev	ity Ko	unde	$- \mathbf{E}$	
	lgorithm. Analysis of Algorithm: Asymptotic analysis of Con					
Average and Worst-	Case behavior; Performance Measurements of Algorithm, Tim	ie and	Space	e Trac	de-C	)ffs
Average and Worst- Analysis of Recursiv	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I	ie and	Space	e Trac	de-C	)ffs
Average and Worst-	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I	ie and	Space	e Trac	de-C	)ffs
Average and Worst- Analysis of Recursiv Method and Masters	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem.	ie and	Space	e Trac cursio	de-C on 7	offs Tree
Average and Worst- Analysis of Recursiv Method and Masters Module:2 Fund	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies	e and Metho	Space d, Re	e Trac cursio	de-Con 7 7 ho	offs Tree
Average and Worst- Analysis of Recursiv Method and Masters <b>Module:2 Fund</b> Brute-Force, Heuris	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I 'Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies	e and Metho ; Illu	Space d, Re	e Trac cursio	de-Con 7 7 ho	our:
Average and Worst- Analysis of Recursiv Method and Masters <b>Module:2 Fund</b> Brute-Force, Heuris	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies	e and Metho ; Illu	Space d, Re	e Trac cursio	de-Con 7 7 ho	offs Tre
Average and Worst- Analysis of Recursi Method and Masters Module:2 Fund Brute-Force, Heuris techniques for Probl Module:3 Gree	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prot edy and Dynamic Programming	e and Metho s; Illu lem.	Space d, Re stratic	e Trac cursic ons c	de-C on 'I 7 ho of th 8 ho	offs our nese
Average and Worst-OAnalysis of RecursivMethod and MastersModule:2FundBrute-Force, Heuristechniques for ProblModule:3GreeDynamic Programm	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prot edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai	ie and Metho s; Illu lem.	Space d, Re stratic	e Trac cursic ons c	de-Con 7 7 ho of th 8 ho Long	offs re- our ness ges
Average and Worst-OAnalysis of RecursivMethod and MastersModule:2FundBrute-Force, Heuristechniques for ProblModule:3GreeDynamic Programm	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prot edy and Dynamic Programming	ie and Metho s; Illu lem.	Space d, Re stratic	e Trac cursic ons c	de-Con 7 7 ho of th 8 ho Long	offs Tree our ness
Average and Worst- Analysis of Recursiv Method and Masters <b>Module:2 Fund</b> Brute-Force, Heuris techniques for Probl <b>Module:3 Gree</b> Dynamic Programm Common Subseque:	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prot edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai	ie and Metho s; Illu lem.	Space d, Re stratic	e Trac cursic ons c	de-Con 7 7 ho of th 8 ho Long	offs Tre our nes
Average and Worst- Analysis of Recursiv Method and Masters <b>Module:2 Fund</b> Brute-Force, Heuris techniques for Probl <b>Module:3 Gree</b> Dynamic Programm Common Subseque: Knapsack proble, Hu	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem ulfman Coding; Fibonacci Heaps	ie and Metho s; Illu lem.	Space d, Re stratic	e Trac cursic ons c tion, t edy s	de-C on 7 7 ho of th 8 ho Lon _i strat	offs re our nes egy
Average and Worst-OAnalysis of RecursivMethod and MastersModule:2FundBrute-Force, Heuristechniques for ProbleModule:3GreeDynamic ProgrammCommon SubsequesKnapsack proble, HuModule:4Grap	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps	n mult	Space d, Re stratic tiplicat	e Trac cursio ons co tion, t edy s	de-Con 7 7 ho of th 8 ho Lon ₃ strat	offs re- our nes- egy
Average and Worst-O         Analysis of Recursive         Method and Masters         Module:2       Fund         Brute-Force, Heuris         techniques for Proble         Module:3       Gree         Dynamic Programm         Common Subseque:         Knapsack proble, Hu         Module:4       Grap	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I 'Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps bh and Tree Algorithms : Depth First Search (DFS) and Breadth First Search (BFS); S	n mult Shorte	Space d, Re stratic tiplicat of gre	e Trac cursio ons co tion, t edy s	de-Con 7 7 ho of th 8 ho Lon ₃ strat	offs re our nes our ges egy
Average and Worst-O         Analysis of Recursive         Method and Masters         Module:2       Fund         Brute-Force, Heuris         techniques for Proble         Module:3       Gree         Dynamic Programm         Common Subseque:         Knapsack proble, Hu         Module:4       Grap	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps	n mult Shorte	Space d, Re stratic tiplicat of gre	e Trac cursio ons co tion, t edy s	de-Con 7 7 ho of th 8 ho Lon ₃ strat	offs re our nes our ges egy
Average and Worst-OAnalysis of RecursivMethod and MastersModule:2FundBrute-Force, Heuristechniques for ProbleModule:3GreeDynamic ProgrammCommon Subseque:Knapsack proble, HuModule:4GrapTraversal algorithmsTransitive closure, MModule:5Trace	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps bh and Tree Algorithms : Depth First Search (DFS) and Breadth First Search (BFS); S finimum Spanning Tree, Topological sorting, Network Flow A	n multi Shorte	Space d, Re stratic tiplicat of gre	e Trac cursio ons c tion, t edy s	de-Con 7 7 hoo of th 8 hoo strat 5 hoo orith 8 hoo	offs re our ges egy our ms
Average and Worst-O         Analysis of Recursive         Method and Masters         Module:2       Fund         Brute-Force, Heurise         techniques for Proble         Module:3       Gree         Dynamic Programm         Common Subseque:         Knapsack proble, Hurst         Traversal algorithms         Transitive closure, M         Module:5       Trac         Computability of Alg	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I 'Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps : Depth First Search (DFS) and Breadth First Search (BFS); S finimum Spanning Tree, Topological sorting, Network Flow A etable and Intractable Problems gorithms, Computability classes – P, NP, NP-complete and N	n multi Shorte	Space d, Re stratic tiplicat of gre	e Trac cursio ons c tion, t edy s	de-Con 7 7 hoo of th 8 hoo strat 5 hoo orith 8 hoo	offs Tree our ges egy our ms
Average and Worst-O         Analysis of Recursive         Method and Masters         Module:2       Fund         Brute-Force, Heurise         techniques for Proble         Module:3       Gree         Dynamic Programm         Common Subseque:         Knapsack proble, Hurst         Traversal algorithms         Transitive closure, M         Module:5       Trac         Computability of Alg	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps bh and Tree Algorithms : Depth First Search (DFS) and Breadth First Search (BFS); S finimum Spanning Tree, Topological sorting, Network Flow A	n multi Shorte	Space d, Re stratic tiplicat of gre	e Trac cursio ons c tion, t edy s	de-Con 7 7 hoo of th 8 hoo strat 5 hoo orith 8 hoo	ours ges egy
Average and Worst-O         Analysis of Recursing         Method and Masters         Module:2       Fund         Brute-Force, Heuris         techniques for Proble         Module:3       Gree         Dynamic Programm         Common Subseque:         Knapsack proble, Hurst         Traversal algorithms         Transitive closure, N         Module:5       Trac         Computability of Alg         Standard NP-comple	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prote edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps bh and Tree Algorithms : Depth First Search (DFS) and Breadth First Search (BFS); S finimum Spanning Tree, Topological sorting, Network Flow A etable and Intractable Problems gorithms, Computability classes – P, NP, NP-complete and N ete problems and Reduction techniques	n multi Shorte	Space d, Re stratic tiplicat of gre	e Trac cursic ons c ion, c edy s h algo	de-Con 7 7 ho of th 8 ho Long strat 5 ho orith 8 ho	our ges our ges our ges
Average and Worst-O         Analysis of Recursis         Method and Masters         Module:2       Fund         Brute-Force, Heuris         techniques for Proble         Module:3       Gree         Dynamic Programm         Common Subseque:         Knapsack proble, Hu         Traversal algorithms         Transitive closure, M         Module:5       Trac         Computability of Alg         Standard NP-comple         Module:6       Appr	Case behavior; Performance Measurements of Algorithm, Tin ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prob edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps bh and Tree Algorithms : Depth First Search (DFS) and Breadth First Search (BFS); S finimum Spanning Tree, Topological sorting, Network Flow A etable and Intractable Problems gorithms, Computability classes – P, NP, NP-complete and N ete problems and Reduction techniques	ie and Metho s; Illu lem. n mult ents o Shorte lgorit P-har	Space d, Re stratic tiplicat of gre st pat hm. d. Coc	e Trac cursio ons c tion, c edy s h algo bk's th	de-Con 7 7 hoo of th 8 hoo strat 5 hoo heor 5 hoo	offs re our ges egy our em
Average and Worst-O         Analysis of Recursis         Method and Masters         Module:2       Fund         Brute-Force, Heuris         techniques for Proble         Module:3       Gree         Dynamic Programm         Common Subseque:         Knapsack proble, Hu         Traversal algorithms         Transitive closure, M         Module:5       Trac         Computability of Alg         Standard NP-comple         Module:6       Appr	Case behavior; Performance Measurements of Algorithm, Tim ve Algorithms through Recurrence Relations: Substitution I ? Theorem. damental Algorithmic Strategies stics, Branch and Bound and Backtracking methodologies em-Solving, Bin Packing, Knapsack, Travelling Salesman Prote edy and Dynamic Programming ingElements of Dy Programming, Rod Cutting, Matrix chai nce; Greedy Algorithms- Activity Selection Problem, Elem uffman Coding; Fibonacci Heaps bh and Tree Algorithms : Depth First Search (DFS) and Breadth First Search (BFS); S finimum Spanning Tree, Topological sorting, Network Flow A etable and Intractable Problems gorithms, Computability classes – P, NP, NP-complete and N ete problems and Reduction techniques	ie and Metho s; Illu lem. n mult ents o Shorte lgorit P-har	Space d, Re stratic tiplicat of gre st pat hm. d. Coc	e Trac cursio ons c tion, c edy s h algo bk's th	de-Con 7 7 hoo of th 8 hoo strat 5 hoo heor 5 hoo	offs re our ges egy our er our





Module	e:7	Quantum Algorithms				2 hours
Introdu	iction	to Quantum Algorithms				
Modul		Contemporary issues				2 hours
Guest le	ecture	by Industry Experts or R&D	organization			
				Total Le	ecture hours:	45 hours
Text B	<u>`</u>	,				
1.	Horo	witz, E., Sahni, S., & Rajas	ekaran, S. Funda	mental of c	omputer algorithn	ns, Hyderabad
	Unive	ersities Press; Second edition, 2	2008.			
2.	Klein	berg J, Tardos E. Algorithm d	lesign. Pearson Ed	lucation India	a; 2006	
Referei		0.	0			
1.	Knut	h Donald E, "Art of Con	nouter Programm	ning: Fundar	nental Algorithms	volume 1 -
		amental Algorithms", Third E	1 0	0	0	
		lorin, "Open Data Structures:				ing)" 31st ed
		· 1		(Open i auis		ing), 51st cu.
		on, UBC Press, 2013.1974.		<u>/                                    </u>		
Mode	of Eva	aluation: CAT / Assignmen	it / Quiz / FAI	/ Project / S	beminar	
List of	Chall	enging Experiments (Indic	ativo)			
		ementation of various data stru	,			
	1	outing the time complexity of		ms		
	1	force strategy	the given algorith			
		ly strategy -Activity selection,	knapscak			
		mic programming- MCM, LC		:k		
		th and Bound strategy	e unu e, i inupeu			
		racking -8 Queens problem				
		h search algorithms				
	1	num Spanning Tree				
		est path algorithm				
		ork flow –Min cut				
12	Appro	oximation algorithms- TSP an	d vertex cover			
I				Total Labor	atory Hours:	30 hours
Mode of	of Ass	essment: Assessments/ M	id Term Lab/ F.	AT / Projec	2	
Recom	meno	led by Board of Studies	29-01-2021	•		



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

CBS3004	Course Title	L T	Р	J	С
	Artificial Intelligence	2 0	2	0	3
Pre-requisite	NIL	S	yllabus		sior
			v. 1.0	)	
Course Objectiv					
-	tificial intelligence principles, techniques and its history.				
	e applicability, strengths, and weaknesses of the basic knowledge repr	esentati	on, pro	oblem	1
8	learning methods in solving engineering problems.				
3. To develop i	ntelligent systems by assembling solutions to concrete computational	l proble	ns		
Expected Cour					
	ficial Intelligence (AI) methods and describe their foundations.	_			
	principles of AI in solutions that require problem solving, inference, pe	erceptio	n,knov	vledg	e
representation a					
	e knowledge of reasoning and knowledge representation for solving :		1	olems	•
-	illustrate how search algorithms and planning play vital role in proble	em solvi	ng.		
5. Discuss curre	ent scope and limitations of AI and societal implications.				
6. Illustrate and	implement the construction of basic AI models and expert systems.				
Module:1	Introduction, Overview of Artificial intelligence			4 H	
	I, AI technique, Tic - Tac - Toe problem. Intelligent Agents, Agents			t, na	ur
of environmen	t, structure of agents, goal-based agents, utility-based agents, learning	g agents.			
Module:2	Problem Solving, Problems, Problem Space & search			3 H	
Defining the p	roblem as state space search, production system, problem characteris	tics, issu	ies in t		
	roblem as state space search, production system, problem characteris	tics, issu	ies in t		
Defining the program of search program	roblem as state space search, production system, problem characteris rams.	tics, issu	ies in t	he de	esig
Defining the progr of search progr Module:3	roblem as state space search, production system, problem characteris rams. Search techniques			he de 5 H	esig Iou
Defining the proof of search progr Module:3 Problem solvir	roblem as state space search, production system, problem characteris rams. Search techniques ag agents, searching for solutions; uniform search strategies: breadth	n first se	earch,	he de 5 H depth	esig Iou n fr
Defining the proof of search progr Module:3 Problem solvin search, depth	roblem as state space search, production system, problem characteris rams. Search techniques ag agents, searching for solutions; uniform search strategies: breadth limited search, bidirectional search, comparing uniform search strategies	n first so ategies.	earch, Heuris	he de 5 H deptl stic s	esig Iou n fi
Defining the proof of search progr Module:3 Problem solvir search, depth strategies Gree	roblem as state space search, production system, problem characteris         rams.         Search techniques         ng agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies breadth         dy best-first search, A* search, AO* search, memory bounded heur	n first se ategies. ristic sea	earch, Heuris urch: lo	he de 5 H deptl stic s ocal s	esig Iou n fi eau
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree	roblem as state space search, production system, problem characteris rams. Search techniques ag agents, searching for solutions; uniform search strategies: breadth limited search, bidirectional search, comparing uniform search strategies	n first se ategies. ristic sea	earch, Heuris urch: lo	he de 5 H deptl stic s ocal s	esig Iot n fi ear ear
Defining the proof of search progr Module:3 Problem solvir search, depth strategies Gree algorithms & o	roblem as state space search, production system, problem characteris         rams.         Search techniques         ng agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies         dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search	n first se ategies. ristic sea	earch, Heuris urch: lo	he de 5 H depth stic s ocal s searc	esig Iot n fi ear ch.
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree algorithms & o Module:4	roblem as state space search, production system, problem characteris         rams.         Search techniques         ng agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies: dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         Constraint satisfaction problems	n first se ategies. ristic sea ch, local	earch, Heuris urch: lo beam	he de 5 H depth stic s ocal s searc 4 H	Iou n fi ear ch.
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree algorithms & o Module:4 Local search for	roblem as state space search, production system, problem characteris         rams.         Search techniques         ng agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies         dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         Constraint satisfaction problems         or constraint satisfaction problems. Adversarial search, Games, optim	n first so ategies. ristic sea ch, local al decise	earch, Heuris arch: lo beam ons &	he de 5 H depth stic s ocal s searc 4 H strat	Iou n fi ear ch. Iou egi
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree algorithms & o Module:4 Local search for	roblem as state space search, production system, problem characteris         rams.         Search techniques         ng agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies: dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         Constraint satisfaction problems	n first so ategies. ristic sea ch, local al decise	earch, Heuris arch: lo beam ons &	he de 5 H depth stic s ocal s searc 4 H strat	Iou n fi ear ch. Iou egi
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree algorithms & o Module:4 Local search for in games, the n	roblem as state space search, production system, problem characteris         rams.         Search techniques         ng agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies         dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         Constraint satisfaction problems         or constraint satisfaction problems. Adversarial search, Games, optim	n first so ategies. ristic sea ch, local al decise	earch, Heuris arch: lo beam ons &	he de 5 H depth stic s ocal s searc 4 H strat	Iou n fr ear ch. Iou g.
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree algorithms & o Module:4 Local search fo in games, the n Module:5	roblem as state space search, production system, problem characteris rams.         Search techniques         ag agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies: breadth         dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         or constraint satisfaction problems. Adversarial search, Games, optim         ninimax search procedure, alpha-beta pruning, additional refinements	n first se ategies. ristic sea ch, local al decisi	earch, Heuris arch: lo beam ons & ve deep	he de 5 H depth stic s searc 4 H strat penin 51	Iou n fr eau ch. Iou egi g.
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree algorithms & o Module:4 Local search fo in games, the n Module:5 Knowledge rep	roblem as state space search, production system, problem characteris         roblem as state space search, production system, problem characteris         rams.         Search techniques         ag agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies: breadth         dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         or constraint satisfaction problems.         or constraint satisfaction problems. Adversarial search, Games, optim         ptinimax search procedure, alpha-beta pruning, additional refinements         Knowledge & reasoning         presentation issues, representation & mapping, approaches to known	n first so ategies. ristic sea ch, local al decise s, iterativ	earch, Heuris urch: lo beam ons & ze deep repre	he de 5 H depth stic s searce 4 H strat penin 51 senta	Iou n fr eau ch. Iou g. Iou tio
Defining the proof of search progree Module:3 Problem solving search, depth strategies Gree algorithms & o Module:4 Local search for in games, the m Module:5 Knowledge rep Using predica	roblem as state space search, production system, problem characteris         rams.         Search techniques         ng agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies: dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         Constraint satisfaction problems         or constraint satisfaction problems. Adversarial search, Games, optim         ninimax search procedure, alpha-beta pruning, additional refinements         Knowledge & reasoning	n first se ategies. ristic sea ch, local al decisi s, iterativ owledge t & IS	earch, Heuris arch: lo beam ons & ze deep repre A rel:	he de 5 H depth stic s searce 4 H strat penin 51 senta ation	Iou n fr eau ch. Iou egi g. Iou tio
Defining the proof of search progr Module:3 Problem solvin search, depth strategies Gree algorithms & o Module:4 Local search for in games, the n Module:5 Knowledge rep Using predica computable fu	roblem as state space search, production system, problem characteris         rams.         Search techniques         ag agents, searching for solutions; uniform search strategies: breadth         limited search, bidirectional search, comparing uniform search strategies: breadth         dy best-first search, A* search, AO* search, memory bounded heur         ptimization problems: Hill climbing search, simulated annealing search         or constraint satisfaction problems. Adversarial search, Games, optim         ninimax search procedure, alpha-beta pruning, additional refinements         Knowledge & reasoning         presentation issues, representation & mapping, approaches to knowledge, representing simple fact in logic, representing instant	n first so ategies. ristic sea ch, local al decise s, iterativ owledge t & IS knowlee	earch, Heuris urch: lo beam ons & 7e deep repre A rela dge us	he de <b>5</b> H depth stic s searce <b>4</b> H strat benin <b>5</b> I senta ation	Ion fin fin eau ch. Ion g. Ion tio shi ule



#### VIT ® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Module:6	Probabilistic Reasonir	ng			4 Hours
Representin	g knowledge in an uncertain	domain, the	semantics o	f Bayesian networks, Demps	ster- Shafer
theory, Plan	nning Overview, component	s of a plann	ing system,	Goal stack planning, Hierard	chical planning
•	ing techniques.	1	0,	1 0,	1 0
I I	0 1 1				
Module:7	Expert Systems				3 Hours
	g and using domain knowled	oe exnert su	stem shells	and knowledge acquisition	5110018
Representit		ge, expert sy	stem snens,	and knowledge acquisition.	
Module:8	Contemporary issues				2 Hours
	re by Industry Experts or R&	D organizat	ion		
		0		Total Lecture Hours	30 Hours
<b>Fext Book(</b>	6)				
1. Russe	ell, S. and Norvig, P. Artificial	Intelligence	- A Modern	Approach, 3rd edition, Pres	ntice Hall.,
2015.		0			
2. Poole	, D. and Mackworth, A. Arti	ficial Intellig	ence: Found	ations of Computational Ag	ents,
	oridge University Press, 2010				
Reference I					
	E., Knight, K and Shankar, B.				
0	, G.F Artificial Intelligence	-Structures a	nd Strategies	s for Complex Problem Solv	ving, 6th
	n, Pearson, 2008.				
Mode of Ev	aluation: CAT / Assignme	nt / Quiz /	FAT / Pro	ject / Seminar	
Lab Experir		1 1			
	ng Missionaries and cannibals	problems			
	r Jug Problem				
	eens Problem				
	Elling Salesman Problem				
	ng Wampus Problem using L				
	keys and Bananas Problem us	ing Logic			
,	ian Classification Problem				
	ion Tree Problem				
	loping a sentiment analysis sy			<i>t</i> :	
10. Deve	lopment of Medical Expert s	ystem with R		2	30 Hours
		<b>.</b>		otal Laboratory Hours:	30 F10UR
	-	Mid Term		/ Project	
	nded by Board of Studies	29-01-202		10 00 0001	
Approved	by Academic Council	No. 61	Date	18-02-2021	





	e Course Title	L	T P	J	С
CBS3011	Usability Design of Software Applications	2	0 2	0	3
Pre-requisite	NIL	Sy	llabus	vers	ion
			v.1	.0	
Course Objectiv					
	arning system through which management students can enhanc	e thei	r innov	vatio	n and
creative thinking					
-	emselves with the special challenges of starting new ventures				
3. To use IPR as	an effective tool to protect their innovations and intangible assets f	rom e	xploita	tion	
E					
Expected Cours	he students to the fundamentals of User Centred Design and	Lleer	Evneri	ence	the
	ntribution to businesses	0.501	Expen	CIICC	uici
	em to the facets of User Experience (UX) Design, particularly a	s ann	lied to	the i	dioite
artefacts	in to the facets of oser Experience (OX) Design, particularly a	s app	lica to	une -	aigiti
	of user research, solution conceptualization and validation as inter	wove	n activi	ties	in th
design and develo	-				
e	ility to constructively engage with the Design professionals they w	vould	work v	with	in th
future					
5. Analyse and ide	entify the methods to offer a better UI experience for the application	ons			
•	in redesigning an existing Application or website for better user exp		ce		
1		L			
Module:1 I	ntroduction to User Centred Design			3	hour
Basics of User Ce					
	Aspects of User Centred Design				hour
	ation Assignment – Evaluating the product from user centered	design	n aspec	ts su	ich a
functionality, ease	e of use, ergonomics, and aesthetics.				
Madular ²	Invitio Evolution	- [		61	h 0.1.4
	<b>Heuristic Evaluation</b>	ion (V	Website		
10 Heuristic Prin	ciples, Examples Heuristic Evaluation: Group Assignment initiati			and	
10 Heuristic Prin				and	
10 Heuristic Prin Evaluation for ke	ciples, Examples Heuristic Evaluation: Group Assignment initiati			and	hour App hour
10 Heuristic Prin Evaluation for ke Module:4 1	ciples, Examples Heuristic Evaluation: Group Assignment initiati y tasks of the app or website for heuristic principles, severity, recor	nmen	dations	and 4	App hour
10 Heuristic Prin Evaluation for ke Module:4 1	ciples, Examples Heuristic Evaluation: Group Assignment initiation y tasks of the app or website for heuristic principles, severity, recon Project design lifecycle through the design lifecycle – Discovery - Define – Design	nmen	dations	and 4	App hour
10 Heuristic Prin Evaluation for ke Module:4 1 Redesign project	ciples, Examples Heuristic Evaluation: Group Assignment initiation y tasks of the app or website for heuristic principles, severity, recon Project design lifecycle through the design lifecycle – Discovery - Define – Design	nmen	dations	and 4	App hour
10 Heuristic Prin         Evaluation for ke         Module:4       1         Redesign project         Prototype) - Usat         Module:5       1	ciples, Examples Heuristic Evaluation: Group Assignment initiati y tasks of the app or website for heuristic principles, severity, recor <b>Project design lifecycle</b> through the design lifecycle – Discovery - Define – Design wility Testing	nmeno - Im	dations	and 41 nt (E	App hour Desig
10 Heuristic Prin         Evaluation for ke         Module:4       I         Redesign project         Prototype) - Usat         Module:5       I         Understanding use	ciples, Examples Heuristic Evaluation: Group Assignment initiation y tasks of the app or website for heuristic principles, severity, recomposite Project design lifecycle through the design lifecycle – Discovery - Define – Design wility Testing UX Research sers, their goals, context of use, and environment of use. Research	nmeno - Im	dations	and 41 nt (E	App hour Desig
10 Heuristic Prin         Evaluation for ke         Module:4       I         Redesign project         Prototype) - Usat         Module:5       I         Understanding use	ciples, Examples Heuristic Evaluation: Group Assignment initiati y tasks of the app or website for heuristic principles, severity, recor <b>Project design lifecycle</b> through the design lifecycle – Discovery - Define – Design wility Testing	nmeno - Im	dations	and 41 nt (E	App hour Desig
10 Heuristic Prin         Evaluation for ke         Module:4       1         Redesign project         Prototype) - Usat         Module:5       1         Understanding us         Enquiry, User Int	ciples, Examples Heuristic Evaluation: Group Assignment initiati y tasks of the app or website for heuristic principles, severity, recorn Project design lifecycle through the design lifecycle – Discovery - Define – Design wility Testing UX Research sers, their goals, context of use, and environment of use. Research ' erviews, Competitive Analysis for UX	nmeno - Im	dations	and 41 nt (D 51 Cont	App hour Desig
10 Heuristic Prin         Evaluation for ke         Module:4       1         Redesign project         Prototype) - Usat         Module:5       1         Understanding us         Enquiry, User Int         Module:6       1	ciples, Examples Heuristic Evaluation: Group Assignment initiati y tasks of the app or website for heuristic principles, severity, recor <b>Project design lifecycle</b> through the design lifecycle – Discovery - Define – Design bility Testing <b>JX Research</b> sers, their goals, context of use, and environment of use. Research reviews, Competitive Analysis for UX <b>Personas and Scenarios</b>	nmen - Im Techn	dations plemer iiques: (	and 41 nt (E 51 Cont 31	App hour Desig
10 Heuristic Prin         Evaluation for ke         Module:4       1         Redesign project         Prototype) - Usat         Module:5       1         Understanding us         Enquiry, User Int         Module:6       1	ciples, Examples Heuristic Evaluation: Group Assignment initiati y tasks of the app or website for heuristic principles, severity, recorn Project design lifecycle through the design lifecycle – Discovery - Define – Design wility Testing UX Research sers, their goals, context of use, and environment of use. Research ' erviews, Competitive Analysis for UX	nmen - Im Techn	dations plemer iiques: (	and 41 nt (E 51 Cont 31	App hour Desig





Mo	dule:7	Development and Proto	typing			3 hours
Con	cept Deve	lopment - Task flow detaili	ng for the Proje	ct - Prototypi	ngTechniques - Pa	per, Electronic,
and	Prototypir	ıg Tools.				
Mo	dule:8	Contemporary issues				2 hours
Gue	st lecture l	y Industry Experts or R&D	organization			
				Total Le	cture hours:	30 hours
Tex	t Book(s)					
1.		Preece, Helen Sharp, Yvo on", 2015, 4 th Edition, Wiley		Interaction D	esign: Beyond Hu	man-Computer
Ref	erence Bo	oks				
1.	Alan Co	oper and Robert Riemann,	"About Face T	he Essentials	of Interaction Des	sign", 2014, 4 th
	Edition,	Wiley Publications.				
2.		h Goodman, Mike Kuniav	•		0	-
		ner's Guide to User Research			0	blications.
Moo	de of Eval	uation: CAT / Assignmen	nt / Quiz / FAJ	[ / Project /	Seminar	
List	of Challe	nging Experiments (Indic	cative)			
1.	Identify	a website or an App to rede	sign, with justific	ation		
2.		of the mobile app or the we	0 . ,		ycle	
3.		ng Personas and Scenarios f	0			
4.	Concept	development and task flow	detailing			
5.	Prototyp	e development with Iteratio	ns and justificati	on		
6.	Usability	testing and demonstration				
					al Laboratory Hou	rs: 30 hours
Mo	de of Asse	essment: Assessments/Mi	dterm lab/Proje	ect/FAT		
P	ommende	ed by Board of Studies	22-05-2021			
Rec	ommenter	ed by board of Studies	22-03-2021			



#### VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course Code	Course Title	L	Τ	Р	J	С
CBS3012	IT Project Management	2	0	2	-	3
Pre-requisite	NIL		Sylla		s vers	sion
				v.1.	0	
Course Objectives:	manage, execute, and control projects within the stipulated time					
			· • • • •			
	age cost targets with a focus on Information Technology and Se			or		
3. To understand vari	ous agile project management techniques such as Scrum and De	vOp	os.			
E-masted Course O						
Expected Course O	oject Management activities and to identify basic project man	000	mont	alzil	le mi	th a
	on issues and problems associated with delivering successful IT r	-		5811	115 WI	ui a
				had	ulina	and
-	ty network to use PERT and to manage project risks such as Re	soui	ce sc	neu	unng	and
cost control.						
	e concept of Agile Project Management and IT Service Managem	ient				
	e various terminologies and best practices followed in scrum.	1.		.1	1	1
	cept of Devops and its Working, Automated testing and test	t-dri	ven i	meth	nods	and
continuous deploy		1				
6. To demonstrate th	ne working of IT Project Management with various tools and tec	hno	logie	s.		
Mad lad Draf					2 1	
	ect Overview and Feasibility Studies			.1	3 ho	ours
Project Identification,	Market and Demand Analysis, Project Cost Estimate, Financial	Ар	praisa	<i>ι</i> ι.		
Module:2 Proj	ect Scheduling				5 ho	11#6
/	ntroduction to PERT and CPM, Critical Path Calculation, Pre	cede	ence	Rela		
, 0.	PERT and CPM, Float Calculation and its importance, Cost red					- ·
activity.	Eliti and Griff, Float Galediation and its importance, Gost red	activ	511 0 9	OI.	asini	5 01
activity.						
Module:3 Cost	Control and Scheduling				3 ho	ours
	(PERT/Cost), Resource Scheduling & Resource Levelling					
)						
Module:4 Proj	ect Management Features				3 ho	ours
Risk Analysis, Project	Control, Project Audit and Project Termination					
	e Project Management				5 ho	
Introduction, Agile P	rinciples, Agile methodologies, Relationship between Agile Scru	m, I	.ean,	Dev	Ops	and
IT Service Manageme	ent (ITIL).					
Module:6 Scru					4 ho	
0	es used in Scrum (Sprint, product backlog, sprint backlog,	spi	int 1	evie	ew, r	etro
perspective), various	roles (Roles in Scrum), Best practices of Scrum.					
Module:7 Dev	Ops				5 ho	
<u> </u>		1				
Overview and its Cor	nponents, Containerization Using Docker, Managing Source Co	de a	nd A	utor		g
Overview and its Cor	nponents, Containerization Using Docker, Managing Source Co	de a	nd A	utor		5





Bui	ilds, Automated Testing and Test-Driven De	velopme	nt, Contir	nuous Integration,	Configuration
	nagement, Continuous Deployment, Automated	-		0	0
to 2	XP, FDD, DSDM, Crystal.		0	0	
	· · · · · · · · · · · · · · · · · · ·				
	odule:8 Contemporary issues				2 hours
Gu	est lecture by Industry Experts or R&D organization	on			
			Total L	ecture hours	30 hours
Te	xt Book				
1.	Mike Cohn, Succeeding with Agile: Software I	evelopm	ent Using	Scrum, 2015, 1 st E	dition Addison-
	Wesley Professional.	1	0		
Re	ference Books				
1.	Roman Pichler, Agile Product Management w	th Scrut	n: Creating	g Products that C	ustomers Love,
	2011, First edition, Addison-Wesley.				
2.	Ken Schwaber, Agile Project Management with S	crum, 20	)14,1 st editi	on, Microsoft Pres	s US.
Mo	ode of Evaluation: CAT / Assignment / Quiz	′ FAT /	Project /	Seminar	
	st of Challenging Experiments (Indicative)				
1	Estimate the IT Project Cost and Control using	pen-sou	rce tools		
2	Scheduling a Project with PERT and CPM:				
	1. Estimation of the total time required to c	-	1 /	•	
	2. The individual activities to meet the proj	-			
	Identify the critical bottleneck activities where an	y delays	must be av	oided to prevent de	elaying project
	completion.				
4	IT project risk analysis using open-source tools				
5	Design IT Project Audit Template				
6	Agile Project Management Tools (Open source)				
7	Design IT Service Management (ITIL) Template	3			
8	Scrum: IT Project Management, DevOps and Au	tomated	Testing To	ools	
			Tot	tal Laboratory Ho	ours 30 hours
Mo	ode of Assessment: Assessments/ Mid Term	.ab/ FA	T / Projec	ct	
	commended by Board of Studies 22-05-2	021	i		
Ap	proved by Academic Council No. 62		Date	15-07-2021	



#### VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

Course Code	Course Title	L	T	Р	J	C
EEE1001	Basic Electrical and Electronics Engineering	2	0	2	0	3
Pre-requisite	NIL	Syl	abus		sion	
Course Objectives	· ·		v.	1.0		
Course Objectives	ne various laws and theorems applied to solve electric circuits and	notru	anlea			
	11			Elas		
-	tudents with an overview of the most important concepts in Ele	ectrica	ana	Elec	tron	ics
Engineering which	is the basic need for every engineer					
Expected Course	Outcome:					
<u>.</u>	ical circuit problems using various laws and theorems					
	er circuits and networks, its measurement and safety concerns					
	pare various types of electrical machines					
-	ement various digital circuits					
0 1	aracteristics of semiconductor devices and comprehend the	e vari	ous	mod	ulati	on
•	nunication engineering					
1	uct experiments to analyze and interpret data					
0	1 7 1					
Module:1 DO	C circuits			Ę	5 ho	ur
Basic circuit element	nts and sources, Ohms law, Kirchhoff's laws, series and paralle	l conr	nectio	n of	circ	uit
elements Node vol	tage analysis, Mesh current analysis, Thevenin's and Maximum po		~			
ciemento, i tode voi	tage analysis, mesh current analysis, Thevenin's and Maximum pe	owertr	anste	r the	oren	
elemento, i tode voi	tage analysis, mesh current analysis, Thevenin's and maximum po	owertr	anste	r the	oren	
Module:2 AC	2 circuits			(	5 ho	ı. ur:
Module:2 AC Alternating voltage	circuits s and currents, AC values, Single Phase RL, RC, RLC Series	circui	ts, Po	<b>(</b> ower	<b>6 ho</b> in <i>P</i>	n. ura
Module:2 AC Alternating voltage circuits-Power Fac	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series ttor- Three Phase Systems – Star and Delta Connection-	circui	ts, Po	<b>(</b> ower	<b>6 ho</b> in <i>P</i>	n. ura
Module:2 AC Alternating voltage circuits-Power Fac	circuits s and currents, AC values, Single Phase RL, RC, RLC Series	circui	ts, Po	<b>(</b> ower	<b>6 ho</b> in <i>P</i>	n. ure
Module:2 AC Alternating voltage circuits-Power Fac Measurement – Ele	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series etor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring.	circui	ts, Po	<b>(</b> ower nase	<b>ó ho</b> in <i>A</i> Pow	n. urs AC
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3Ele	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series etor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring.	circui Thre	ts, Po ee Pł	( ower nase	5 hou in A Pow 7 hou	n. urs AC ver
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, Wor	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform	circui Thre	ts, Po ee Pł	ower nase 7 pha	5 hou in <i>A</i> Pow 7 hou	n. urs AC ver
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, Wor	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series etor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring.	circui Thre	ts, Po ee Pł	ower nase 7 pha	5 hou in <i>A</i> Pow 7 hou	n. urs AC ver
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInduce	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a	circui Thre	ts, Po ee Pł	ower nase 7 pha moto	5 hou in <i>A</i> Pow 7 hou	n. urs AC ver
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4Di	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems	circui Thre ners, S nd BI	ts, Po ee Ph Single LDC 1	ower nase 7 pha moto	<b>5 ho</b> in <i>A</i> Pow <b>7 ho</b> use a or. <b>5 ho</b>	n. urs AC ver urs nd urs
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4Di	C circuits s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems concepts, Representation of Numerical Data in Binary Form	circui Thre ners, S nd BI	ts, Po ee Ph Single LDC 1	ower nase 7 pha moto	<b>5 ho</b> in <i>A</i> Pow <b>7 ho</b> use a or. <b>5 ho</b>	n. urs AC ver urs nd urs
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogiccircuit	C circuits s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems concepts, Representation of Numerical Data in Binary Form	circui Thre ners, S nd BI	ts, Po ee Ph Single LDC 1	ower nase 7 pha moto	<b>5 ho</b> in <i>A</i> Pow <b>7 ho</b> use a or. <b>5 ho</b>	n. ura Ver ura nd
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogiccircuits, Synthesisoutput	C circuits s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems concepts, Representation of Numerical Data in Binary Form	circui Thre ners, S nd BI	ts, Po ee Ph Single LDC 1	( power nase pha moto tiona	<b>5 ho</b> in <i>A</i> Pow <b>7 ho</b> use a or. <b>5 ho</b>	n. ura ver ura gio
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogic circuitcircuits, Synthesis oModule:5Sen	<b>C circuits</b> s and currents, AC values, Single Phase RL, RC, RLC Series ttor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems concepts, Representation of Numerical Data in Binary Form f logic circuits	circui Thre ners, S nd BI	ts, Po ee Ph Single LDC 1	( ower nase 7 pha moto 5 tiona	5 hou in <i>P</i> Pow 7 hou se a or. 5 hou al log 7 hou	n. urs ver urs gic
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogiccircuits, Synthesis oModule:5SenConduction in Sen	C circuits s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems concepts, Representation of Numerical Data in Binary Form f logic circuits miconductor devices and Circuits niconductor materials, PN junction diodes, Zener diodes, BJTs,	circui Thre ners, S nd BI n- Cor MOS	ts, Po ee Ph Single LDC 1 nbina	( power nase pha moto tiona	5 hou in <i>P</i> Pow 7 hou ise a or. 5 hou al log 7 hou ctifie	n. ura ver ura nd ura gio
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogic circuitcircuits, Synthesis oModule:5SerConduction in SerrFeedbackAmplifie	C circuits s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems concepts, Representation of Numerical Data in Binary Form f logic circuits miconductor devices and Circuits niconductor materials, PN junction diodes, Zener diodes, BJTs, ers using transistors. Communication Engineering: Modulatior	circui Thre ners, S nd BI n- Cor MOS	ts, Po ee Ph Single LDC 1 nbina	( power nase pha moto tiona	5 hou in <i>P</i> Pow 7 hou ise a or. 5 hou al log 7 hou ctifie	n. ura ver ura nd ura gio
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogic circuitcircuits, Synthesis oModule:5SerConduction in SerrFeedbackAmplifie	C circuits s and currents, AC values, Single Phase RL, RC, RLC Series stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring. ectrical Machines king Principle and applications of DC Machines, Transform tion motors, Special Machines-Stepper motor, Servo Motor a gital Systems concepts, Representation of Numerical Data in Binary Form f logic circuits miconductor devices and Circuits niconductor materials, PN junction diodes, Zener diodes, BJTs,	circui Thre ners, S nd BI n- Cor MOS n and	ts, Po ee Ph Single LDC 1 nbina	( power nase pha moto tiona 7 , Rec odula	5 hou in <i>P</i> Pow 7 hou ise a or. 5 hou al log 7 hou ctifie	n. urs ver urs nd urs gic urs
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogic circuitcircuits, Synthesis oModule:5SerConduction in SerrFeedbackAmplifie	<ul> <li>C circuits</li> <li>s and currents, AC values, Single Phase RL, RC, RLC Series</li> <li>tor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring.</li> <li>ectrical Machines</li> <li>king Principle and applications of DC Machines, Transform</li> <li>tion motors, Special Machines-Stepper motor, Servo Motor a</li> <li>gital Systems</li> <li>concepts, Representation of Numerical Data in Binary Form</li> <li>f logic circuits</li> <li>miconductor devices and Circuits</li> <li>miconductor materials, PN junction diodes, Zener diodes, BJTs,</li> <li>ers using transistors. Communication Engineering: Modulation</li> </ul>	circui Thre ners, S nd BI n- Cor MOS n and	ts, Po ee Ph Single LDC 1 nbina	( power nase pha moto tiona 7 , Rec odula	5 hou in <i>P</i> Pow 7 hou ise a or. 5 hou al log 7 hou ctifie	n. ura ver ura nd ura gio
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogiccircuits, Synthesis oModule:5SerConduction inSerFeedbackAmplifieAmplitude andFreTextBook(s)	<ul> <li>C circuits</li> <li>s and currents, AC values, Single Phase RL, RC, RLC Series</li> <li>stor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring.</li> <li>ectrical Machines</li> <li>king Principle and applications of DC Machines, Transform</li> <li>tion motors, Special Machines-Stepper motor, Servo Motor a</li> <li>gital Systems</li> <li>concepts, Representation of Numerical Data in Binary Form</li> <li>f logic circuits</li> <li>miconductor devices and Circuits</li> <li>niconductor materials, PN junction diodes, Zener diodes, BJTs, ers using transistors. Communication Engineering: Modulation</li> <li>Total Lecture hours:</li> </ul>	circui Thro ners, S nd BI n- Cor MOS n and	ts, Po ee Pf single LDC 1 nbina FET's Demo	( power nase pha moto tiona 7 , Rec odula 3	5 hou in <i>F</i> Pow 7 hou ise a or. 5 hou al log 7 hou ctifie ation	ur ur ur ur ur ur ur
Module:2ACAlternating voltagecircuits-PowerFacMeasurement – EleModule:3EleConstruction, WorThree-phaseInducModule:4DiBasiclogiccircuits, Synthesis oModule:5SerConduction inSerFeedbackAmplifieAmplitude andFreTextBook(s)	<ul> <li>C circuits</li> <li>s and currents, AC values, Single Phase RL, RC, RLC Series</li> <li>tor- Three Phase Systems – Star and Delta Connection- ctrical Safety –Fuses and Earthing, Residential wiring.</li> <li>ectrical Machines</li> <li>king Principle and applications of DC Machines, Transform</li> <li>tion motors, Special Machines-Stepper motor, Servo Motor a</li> <li>gital Systems</li> <li>concepts, Representation of Numerical Data in Binary Form</li> <li>f logic circuits</li> <li>miconductor devices and Circuits</li> <li>miconductor materials, PN junction diodes, Zener diodes, BJTs,</li> <li>ers using transistors. Communication Engineering: Modulation</li> </ul>	circui Thro ners, S nd BI n- Cor MOS n and	ts, Po ee Pf single LDC 1 nbina FET's Demo	( power nase pha moto tiona 7 , Rec odula 3	5 hou in <i>F</i> Pow 7 hou ise a or. 5 hou al log 7 hou ctifie ation	urr nc urr urr gic



#### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

Refe	erence Books:						
1.	Allan R. Hambley, 'Electrical Engin	neering -Principles	& Appli	cations' Pearson Education	ion, First		
	Impression, 6/e, 2013						
2.	Simon Haykin, 'Communication Systems', John Wiley & Sons, 5 t h Edition, 2009.						
3.	Charles K Alexander, Mathew N O S	adiku, 'Fundament	als of Elec	tric Circuits', Tata McGra	w Hill,		
	2012.						
4.	Batarseh, 'Power Electronics Circuits'	, Wiley, 2003					
5.	H. Hayt, J.E. Kemmerly and S. M.	Durbin, 'Engineeri	ing Circuit	Analysis', 6/e, Tata Mc	Graw Hill,		
	New Delhi, 2011.						
7.	Fitzgerald, Higgabogan, Grabel, 'Basi	c Electrical Engine	ering', 5t h	edn, McGraw Hill, 2009.			
8.	S.L.Uppal, 'Electrical Wiring Estimati	ng and Costing ', k	Khanna pul	blishers, NewDelhi, 2008.			
Mod	e of Evaluation: CAT / Assignment /	Quiz / FAT / Proj	ect / Semi	nar			
	of Challenging Experiments (Indica						
1.	Thevenin's and Maximum Power Tra	nsfer Theorems – I	Impedance	e matching of source and	3 hours		
	load						
2.	Sinusoidal steady state Response of R				3 hours		
3.	Three phase power measurement for				3 hours		
4.	Staircase wiring circuit layout for mult				3 hours		
5.	Fabricate and test a PCB layout for a	rectifier circuit			3 hours		
6.	Half and full adder circuits.				3 hours		
7.	Full wave Rectifier circuits used in	DC power supplie	es. Study t	the characteristics of the	3 hours		
	semiconductor device used						
8.	Regulated power supply using zener	diode. Study the	characteri	stics of the Zener diode	3 hours		
	used						
9.	Lamp dimmer circuit (Darlington pair	0	istors) use	d in cars.	3 hours		
	Study the characteristics of the transis	tor used					
10.	Characteristics of MOSFET				3 hours		
			Т	otal Laboratory Hours	30 hours		
			· - ·				
	le of assessment: CAT / Assignmer		/ Project /	/ Seminar			
	ommended by Board of Studies	29-05-2015	Data	17.04.2015			
App	roved by Academic Council	No. 37	Date	17-06-2015			



#### VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course Cod		Course Title		L	Τ	Р	J	С
MAT1004		Discrete Mathemat	tics	3	0	0	0	3
Pre-requisite	1	IL		Syl	labu			n
						v. 1.	0	
Course Objecti								
The aim of this of								
		functions, relations and groups of	concepts for analyzin	ig pro	oblem	ns th	nat a	rise in
engineering an	1 2			_				
	-	e the problems connected with con	nbinatorics and Boole	an alg	gebra	•		
3 To solve calcu	ulus and	ntegral calculus problems.						
<b>D</b> 10	0							
Expected Cour		he student should be able to						
	-	bes of sets, functions and relations.						
	-	ts of group theory.						
	-	ts of combinatorics.						
	-	ts of graph theory and its application						
5.Learning logic	c and Bo	lean algebra. Using these concepts	to solve the problem	s.				
Module:1		ction and Relation						hours
		set – Types of set – Operation of						
	-	unctions - One-one and onto fu	inctions – Relations	– T	ypes	of :	relati	.on –
Equivalence rela	ations.							
	0	c Structures						hours
0 1		Groups – Subgroups – Abelian gr	oups – Lagrange's th	eoren	1 – R	lings	(exa	Imples
only) – Integral o	domain –	Fields – Definition and examples.						
	<u> </u>			1				
Module:3	Combin							hours
		anting Principles, Formulae behind			1			0
-		ence relations – Generating Func	tions - Introduction	to I	Proof	Tee	chnic	ques -
Mathematical In	nduction							
	<u> </u>							
		aph Theory						hours
		omplement, isomorphism, conne		-			-	
Eulerian paths	and circ	uits in graphs and digraphs, Ha	miltonian paths and	l circ	uits	in g	graph	s and
tournaments								
Module:5		laner graph and colouring of a g	•					hours
0	-	er's formula, dual of a planer grap	oh, independence nur	nber	and	cliqu	le nu	mber,
chromatic numb	per, stater	ent of Four-color theorem						
	<b>.</b> .						_	
	Logic			<u> </u>				hours
Propositional ca	alculus -	propositions and connectives, syn	tax; Semantics - trut	h ass	ıgnm	lents	and	truth





B. Tech Computer Science and Engineering and Business Systems

tables, validity and satisfiability, tautology; Adequate set of connectives; Equivalence and normal forms; Compactness and resolution; Formal reducibility - natural deduction system and axiom system; Soundness and completeness

Module:7 **Boolean Algebra** 5 hours Introduction of Boolean algebra, truth table, basic logic gate, basic postulates of Boolean algebra, principle of duality, canonical form, Karnaugh map.

#### Module:8 **Contemporary Issues**

Industry Expert Lecture

Total Lecture hours:

45 hours

2 hours

Text Book(s)										
1. I. N. Herstein, "Topics in	I. N. Herstein, "Topics in Algebra", John Wiley and Sons.									
2. M. Morris Mano, "Digital	M. Morris Mano, "Digital Logic & Computer Design", Pearson.									
3. C. L. Liu, "Elements of D	C. L. Liu, "Elements of Discrete Mathematics:, second edition, LiuMcGraw Hill, New Delhi.									
4. J. A. Bondy and U. S. R. I	Murty, "Grap	oh Theory with Ap	plications	s ", Macmillan Press, London.						
5. L. Zhongwan, "Mathema	tical Logic fo	or Computer Scien	ce ", Wor	rld Scientific, Singapore						
Reference Books										
1. Gilberft Strang, "Introduc	ction to Line	ear Algebra".								
2. R. A. Brualdi, "Introducto	ory Combina	torics", , North-H	olland, N	lew York.						
3. N. Deo, "Graph Theory	with Applica	tions to Engineeri	ng and Co	omputer Science", Prentice Hall,						
Englewood Cliffs.										
4. E. Mendelsohn, "Introdu	ction to Mat	hematical Logic, (S	econd E	dition)", Van-Nostrand, London.						
Mode of Evaluation: CAT/Q	uiz/Digita	l assignment, Sen	ninar an	d FAT						
Recommended by Board of S	tudies	16-02-2019								
Approved by Academic Cour	cil	No. 56	Date	24-09-2019						





Course Code	Course Title	L	T	Р	J	С
MAT2004	Linear Algebra	3	2	0	0	4
Pre -requisite	Discrete Mathematics	S	Syllabi	ıs Ve	rsior	ı
				v. 1.0		
Course Objectives:						
The aim of this cour						-
	n solution of system of linear equations, vector space and o	rthog	gonalit	y con	cepts	fo
	ns that arise in engineering and physical sciences.					
	analyze the problems connected Eigen value, Hermit	tian	and	Unita	ry li	nea
transformations.						
. Is to solve QR a	and LU decomposition and to learn the applications of lir	near a	algebra	a in c	comp	ute
science.						
Expected Course C						
	urse the student should be able to					
	ous types of matrix, determinant and its properties.					
. Understand the co	oncepts of system of linear equations and solving by various n	netho	ods.			
. Understand the co	oncepts of vector space, subspace and basis.					
. Understand the co	oncepts of orthogonality, Hermitian and unitary transformation	ons.				
. Learning the appl	ications in Image processing, Machine learning and Cryptogra	phy.				
Module:1 M	atrices and Determinants				1 1	
					4 NG	our
ntroduction to Mati	rices – Types of Matrices – Determinants – Properties – Rank	t of a	Matri	x.	4 חנ	our
	rices – Types of Matrices – Determinants – Properties – Rank	t of a	Matri	х.		
Aodule:2 Sy	rices – Types of Matrices – Determinants – Properties – Rank rstem of Linear Equations				4 ho	our
Aodule:2 Sy	rices – Types of Matrices – Determinants – Properties – Rank				4 ho	our
<b>Module:2</b> Sy olutions of linear e nethod.	rices – Types of Matrices – Determinants – Properties – Rank <b>estem of Linear Equations</b> quations – Cramer's rule – Matrix inversion method – Cons				4 ho	our
Module:2Syolutions of linear enethod.Module:3	rices – Types of Matrices – Determinants – Properties – Rank <b>estem of Linear Equations</b> quations – Cramer's rule – Matrix inversion method – Cons <b>U Decompositions</b>	isten	cy and	inco	4 ho nsisto 7 ho	our enc
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Mod	lule:8	Contemporary Issues				2 hours
Indu	istry Expe	rt Lecture				
			Т	otal Lectu	are hours:	45 hours
Tuto	orial: A m	inimum of five problems to	be worked out h	by students	s in every	15 hours
Tuto	orial Class.	Another five problems per tut	orial class to be giv	ren as hom	e work.	
Text	t Book(s)					
1.	Jin Ho K	Kwak and Snngpyo Hong, Line	ear Algebra, Second	d Edition,	Springer (2004).	
2.	Bernard	Kolman and David R. Hill, Ir	troductory Linear	Algebra – .	An Applied Cour	se, 9 th Edition,
	Pearson	Education, 2011.				
Refe	erence Boo	oks				
1.	Gilbert S	trang, Introduction to linear a	lgebra, 4 th Edition,	Academic	Press.	
2.	Howard A	Anton and Robert C Busby, C	Contemporary Linea	ar Algebra,	John Wiley (200	3).
3.	R C Gon	zalez and R E Woods, Digital	Image Processing.			
4.	https://n	nachinelearningmastery.com/i	ntroductionmatr	ices –mach	nine –learning/	
Mod	le of Evalı	ation: CAT, Quiz, Digital a	assignment, Semi	nar and F	AT	
Reco	ommende	d by Board of Studies	16-02-2019			
App	roved by A	cademic Council	No. 56	Date	24-09-2019	





Course code	Course Title I		Р	J	С
MAT2005	Data Science and Statistical Modelling   2	2 0	2	0	3
Pre-requisite	MAT 1017	Syllal	bus ve		1
			v. 1.0		
Course Objective	s: le of statistics in business				
-	ledge on collection, analysis and presentation of data				
•	butions and relationships of real-time data. ation and testing methods to make inference and modeling tec	heigue	for	docio	
making.	ation and testing methods to make interence and modeling tec	Innque	5 101	uccis	101.
making.					
Expected Course	<b>Outcome:</b> After completing the course, the student should be abl	e to			
1. Present and anal	1 0				
2. Solve problems	on probability				
3. Interpret statistic	al test outcomes				
4. Design and analy					
e .	pplications of statistical methods in science and engineering				
6. Apply relevant st	catistical analysis to experimental data				
Module:1	Linear Statistical Models			4 ho	ur
Simple linear regres	ssion & correlation, multiple regression & multiple correlation				
Module:2	Estimation			6 ho	
D · · ·					
	riteria for good estimates (un-biasedness, consistency), Methods o	of estimation	ation i		
Point estimation, c maximum likelihoo	riteria for good estimates (un-biasedness, consistency), Methods o	of estimation of the strength	ation i		
maximum likelihoo	riteria for good estimates (un-biasedness, consistency), Methods o d estimation.	of estima	ation i	incluc	linį
maximum likelihoo Module:3	riteria for good estimates (un-biasedness, consistency), Methods o d estimation. Sufficient Statistic	of estima	ation i		linį
maximum likelihoo Module:3	riteria for good estimates (un-biasedness, consistency), Methods o d estimation.	of estima	ation i	incluc	linį
maximum likelihoo Module:3 Concept & exampl Module:4	riteria for good estimates (un-biasedness, consistency), Methods o ad estimation.           Sufficient Statistic           es, complete sufficiency, their application in estimation           Test of hypothesis			4 ho	ur
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu	riteria for good estimates (un-biasedness, consistency), Methods o ed estimation.           Sufficient Statistic           es, complete sufficiency, their application in estimation           Test of hypothesis           lation, Type I and Type II errors, Neyman Pearson lemma, F			4 ho	urs
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu	riteria for good estimates (un-biasedness, consistency), Methods o ad estimation.           Sufficient Statistic           es, complete sufficiency, their application in estimation           Test of hypothesis			4 ho	ur
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc	riteria for good estimates (un-biasedness, consistency), Methods o d estimation.    Sufficient Statistic  es, complete sufficiency, their application in estimation     Test of hypothesis  lation, Type I and Type II errors, Neyman Pearson lemma, H e (one way, two way with as well as without interaction)			4 ho 8 ho f test	ure ure
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc Module:5	riteria for good estimates (un-biasedness, consistency), Methods on destimation.          Sufficient Statistic         es, complete sufficiency, their application in estimation         Test of hypothesis         lation, Type I and Type II errors, Neyman Pearson lemma, I         e (one way, two way with as well as without interaction)         Non-parametric Inference	Procedu	res of	4 ho 8 ho f test 6 ho	urs urs ing
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc Module:5 Comparison with p	riteria for good estimates (un-biasedness, consistency), Methods o d estimation.    Sufficient Statistic es, complete sufficiency, their application in estimation	Procedu	res of	4 ho 8 ho f test 6 ho	ur: ur: ing
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc Module:5 Comparison with p	riteria for good estimates (un-biasedness, consistency), Methods on destimation.          Sufficient Statistic         es, complete sufficiency, their application in estimation         Test of hypothesis         lation, Type I and Type II errors, Neyman Pearson lemma, I         e (one way, two way with as well as without interaction)         Non-parametric Inference	Procedu	res of	4 ho 8 ho f test 6 ho	ur: ur: ing
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc Module:5 Comparison with p	riteria for good estimates (un-biasedness, consistency), Methods or d estimation.    Sufficient Statistic es, complete sufficiency, their application in estimation	Procedu	res of	4 ho 8 ho f test 6 ho	urs urs ing n-
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maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc Module:5 Comparison with p Whitney test, Run t	riteria for good estimates (un-biasedness, consistency), Methods on destimation.          Sufficient Statistic         es, complete sufficiency, their application in estimation         Test of hypothesis         lation, Type I and Type II errors, Neyman Pearson lemma, I         e (one way, two way with as well as without interaction)         Non-parametric Inference         warametric inference, Use of order statistics. Sign test, Wilcoxon signest, Kolmogorov-Smirnov test. Spearman's and Kendall's test.         Expert Lecture	Procedu ned ran	res of k test,	4 ho 8 ho f test 6 ho Man 2 ho	urs urs ing urs n-
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc Module:5 Comparison with p Whitney test, Run t	riteria for good estimates (un-biasedness, consistency), Methods on destimation.          Sufficient Statistic         es, complete sufficiency, their application in estimation         Test of hypothesis         lation, Type I and Type II errors, Neyman Pearson lemma, I         e (one way, two way with as well as without interaction)         Non-parametric Inference         warametric inference, Use of order statistics. Sign test, Wilcoxon signest, Kolmogorov-Smirnov test. Spearman's and Kendall's test.         Expert Lecture	Procedu ned ran	res of k test,	4 ho 8 ho f test 6 ho Man 2 ho	ur: ur: ur: n- ur:
maximum likelihoo Module:3 Concept & exampl Module:4 Concept & formu Analysis of varianc Module:5 Comparison with p Whitney test, Run to Module:6 Text Books	riteria for good estimates (un-biasedness, consistency), Methods on destimation.          Sufficient Statistic         es, complete sufficiency, their application in estimation         Test of hypothesis         lation, Type I and Type II errors, Neyman Pearson lemma, I         e (one way, two way with as well as without interaction)         Non-parametric Inference         warametric inference, Use of order statistics. Sign test, Wilcoxon signest, Kolmogorov-Smirnov test. Spearman's and Kendall's test.         Expert Lecture	Procedu ned ran	res of k test,	4 ho 8 ho 6 ho Man 2 ho 30 ho	ur ur ur ur
maximum likelihoo         Module:3         Concept & example         Module:4         Concept & formu         Analysis of variance         Module:5         Comparison with p         Whitney test, Run test, Run test         Module:6         Text Books         1.       Probability at	riteria for good estimates (un-biasedness, consistency), Methods o d estimation.    Sufficient Statistic es, complete sufficiency, their application in estimation   Test of hypothesis lation, Type I and Type II errors, Neyman Pearson lemma, I e (one way, two way with as well as without interaction)  Non-parametric Inference arametric inference, Use of order statistics. Sign test, Wilcoxon sig test, Kolmogorov-Smirnov test. Spearman's and Kendall's test.  Expert Lecture  Total Lecture hours	Procedu ned ran	res of k test,	4 ho 8 ho 6 ho Man 2 ho 30 ho	ur: ur: ur: n- ur:
maximum likelihoo         Module:3         Concept & example         Module:4         Concept & formu         Analysis of variance         Module:5         Comparison with p         Whitney test, Run test, Run test         Module:6         Text Books         1.       Probability as         2.       Fundamental	riteria for good estimates (un-biasedness, consistency), Methods o d estimation.    Sufficient Statistic es, complete sufficiency, their application in estimation    Test of hypothesis lation, Type I and Type II errors, Neyman Pearson lemma, I e (one way, two way with as well as without interaction)  Non-parametric Inference parametric inference, Use of order statistics. Sign test, Wilcoxon sig test, Kolmogorov-Smirnov test. Spearman's and Kendall's test.   Expert Lecture  Total Lecture hours  nd Statistics for Engineers (4th Edition), I.R. Miller, J.E. Freund an	Procedu ned ran	res of k test,	4 ho 8 ho 6 ho Man 2 ho 30 ho	ur: ur: ur: n- ur:



#### VIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

Refe	erence Books				
1.	Introduction to Linear Regression Analy	vsis, D.C. Montgo	mery & E.I	Peck	
2.	Introduction to the Theory of Statistics,	A.M. Mood, F.A.	Graybill&	D.C. Boes.	
3.	Applied Regression Analysis, N. Draper	& H. Smith			
4.	Hands-on Programming with R,- Garret	t Grolemund			
5	R for Everyone: Advanced Analytics and	d Graphics, Jared	P. Lander		
6	Data Source: www.rbi.org.in				
	of Experiments				
1.	Introduction to R software Understanding				1 hours
2.	Computing Summary Statistics /plott Graphical Representations.	ing and visualizi	ing data u	using Tabulation and	2 hours
3.	Applying correlation and simple linear interpreting the coefficient of determina	0	to real da	ataset; computing and	1 hours
4.	Applying multiple linear regression mod multiple coefficient of determination		; computin	g and interpreting the	2 hours
5.	Testing of hypothesis for One sample n	nean and proporti	on from re	al-time problems.	1 hours
6.	Testing of hypothesis for Two sample n				2 hours
7.	Performing ANOVA for real dataset for	Randomized Blo	ck design	•	2 hours
8.	Latin square Design				1 hours
9.	Non parametric Sign test and Wilcoxon	signed rank test			2 hours
10.	Mann-Whitney test				1 hours
	le of Evaluation: Assignments, Quiz, C		ssments, S	Seminar and FAT	
	ommended by Board of Studies	16-02-2019	1	1	
App	roved by Academic Council	No.56	Date	24-09-2019	





Course C		Course Title L		Р	J	С
MGT10	64	Financial And Cost Accounting3	0	0	0	3
Pre-requisite		NIL	Sy		s ver	sio
				v. 1.	.0	
Course Objec						
<ul> <li>manageria</li> <li>2. To develor interpret f</li> <li>3. To create</li> <li>3. To create</li> <li>Expected Con</li> <li>After completion</li> <li>1. Enable th</li> <li>2. Process th</li> <li>3. Analyze th</li> <li>4. Prepare th</li> <li>5. Understant</li> </ul>	l implicat op an unc inancial s an awaren <b>arse Outo</b> tion of th e budding ne accoun ne Annua ne FFS an ad the Co	lerstanding of the financial statements and the underlying printatements hess about cost accounting, different types of costing and cost metabolic cost accounting, different types of costing and cost metabolic cost accounting, different types of costing and cost metabolic cost accounting, different types of costing and cost metabolic cost accounting, different types of costing and cost metabolic cost accounting, different types of costing and cost metabolic cost accounting, different types of costing and cost metabolic cost accounts and cost metabolic cost accounts and the financial Accounting transactions leading to final statement of accounts and CFS sting concepts and make decisions using Marginal costing co	nciple manag	es and gemen	d lear	n t
Module:1	Intro	1 .1			2 ho	111#
	Inno	duction				Jui
			ts- Un	derst		
Accounting Co	oncept: In	troduction, Techniques and Conventions, Financial Statement	ts- Ur	Iderst		
Accounting Co Interpreting Fi	oncept: In nancial St	troduction, Techniques and Conventions, Financial Statements	ts- Ur	Iderst	tandin	g ð
Accounting Co Interpreting Fi Module:2	oncept: In nancial St Acco	troduction, Techniques and Conventions, Financial Statements atements unting Process			tandin 6 ho	g ð
Accounting Co Interpreting Fi <b>Module:2</b> Book Keeping	and Reco	troduction, Techniques and Conventions, Financial Statements			tandin 6 ho	g ð
Accounting Co Interpreting Fi <b>Module:2</b> Book Keeping Balance, Cash	and Reco Book and	troduction, Techniques and Conventions, Financial Statements atements unting Process ord Maintenance, Fundamental Principles and Double Entry, Jo			tandin 6 ho	g &
Accounting Co Interpreting Fi <b>Module:2</b> Book Keeping Balance, Cash <b>Module:3</b>	Accor and Reco Book and Finar	troduction, Techniques and Conventions, Financial Statements atements unting Process ord Maintenance, Fundamental Principles and Double Entry, Jo Subsidiary Books, Rectification of Errors.	ourna	l, Leo	6 ho lger, 1 12 ho	g &
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Accounting Co Interpreting Fi Module:2 Book Keeping Balance, Cash Module:3 Form and Cor Accounts-analy Module:4	Accor and Reco Book and Finar tents of J ysing and Comj	Attroduction, Techniques and Conventions, Financial Statements atements atements ord Maintenance, Fundamental Principles and Double Entry, Jo Subsidiary Books, Rectification of Errors. Incial Statements Financial Statements- Trading and Profit and Loss Account, B Interpreting Financial Statements, Accounting Standards.	ourna Balanc	l, Lec e She	<b>6 ho</b> lger, ⁷ <b>12 ho</b> eet - F	g &
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#### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Text Book(s)						
1.	Robert N Anthony, David Hawkins, Kenneth Marchant, Accounting: Texts and Cases, McGraw-Hill					
2.	Case Study Materials: To be distributed for class discussion					
Refe	erence Books					
1.	Advanced Accounting by RL Gupta and Radhaswamy					
2.	Advanced Accounting by MC Shukla and Grewal					

Mode of Evaluation: CAT / Assignment / Quiz / FAT						
Recommended by Board of Studies	07-06-2019					
Approved by Academic Council	No. 55	Date	13-06-2019			



# Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course Code		Course TitleL	T	Р	J	С
MGT 1065		Fundamentals of Management3	0	0	0	3
Pre-requisite		NIL	Syll	abus		sio
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		levelop the ability to				
1. Understand ma	anagem	ent theories, evolution of management over the years and b	pasics	con	cept	s o
Management.						
2. Develop an und	derstand	ling about how organizations work				
3.Exlpore the intri	icacies	of different management areas such as finance, marketing, strateg	gy et	с		
Expected Course						
1.Understanding of	of the b	asic theoretical concepts of Management and Organisational Beh	havio	ur		
2.Understanding a	and link	ing the concepts with contemporary issues				
3.Understand real-	-time m	anagement problems, analyse them, and find solutions				
4.Develop and exl	hibit cro	oss-cultural competencies by working in teams.				
5.Develop manage	erial ski	lls needed to become an effective manager.				
		gement Theories			8 ho	
		ons of Management, Evolution of Management Though				
		e 1880), Classical management Era (1880-1930), Neo-classical				Er
	tern Ma	procement era (1950 on word) (Contribution of Management	The	12040	• Ta	1
		anagement era (1950-on word). Contribution of Management	1 111.	IKCIS	· 14	yloi
Fayol, Elton Mayo		anagement era (1990-on word). Contribution of Management	1111		. 14	yloı
	o etc.		1111			
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Module:2	o etc. Funct	ons of Management				
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Module:2 Planning, Organiz Module:3 Introduction, Pers	Funct Funct ting, Sta Organ sonality	ions of Management         ffing, Directing, Controlling         ization Behavior         , Perception, Learning and Reinforcement, Work Stress and Stress			6 ha	our
Module:2 Planning, Organiz Module:3 Introduction, Pers	Funct Funct ting, Sta Organ sonality	tions of Management ffing, Directing, Controlling ization Behavior			6 ha	our
Module:2 Planning, Organiz Module:3 Introduction, Pers Decision Making,	Funct: Funct: ting, Sta Organ sonality Proble:	ions of Management         ffing, Directing, Controlling         ization Behavior         , Perception, Learning and Reinforcement, Work Stress and Stress in Decision Making, Decision Making			6 ho 6 ho agem	our
Module:2 Planning, Organiz Module:3 Introduction, Pers Decision Making, Module:4	Funct: Funct: ting, Sta Organ sonality Proble: Organ	ions of Management         ffing, Directing, Controlling         ization Behavior         , Perception, Learning and Reinforcement, Work Stress and Stress in Decision Making, Decision Making         izational Design	rress	Mana	6 ho 6 ho agem	
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Mo	dule:8	Contemporary issues				2 hours
Con	ntemporary	ssues in Management				
Lab	• Experime	nts:NIL				
			Te	otal Lectu	re hours:	30 hours
Tex	kt Book(s)					
1.	Richard I	. Daft, Understanding the Th	eory and Design of	Organizat	ions	
2.	Stephen 1	P. Robbins, Timothy A. Judge	, Neharika Vohra, (	Organizatio	onal Behavior	
3.	Harold K	oontz, Essentials of Managen	nent			
Ref	erence Boo	oks				
1.	Cyril J. (	D'Donnell and Harold Koor	ntz, Principles of	Manageme	ent: An Analysis	s of Managerial
	Function	5				
2.	Arnold B	akker, Positive Interventions i	n Organizations			
3.	Journals-	Academy of Management Jou	irnal, Journal of Ma	inagement,	HBR	
Mo	de of Evalu	ation: CAT / Assignment ,	/ Quiz / FAT / L	ab		
Rec	commende	d by Board of Studies	07-06-2019			
App	proved by A	Academic Council	No. 55	Date	13-06-2019	



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

Course Code	Course Title	L	Τ	Р	J	С
MGT2002	Marketing Research & Marketing Management	3	0	0	0	3
Pre-requisite	NIL		Sylla			ioı
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Course Objectives:						
-	stand the need of study of Marketing and Marketing Research					
11 2 1	skill into real world problems					
3. Utilize marketing r	nanagement tools for competitive advantage					
Expected Course O	utcome:					
1. Understand basi	c marketing concepts					
2. Comprehend th	e dynamics of marketing and analyze how its various component	nts i	intera	ict w	ith e	acl
other in the real	world					
3. Leverage market	ting concepts for effective decision making					
—	c concepts and application of statistical tools in marketing resear	ch				
	1 11					
Module:1 Mar	keting Concepts				8 ho	ur
	and Applications: Introduction to Marketing & Core Concepts, N	Marl	keting	g of S	Servi	ces
e .	eting in service sector. Marketing Planning & Environment: E			-		
-	ds & trends in Environment - Macro, Economic, Political,					1n
inin, maryzing nee				ano		
Understanding the						cia
0	consumer: Determinants of consumer behavior, Factors in	nflue	encin	g co	onsur	cia ne
behavior.Market Seg	consumer: Determinants of consumer behavior, Factors in nentation: Meaning & Concept, Basis of segmentation, selection	nflue	encin	g co	onsur	cia ne
behavior.Market Seg	consumer: Determinants of consumer behavior, Factors in	nflue	encin	g co	onsur	cia ne
behavior.Market Seg Segmentation strateg	consumer: Determinants of consumer behavior, Factors in mentation: Meaning & Concept, Basis of segmentation, selection ies, Target Marketing, Product Positioning	nflue	encin	g co ients,	onsur Mar	cia ne ke
behavior.Market Seg Segmentation strateg Module:2 Proc	consumer: Determinants of consumer behavior, Factors in mentation: Meaning & Concept, Basis of segmentation, selection les, Target Marketing, Product Positioning duct Decisions	nflue 1 of	encin segm	g co lents,	onsur Mar 6 ho	cia ne ke
behavior.Market Segression Segmentation strateg	consumer: Determinants of consumer behavior, Factors in mentation: Meaning & Concept, Basis of segmentation, selection ies, Target Marketing, Product Positioning duct Decisions t: Product Life cycle concept, New Product development & str	nflue 1 of	encin segm	g co lents,	onsur Mar 6 ho	cia ne ke
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behavior.Market Segressegmentation strateg Module:2 Product Managemen Product developmen Module:3 Price	consumer: Determinants of consumer behavior, Factors in mentation: Meaning & Concept, Basis of segmentation, selection ies, Target Marketing, Product Positioning duct Decisions t: Product Life cycle concept, New Product development & str t, Product decision and strategies, Branding & packaging e, Place and Promotion Decisions	nflue n of rateg	encin segm gy, St	g co lients, rages	6 ho	cia ne ke ur lev
behavior.Market Segressegmentation strateg Module:2 Prod Product Managemen Product developmen Module:3 Price Pricing, Promotion	consumer: Determinants of consumer behavior, Factors in mentation: Meaning & Concept, Basis of segmentation, selection ies, Target Marketing, Product Positioning duct Decisions t: Product Life cycle concept, New Product development & str t, Product decision and strategies, Branding & packaging e, Place and Promotion Decisions and Distribution Strategy: Policies & Practices – Pricing	n flue n of rateg	encin segm gy, St	g co aents, ages ds &	6 ho 6 ho 6 ho 6 ho	cia ne ke ur lev
behavior.Market Segressegmentation strateg Module:2 Prod Product Managemen Product developmen Module:3 Price Pricing, Promotion determination Policie	consumer: Determinants of consumer behavior, Factors in mentation: Meaning & Concept, Basis of segmentation, selection ies, Target Marketing, Product Positioning duct Decisions t: Product Life cycle concept, New Product development & str t, Product decision and strategies, Branding & packaging e, Place and Promotion Decisions	n fluo n of rateg	encin segm gy, St letho Public	g co nents, rages ds &	6 ho 6 ho 6 ho 6 ho	cia ne ke ur lev
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#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Inte	ernet Marke	ting: Introduction to Interne	t Marketing. N	Iapping fundam	nental concepts of N	Marketing (7Ps,
ST	P); Strategy a	and Planning for Internet Ma	arketing.			
		1			1	
Mo	odule:7	B2B Marketing				5 hours
Bus	siness to B	usiness Marketing: Fundar	nental of bus	siness markets.	Organizational b	uying process.
Bus	siness buyer	needs. Market and sales po	tential. Produc	ct in business m	narkets. Price in but	siness markets.
Pla	ce in busin	ness markets. Promotion	in business r	narkets. Relatio	onship, networks	and customer
rela	ationship ma	nagement. Business to Busin	less marketing	strategy.		
Mo	odule:8	Contemporary issues				2 hour
Co	ntemporary	topics in marketing				
				Tota	l Lecture hours:	45 hours
	xt Book(s)	N (2040) D1 '''	7 1 0 17 11			
1.	0	Management (2019), Philip I				
2.	0	Management (2019), Deepal				8
3.	_	Management: A relationship		-		
4.	0	research: An applied approa	ch (2019), Ma	lhotra, N. K., N	lunan, D., & Birks,	D. F. ,Pearson
	Education					
	ference Boo					
1.	0	research: Text and cases (202	,. 0			
2.	Marketing	management: A cultural pers	spective (2020)	), Visconti, L. M	I., Peñaloza, L., & T	'oulouse, N.
	(Eds.) Rou	tledge.				
		uation: CAT / Assignment		T		
		d by Board of Studies	29-01-2021		10.00.000	1
Ap	proved by A	Academic Council	No. 61	Date	18-02-2021	l





Course Code	Course Title	L	T	Р	J	C
MGT2003	Financial Management	3	0	0	0	3
Pre-requisite	NIL		Sylla		vers	ioı
<u> </u>			V	. 1.0		
Course Objectives:						
	ndamental concepts of financial management			· ·		
	oncepts such as time value of money, cost of capital, risk and	retur	n, wo	orking	g cap	01t2
management, capit	0 0					
3.Leverage the conc	ept for deciding financial angle of IT projects					
Even a stad Course O						
Expected Course O Students will be able						
	ding Technocrat Managers to understand the Financial Manag	emen	it con	cept	s and	1 t
	cepts of "time value of money" in the decision-making process.			eepe		
	ities and know the concept of Risk and return					
	everage", "cost of capital" and the projects using the Capital by	udaet	ing c	once	nte	
	Capital components, their implications and Working Capital re	0	0		pts	
	v the Components of Working Capital.	quire	ment			
5.10 analytically vie	whe components of working capital.					
Module:1 Intr	oduction				2 ho	ur
	luction to Financial Management - Goals of the firm - Financial	l Env	ironn			_
			nonn	iciito		ne
Value of Money: Sir	nple and Compound Interest Rates. Amortization. Computing t					
-	nple and Compound Interest Rates, Amortization, Computing 1					
Value of Money: Sir Annuity Factor.	nple and Compound Interest Rates, Amortization, Computing 1					
Annuity Factor.				once	e a ye	ar
Annuity Factor. Module:2 Valu	nation of Securities / Risk & return	more	than	once	e a ye 0 ho	ar ur
Annuity Factor. Module:2 Valu Valuation of Securi		more	than	once	e a ye 0 ho	ar ur
Annuity Factor. Module:2 Valu Valuation of Securi of Yield and YTM.	nation of Securities / Risk & return ties: Bond Valuation, Preferred Stock Valuation , Common Sto	more ock V	than aluati	once 1	e a ye 0 ho Conc	ur ur
Annuity Factor. Module:2 Value Valuation of Securie of Yield and YTM. Risk & Return: De	nation of Securities / Risk & return ties: Bond Valuation, Preferred Stock Valuation , Common Sto fining Risk and Return, Using Probability Distributions to M	more Dock V	than faluati	once	e a ye 0 ho Conc	ar ur cep
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Modu	ıle:6	Cash Management:				9 hours
Motr	ves for	Holding cash, Speeding U	p Cash Receipts	s, Slowing	Down Cash Payou	its, Electronic
Com	merce, O	utsourcing, Cash Balances to	o maintain, Facto	ring		
Modu	ıle:7	Accounts Receivable Ma	nagement:			11 hours
Credit	& Colle	ction Policies, Analyzing the	Credit Applican	t, Credit Re	ferences, Selecting of	optimum Credit
period	1.					
				Total	Lecture hours:	45 hours
Text ]	Book(s)					
1	~ /	Prasanna - Financial M	anagement - 7	Theory &	Practice, Prentice	Hall/Pearson
1. C	~ /		anagement - 7	Theory &	Practice, Prentice	Hall/Pearson
1. C E	Chandra,				·	Hall/Pearson
1. C E	Chandra,	.(2019)			·	Hall/Pearson
1. C E 2. I.	Chandra, Education M. Pande	.(2019)	ikas Publishing F		·	Hall/Pearson
1. C E 2. I. Mode	Chandra, Education M. Pande of Evalu	.(2019) ey, Financial Management, V	ikas Publishing F		·	Hall/Pearson





	Course Title	L	Т	Р	J	С
MGT3016	Services Science and Service Operations Management	2	0	2	0	3
Pre-requisite	NIL		Sylla			ion
	-		V	7. 1.0		
Course Object		1	<u> </u>			
	examines the management of services focusing on both the strategic an	d op	eratio	onal	aspe	cts
of designing						
2. Helps in ass	essing and improving service quality, improving the efficiency and ef	fecti	vene	ss of	serv	vice
processes						
3. Helps in und	erstanding the integration of new technologies into service operations.					
Expected Cou						
	nd concepts about Services and distinguish it from Goods					
2. To identify	characteristics and nature of Services					
3. Comprehen	d ways to design Services and evaluate them using Service qualities					
4. To be able t	o understand various methods to be used to operate and manage Servi	ce b	usine	sses		
5. To understa	nd how innovation can be approached from Services point of view					
6. To be famili	ar with the tools and techniques used for designing and managing the	servi	ce op	berat	ions.	
Module:1	Introduction to services				4 ho	urs
Introduction to	the course, introduction to service operations, role of service in e	econ	omy	and	soci	ety,
introduction to	Indian service sector, differences between services and operation	ons,	servi	ice r	backa	age,
characteristics,	-	of se		-	coun	ter,
	various frameworks to design service operation system, kind o	of se		-	coun	ter,
characteristics, importance of e	various frameworks to design service operation system, kind o	of se		-	coun	ter,
	various frameworks to design service operation system, kind o	of se		e en	coun 5 ho	
importance of e Module:2	various frameworks to design service operation system, kind o encounters Service Design		ervice	e en	5 ho	urs
importance of e Module:2 Service-Domina	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C	Lo-cr	ervice	n, Ci	5 ho	urs ner
importance of e Module:2 Service-Domine Journey and Se	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Deve	Co-cr elopi	ervice eatio ment	n, C	<b>5 ho</b> ustor	urs ner
importance of e Module:2 Service-Domina Journey and Se Service Vision	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C	Co-cr elopi	ervice eatio ment	n, C	<b>5 ho</b> ustor	<b>urs</b> ner
importance of e Module:2 Service-Domine Journey and Se	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Deve	Co-cr elopi	ervice eatio ment	n, C	<b>5 ho</b> ustor	urs ner egic
importance of e Module:2 Service-Domina Journey and Se Service Vision	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Devo (SSV), Data Envelopment Analysis, NSD cycle, Service Blueprinting	Co-cr elopi	ervice eatio ment	n, Co of S ts of	<b>5 ho</b> ustor	urs ner egic vice
importance of e Module:2 Service-Domina Journey and Se Service Vision delivery system Module:3	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Deve (SSV), Data Envelopment Analysis, NSD cycle, Service Blueprinting Quality and Yield Management	Co-cr elopr	eatio ment emen	n, Connormality of States	5 ho ustor Strate Serv 4 ho	urs ner egic vice
importance of e Module:2 Service-Domina Journey and Se Service Vision delivery system Module:3 Models of facili	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Deve (SSV), Data Envelopment Analysis, NSD cycle, Service Blueprinting Quality and Yield Management ity locations (Huff's retail model), role of service-scape in layout design	Co-cr elopr	eatio ment emen	n, Connormality of States	5 ho ustor Strate Serv 4 ho	urs ner egic vice
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importance of e Module:2 Service-Domina Journey and Se Service Vision delivery system Module:3 Models of facili through audit, o Module:4 Service guarant customer respo Module:5	various frameworks to design service operation system, kind o encounters  Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Deve (SSV), Data Envelopment Analysis, NSD cycle, Service Blueprinting  Quality and Yield Management ity locations (Huff's retail model), role of service-scape in layout design limensions of service quality & other quality tools  Service Guarantee & Service Recovery ee, benefits, types, design of service of guarantees, service failure, serv nse analysis.	co-cr elopr ; Ele n, SI	ervice eatio ment emen ERV0	e end	5 ho ustor Strate Strate 4 ho L, w 4 ho strate	urs ner egic vice urs valk urs egy,
importance of e Module:2 Service-Domina Journey and Sec Service Vision delivery system Module:3 Models of facilit through audit, of Module:4 Service guarant customer respo Module:5 Forecasting De	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Devo (SSV), Data Envelopment Analysis, NSD cycle, Service Blueprinting Quality and Yield Management ity locations (Huff's retail model), role of service-scape in layout design limensions of service quality & other quality tools Service Guarantee & Service Recovery ee, benefits, types, design of service of guarantees, service failure, serv nse analysis. Forecasting, Managing Capacity and facilities	Co-cr elopr , Ele n, SI	eatio ment emen ERV(	e end n, Cr of S ts of QUA ery, s	5 ho ustor Strate Serv 4 ho strate 4 ho city :	urs mer egic vice urs valk urs egy,
importance of e Module:2 Service-Domin: Journey and Se Service Vision delivery system Module:3 Models of facil: through audit, o Module:4 Service guarant customer respo Module:5 Forecasting De demand: Strates	various frameworks to design service operation system, kind o encounters Service Design ant Logic, Goods-Dominant logic to Service-Dominant logic, Value C rvice Design, Design Thinking methods to aid Service Design, Deve (SSV), Data Envelopment Analysis, NSD cycle, Service Blueprinting Quality and Yield Management ity locations (Huff's retail model), role of service-scape in layout design limensions of service quality & other quality tools Service Guarantee & Service Recovery ee, benefits, types, design of service of guarantees, service failure, serv nse analysis. Forecasting, Managing Capacity and facilities mand for Services, review of different types of forecasting methods, n	Co-cr elopr ; Ele n, SI ice r	ervice eatio ment emen ERVO ecov	e end n, Ch of S ts of QUA ery, s capa vario	5 ho ustor Strato Strato A ho L, w 4 ho strato City : us to	urs ner egic vice urs valk urs egy: urs and ools





N	117		1.1			4.1
	dule:6	Service Supply, Queuing		1 1	(1 1 6	4 hours
		ice supply relationship: Un				
	0 0 11	bliers of service, Vehicle Ro	e	00		
serv	ices that inv	volve transportation of peopl	le and vehicle, lec	hniques for	optimizing veh	ncle routes
Ma	dule:7	Service Innovation				3 hours
		ctivity, Need for Services Inn	ovation Case stud	lies		5 110015
5010		uvity, inced for services fill	iovation, Case stue	1103,		
Mo	dule:8	Contemporary Issues				2 hours
		by Industry Experts or R&D	organization			
		[		Total le	ecture hours	30 hours
		L				
Tex	t Book					
1.	Fitzsimmo	ns & Fitzsimmons, Service	Management: Op	erations, S	trategy, Inform	nation Technology,
		lition, McGraw Hill publicati		,	0,7	0,7
Ref	erence Boo	oks				
1.	Wilson, A.	, Zeithaml, V. A., Bitner, M.	. J., &Gremler, D.	D. Service	s marketing: In	tegrating customer
	focus acros	ss the firm. 2012. McGraw H	Till publications.		_	
2.	Reason, Be	en, and Lovlie, Lavrans, Serv	vice Design for Bu	usiness: A I	Practical Guide	to Optimizing the
	Customer	Experience, 2016, Pan Macm	nillan India.			
		ation: CAT / Assignment	/ Quiz / FAT /	Project /	Seminar	
	t of Experi					
1.	8	ew super market in a cosmog	• •		-	•
	levels, expe	erimental design, presentation	n of alternatives to	responden	ts and estimatio	on of choice
	model)					
2.	Choose any	y service organization and pr	esent it from the p	erspective	of nature of ser	vice, classification
	of service,	blueprint or service design a	nalysis, and service	quality.		
3.		ervice blueprint for a fast for				
4.	-	, software, user and mashup		e a next gen	service oriente	d architecture.
5.	0	eview article after analysing 5		0		
		ck on the same.	1 1		1 5	0
6.		Fortune 500 company in digit	al media and point	out how t	nese technologi	es could be
	2	used in a startup in digital sp	1			
7.	5	e booking policy of an intern		ator. assum	ing that the ave	rage number of no
	•	0%, explain why the best ove			0	0
		comparative chart analysing a	-			n based on
8.		responsiveness, assurance, an		, 0		
	, , , , , , , , , , , , , , , , , , ,		± ,		Total	Hours 30Hours
Mo	de of Evalu	ation: Assessments/Midte	erm Lab/ FAT			
-		d by Board of Studies	22-05-2021			
App	proved by A	Academic Council	No. 62	Date	19-07-	2021



CURRICULUM (2019 - 2020) B. Tech Computer Science and Engineering and Business Systems

## **PROGRAMME ELECTIVE**

### (AY 2019 - 2020)

B. Tech. Computer Science and Engineering and Business Systems

(in collaboration with TCS)



Sl.No.	Course Code	Course Title	Page No.
1.	CBS1011	Programming in Python	65
2.	CSE1007	JAVA Programming	67
3.	CBS3005	Cloud, Microservices and Applications	70
4.	CBS3006	Machine Learning	72
5.	CBS3007	Data Mining and Analytics	74
6.	CBS3008	Introduction to Internet of Things	77
7.	CBS3009	Advanced Social, Text and Media Analytics	79
8.	CBS3010	Mobile Computing	81
9.	CBS3013	Conversational Systems	83
10.	CBS3014	Modern Web Applications	85
11.	CBS3015	Information Systems Audit and Control	87
12.	CBS3016	Cognitive Science and Analytics	89
13.	CBS4001	Robotics and Embedded Systems	92
14.	CBS4002	Cryptology and Analysis	94
15.	CBS4003	Quantum Computation and Quantum	96
		Information	
16.	CBS4004	Image Processing and Pattern Recognition	98
17.	CBS4005	Enterprise Systems	100



Course code	Course Title	L	Τ	Р	J	С
CBS1011	Programming in Python	2	0	2	0	3
Pre-requisite	NIL	S	yllal	bus	vers	sio
					v	. 1.
Course Objecti						
2. To dev	vide exposure to basic problem-solving techniques with computers elop the logical thinking abilities and to propose novel solutions fo ns through programming language constructs.		al w	orld		
3. To deep	ben the empirical knowledge on applying programming on busines	s do	omai	ns.		
Expected Cour	se Outcome:					
1. Interpret	the basic representation of the data structures and sequential prog	gran	nmir	ıg		
2. Knowled	lge of, and ability to use control framework terminologies.					
3. Ability to	work out using the core data structures as lists, dictionaries, tuple	s, a	nd s	ets.		
	appropriate programming paradigms, interrupt and handle data usis through reusable modules.	ng f	files	to p	rop	ose
5. Propose	possible error-handling constructs for unanticipated states/inputs					
-	ent exemplary applications on the real-world problems.					
Module:1 In	roduction to Python Programming				4 ho	our
Introduction to	Python, Demo of Interactive and script mode, Tokens in P	yth	on -	- V	arial	bles
-	ments, Literals, Data types, Indentation, Operators and its preced functions. Sequential approach	den	ce, I	Expi	essi	ons
Module:2 Co	ntrol Structures				4 ho	our
Selective statem	ents – if, if-else, nested if, if –elif ladder statements					
Iterative stateme	nts - while, for, Nested loops, else in loops, break, continue and pa	ass s	state	mer	its.	
Module:3 Co	llections				5 ho	our
List: Create, Acc	ess, Slicing, Negative Indices, List Methods, and comprehensions					
1 .	Indexing and Slicing, Operations on tuples. Dictionary: Create	e, a	dd,	and	rep	olac
values, operation	as on dictionaries. Sets: Create and operations on set.					
Module:4 St	rings and Regular Expressions				5 ho	our
	ting, Comparison, Slicing, Splitting, Stripping, Negative indices, St	ring	g fun			
Strings: Forma		C				
0	sion: Matching the patterns, Search and replace.					
Regular express						
Regular express Module:5 Fu	notions Matching the patterns, Search and replace.				4 ho	our



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CURRICULUM (2019 - 2020)

	dule:6	File Handling		3 hours
File	s: Open,	Read, Write, Append and	Close. Tell and seek methods	
	dule:7	Handling Exceptions		3 hours
		1 2 2	, Exceptions, Handling Exceptions, Raising Ex-	ceptions,
Exc	ception (	Chaining, User-defined Exe	ceptions, Defining Clean-Up actions.	
	dule:8	Contemporary issues:		2 hours
Gue	est lectur	e by Industry experts or R	&D organization	
			Total Lecture hours:	30 hour
Tex	xt Book	(s)		
1.			arse: A Hands-On, Project-Based Introduction	to
	Progra	amming, 2nd Edition, No	starch Press, 2019.	
Ref	ference 1	0.		
1.	Martic	C Brown, Python: The Co	mplete Reference, 4th Edition, McGraw Hill P	Publishers,
	2018.		1	
2.		Dierbach, Introduction	to Computer Science using Python: A Compu	itational Problem
2.	Charles	Dierbach, Introduction ( Focus,2 nd Edition, Wiley	to Computer Science using Python: A Compu	utational Problem
	Charles Solving	Focus,2 nd Edition, Wiley	to Computer Science using Python: A Compu	atational Problem
	Charles Solving	Focus,2 nd Edition, Wiley	to Computer Science using Python: A Compu India Edition, 2017.	atational Problem
Mo	Charles Solving ode of Ev	Focus,2 nd Edition, Wiley	to Computer Science using Python: A Compu India Edition, 2017. Iment / Quiz / FAT / Project / Seminar	utational Problem
Mo	Charles Solving ode of Ev	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I	to Computer Science using Python: A Compu India Edition, 2017. Iment / Quiz / FAT / Project / Seminar	atational Problem
<b>Mo</b> <b>Lis</b> 1.	Charles Solving de of Ev t of Cha	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I	to Computer Science using Python: A Compu India Edition, 2017. Imment / Quiz / FAT / Project / Seminar Indicative) tokens, operators and expressions	itational Problem
<b>Mo</b> <b>Lis</b> 1.	Charles Solving de of Ev t of Cha Sequen Selectio	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I tial programs with python	to Computer Science using Python: A Compu India Edition, 2017. Imment / Quiz / FAT / Project / Seminar Indicative) tokens, operators and expressions	atational Problem
Mo Lis 1. 2. 3.	Charles Solving ode of Ev t of Cha Sequen Selectic List,Tu	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I tial programs with python onal and Looping construct	to Computer Science using Python: A Computer India Edition, 2017. India Edition, 2017. India Edition, 2017. Indicative / FAT / Project / Seminar Indicative) tokens, operators and expressions	atational Problem
Mo Lis 1. 2. 3. 4.	Charles Solving de of Ev t of Cha Sequen Selectio List,Tu String I	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I tial programs with python onal and Looping construct ples, Dictionary and Sets	to Computer Science using Python: A Computer India Edition, 2017. India Edition, 2017. Iment / Quiz / FAT / Project / Seminar Indicative) tokens, operators and expressions Expression	atational Problem
Mo Lis 1. 2. 3. 4. 5.	Charles Solving de of Ev t of Cha Sequen Selectio List,Tu String I	Focus,2 nd Edition, Wiley valuation: CAT / Assign Ilenging Experiments (I tial programs with python onal and Looping construct ples, Dictionary and Sets Manipulation and Regular	to Computer Science using Python: A Computer India Edition, 2017. India Edition, 2017. Iment / Quiz / FAT / Project / Seminar Indicative) tokens, operators and expressions Expression	atational Problem
Mo Liss 1. 2. 3. 4. 5. 6.	Charles Solving de of Ev t of Cha Sequen Selectic List,Tu String I Functic Files	Focus,2 nd Edition, Wiley valuation: CAT / Assign Ilenging Experiments (I tial programs with python onal and Looping construct ples, Dictionary and Sets Manipulation and Regular	to Computer Science using Python: A Computer India Edition, 2017. India Edition, 2017. Indicative / FAT / Project / Seminar Indicative) tokens, operators and expressions Expression	atational Problem
Mo Liss 1. 2. 3. 4. 5. 6.	Charles Solving de of Ev t of Cha Sequen Selectic List,Tu String I Functic Files	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I tial programs with python onal and Looping construct ples, Dictionary and Sets Manipulation and Regular ons, Recursion and Lamda	to Computer Science using Python: A Computer India Edition, 2017. India Edition, 2017. Indicative / FAT / Project / Seminar Indicative) tokens, operators and expressions Expression	
Mo Lis 1. 2. 3. 4. 5. 6. 7.	Charles Solving de of Ev t of Cha Sequen Selectic List,Tu String I Functic Files Except	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I tial programs with python onal and Looping construct ples, Dictionary and Sets Manipulation and Regular ons, Recursion and Lamda	to Computer Science using Python: A Computer India Edition, 2017. Iment / Quiz / FAT / Project / Seminar Indicative) tokens, operators and expressions ets Expression functions	
Liss 1. 2. 3. 4. 5. 6. 7. Mo	Charles Solving ode of Ev t of Cha Sequen Selectio List,Tu String I Functio Files Except de of as	Focus,2 nd Edition, Wiley valuation: CAT / Assign llenging Experiments (I tial programs with python onal and Looping construct ples, Dictionary and Sets Manipulation and Regular ons, Recursion and Lamda	to Computer Science using Python: A Computer India Edition, 2017. Imment / Quiz / FAT / Project / Seminar Indicative) tokens, operators and expressions tts Expression functions Total Laboratory Hours	atational Problem



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CSE1007		JAVA PROGRAMMING	L	T	P J	C
Pre-requi	site	NIL	3 St	0 Ilah	2 0 us ver	
i ie iequi	one		0,	nao		v1.0
Course O	bjecti	ves:				
1. T	o imp	art the core language features of Java and its Application Programming	; Inte	erface	es(AP	I)
	-	onstrate the use of threads, exceptions, files and collection framework			,	,
		liarize students with GUI based application development and database	-			
со	nnectiv	vity.				
Expected	l Cour	se Outcome:				
1. 0	Compre	hend Java Virtual Machine architecture and Java Programming Funda	ment	als.		
2. T	Design	applications involving Object Oriented Programming concepts such as	s inh	eritai	nce,	
as	ssociati	on, aggregation, composition, polymorphism, abstract classes and inte	rface	s.		
3. I	Design	and build multi-threaded Java Applications.				
4. B	Build so	oftware using concepts such as files, collection frameworks and contain	ers.			
5. T	Design	and implement Java Applications for real world problems involving Da	ataba	iseCo	onnec	tivity
6. I	Design	Graphical User Interface using JavaFX.				
7. E	Design,	Develop and Deploy dynamic web applications using Servlets and Jav	a Ser	verP	ages.	
Module:1	Jav	a Fundamentals			4 h	ours
Java Basic	s: Java	Design goal - Features of Java Language - JVM - Bytecode - Java s	ourc	e file	estruct	ture-
basic prog	grammi	ng constructs- Arrays- one dimensional and multi-dimensional enhar	nced	for l	oop St	tring
package						
Module:2		ject Oriented Programming				ours
		tals - Object reference array of objects constructors methods over- lo				
		ted class inner class garbage collection finalize() Wrapper classes Inhe	ritan	ce t	ypes -	use
-	- Polyr	norphism abstract class interfaces packages and sub				
packages.						
Module:3		bustness and Concurrency			6 h	ours
-		ling - Exceptions Errors - Types of Exception - Control Flow in Exce	-			
	•	catch, finally, throw, throws in Exception Handling - user de			-	
	0	Thread creation sharing the workload among threads synchroniz	cation	n in	ter th	read
communio	cation	deadlock.				
Module:4		es, Streams and Object serialization				ours
		Java I/O streams Working with files Serialization and deserialization	ı of	obje	cts	
Lambda e	xpressi	ons, Collection framework List, Map, Set, Generics Annotations				
Module:5		I Programming and Database			7 h	ours
	Co	nnectivity				
					67	



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B. Tech Computer Science and Engineering and Business Systems

GUI programming using JavaFX, exploring events, controls and JavaFX menus Accessing databases using JDBC connectivity.

#### Module:6 Servlets

7 hours

7 hours

2 hours

Introduction to servlet - Servlet life cycle - Developing and Deploying Servlets - Exploring Deployment Descriptor (web.xml) - Handling Request and Response - Session Tracking Management.

#### Module:7 Java Server Pages

JSP Tags and Expressions - JSP Expression Language (EL) - Using Custom Tag - JSP with Java Bean.

#### Module:8 Contemporary Issues

Guest lecture by Industry Experts or R&D organization

#### Total Lecture hours:

45 hours

#### Text Book(s)

- 1. Herbert Schildt, The Complete Reference -Java, Tata McGraw-Hill Education, Tenth Edition, 2017.
- 2. Paul J. Deitel, Harvey Deitel, Java SE8 for Programmers (Deitel Developer Series) 3rd Edition, 2014
- 3. Y. Daniel Liang, Introduction to Java programming-comprehensive version-Tenth Edition, Pearson ltd 2015

#### **Reference Books**

- 1. Paul Deitel Harvey Deitel, Java, How to Program, Prentice Hall; 9th edition, 2011.
- 2. Cay Horstmann BIG JAVA, 4th edition, John Wiley Sons,2009
- 3. Nicholas S. Williams, Professional Java for Web Applications, Wrox Press, 2014.

#### Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

#### List of Challenging Experiments (Indicative)

1. Write a program to demonstrate the use of multidimensional arrays and looping constructs.

- 2. Write a program to demonstrate the application of String handling functions.
- 3. Write a program to demonstrate the use of Inheritance.
- 4. Write a program to demonstrate the application of user-defined packages and sub-packages.
- 5. Write a program to demonstrate the use of Java Exception handling methods.
- 6. Write a program to demonstrate the use of threads in Java.
- 7. Demonstrate with a program the use of File handling methods in Java.

8. Demonstrate the use of Java collection frameworks in reducing application development time.

- 9. Build a GUI application using JavaFX
- 10. Write a program to register students data using JDBC with MySQL Database.

11. Write a program that uses Servlets to perform basic banking tasks.

12. Write a web application using JSP and demonstrate the use of http request and response methods.





13. Write a JSP program	Write a JSP program for an order management system.							
14. Write a JSP program	Write a JSP program that using JDBC and MySQL database to store the user data.							
15. JSP with Java Bean								
		Total Lal	ooratory Hours	30 hours				
Mode of Assessment: As	sessments/ Mid Term La	ab/ FAT / Proje	ct					
Recommended by Board	of Studies 10-08-201	8						
Approved by Academic C	Council No. 52	Date	14-09-2018					



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Course Co	ode	Course Title	L	T	Р	J	С
CBS300	5	Cloud Microservices and Applications	3	0	2	0	4
Pre-requisite		NIL		Syl	labu	s ve	rsior
					v. 1.	0	
Course Object							
		lamentals of cloud computing					
	-	rking knowledge of the essentials of Cloud Micro Services					
3. To impleme	ent busin	ess specific cloud applications					
Expected Co	urse Ou	tcome:					
1. Study the ba	asics of c	cloud computing, cloud models and its applications.					
2. Understand	cloud se	ervices and architecture.					
3. Learn how	to use Cl	oud Services and to build applications.					
4. Realize secu	rity need	ls for cloud service and Analyze different SLAs					
5. Analyze pla	tform-sp	ecific security features and management of security controls.					
6. Design, Dev	velop &	Deploy real-world applications in the cloud computing platfor	ms				
Module:1	Cloud	l Fundamentals		1		4 H	lours
		nents - Deployment Models – Application of Cloud Computin	no			111	louie
	compoi		8				
Module:2	Appli	cation Architectures				6 H	lours
Monolithic an	d Distrib	outed – Micro Service fundamentals – Design Approach – Clo	oud	Nati	ve Aj	pplic	ation
– Application	Integrati	on Process – API fundamental – API Management					
Module:3		1 Services					lours
Application Se	ervices -	Deployment and Management Services - Amazon Web Servi	ces -	- Wii	ndow	vs Az	zure
Module:4	Cloud	Application Development				8 H	lours
Python-Refre	sher, Use	e cases					
				1		< <b>T</b>	-
Module:5		1 Security				6 H	lours
Security Basic	s and Be	nefits – Challenges					
Module:6	Cloud	1 Service Monitoring and Management				5 H	lours
Cloud Securi	ty Monit	oring Tools					
Module:7	Casa	Studies		1		61	nours
		es - GCP Features Use cases - AWS features use cases				υſ	iours
		- Sof Teatures Ose cases - Itwo reatures use cases					
	Conte	emporary Issues				2 H	lours
Module:8							
		try Experts or R&D organization		1			
Guest lecture	by Indus	try Experts or R&D organization Total Lecture hou	ırs:	45	Hou	rs	
Guest lecture	by Indus	Total Lecture hou					
Guest lecture Text Book(s) 1. Rajkur	by Indus nar Buy						anc





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2. Ronald Krutz and Russell Dean Vines, Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Wiley, 2010.

#### **Reference Books**

- 1. Toby Velte, Anthony Velte, Robert Elsenpeter, Cloud Computing, A Practical Approach, McGraw Hill, 2010.
- 2. Judith Hurwitz, Robin Bloor, Marcia Kaufman, Fern Helper, Cloud Computing For Dummies, Wiley, 2010.

#### Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar

#### List of Challenging Experiments (Indicative)

- 1. Develop cloud application using Amazon Cloud, Google Cloud.
- 2. Demonstrate cloud application using Windows Azure.
- 3. Implementation of Amazon cloud services.
- 4. Patient Health Monitoring using AWS/Windows Azure.
- 5. Financial Trading Monitoring System using AWS/Windows Azure.
- 6. Cloud Usecase resource monitoring using AWS/Windows Azure.

	7	otal Labo	ratory Hours:	30 hours		
Mode of Assessment: Assessments/ Mid Term Lab/ FAT / Project						
Recommended by Board of Studies	29-01-2021					
Approved by Academic Council	No. 61	Date	18-02-2021			



## VIT® Vellore Institute of Technology

CURRICULUM (2019 - 2020)

Course Code		Course Title		L	Τ	P J	С
CBS3006		Machine Learning		2	0	2 4	4
Pre-requisite	NIL				Sy	llabus	s versio
							v. 1.
Course Objectives							
		of supervised and unsupervised lear	0	-			
0		on and clustering techniques and to i	-			0	
		ious machine learning techniques a	and to se	lect	appr	opriate	feature
for training machine	e learning algorithm	ns.					
Expected Course (							
		machine learning strategies.					
-		n ANN learning models.					
	11 2	cting suitable learning model.					
4. Boost the perform	nance of the mode	l by combining results from differen	nt approa	ches	•		
_		atterns using HMM.					
6. Infer the associati	on and relationship	p between the data objects.					
7. Construct machin	e learning model f	or unseen data and can solve real w	orld appl	icati	on.		
	roduction to Mac						3 hour
Introduction to Ma	achine Learning (	(ML); Feature engineering; Learni	ng Parao	ligm	, Ge	eneraliz	ation c
hypothesis, VC Dim	ension, PAC learn	ing, Applications of ML.					
Module:2 Da	ta Handling and	ANN					4 hour
	lechanisms Imbal	anced data, Outlier detection- Art	tificial ne	nral	netv	vorke	includin
	icchambins, impai	lanced data, Outlier detection- mit		urai	neuv	VOIK5	inciudin
backpropagation- A	pplications	aluation					6 hour
backpropagation- Ap	pplications		pression:	Reg	ulari	zation:	
backpropagation- Agentication A	pplications <b>Models and Eva</b> ariable regression;	Model evaluation; Least squares reg	-	-			LASSC
backpropagation- Applications of regr	pplications <b>Models and Eva</b> ariable regression; ression, Classification	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De	ecision T	ree;	Trair	ning ar	LASSC d testin
backpropagation- A Module:3 MI Regression: Multi-va Applications of regr classifier models; C	pplications <b>Models and Eva</b> ariable regression; ression, Classification ross-validation; M	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall,	ecision T F1-mesu	'ree; re, a	Trair ccura	ning ar	LASSC d testin
backpropagation- A Module:3 MI Regression: Multi-va Applications of regr classifier models; C	pplications <b>Models and Eva</b> ariable regression; ression, Classification ross-validation; M	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De	ecision T F1-mesu	'ree; re, a	Trair ccura	ning ar	LASSC d testin
backpropagation- A Module:3 MI Regression: Multi-va Applications of regr classifier models; C curve); Statistical de	pplications <b>Models and Eva</b> ariable regression; ression, Classification cross-validation; M cision theory include	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall, ding discriminant functions and dec	ecision T F1-mesu	'ree; re, a	Trair ccura	ning ar	LASSC d testin ea unde
backpropagation- A Module:3 MI Regression: Multi-va Applications of regr classifier models; C curve); Statistical dec Module:4 Mo	pplications <b>Models and Eva</b> ariable regression; ression, Classification; ross-validation; M cision theory inclue odel Assessment a	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, Do lodel evaluation (precision, recall, ding discriminant functions and dec and Inference	ecision T F1-mesu tision sur	ree; re, a faces	Trair ccura	ning an acy, ar	LASSC d testin ea unde <b>4 hour</b>
backpropagation- A         Module:3       MI         Regression: Multi-va         Applications of regr         classifier models; C         curve); Statistical dee         Module:4       Mo         Model assessment	pplications <b>Models and Eva</b> ariable regression; f ression, Classification cross-validation; M cision theory inclue odel Assessment a and Selection –	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting,	ecision T F1-mesu tision sur	ree; re, a faces	Trair ccura	ning an acy, ar	LASSC d testin ea unde <b>4 hour</b>
backpropagation- A Module:3 MI Regression: Multi-va Applications of regr classifier models; C curve); Statistical dec Module:4 Mo	pplications <b>Models and Eva</b> ariable regression; f ression, Classification cross-validation; M cision theory inclue odel Assessment a and Selection –	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting,	ecision T F1-mesu tision sur	ree; re, a faces	Trair ccura	ning an acy, ar	LASSC d testin ea unde <b>4 hour</b>
backpropagation- A Module:3 MI Regression: Multi-va Applications of regr classifier models; C curve); Statistical dec Module:4 Mo Model assessment Averaging, Bayesian	pplications <b>Models and Eva</b> ariable regression; finite ression, Classification fross-validation; M cision theory inclue odel Assessment a and Selection – Theory, EM Algor	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting, rithm	ecision T F1-mesu tision sur	ree; re, a faces	Trair ccura	ning an acy, ar	LASSC d testin ea unde <u>4 hour</u> ence an
backpropagation- ApplicationsMIModule:3MIRegression: Multi-vaApplications of regrclassifier models; Ccurve); Statistical deeModule:4MoModel assessmentAveraging, BayesianModule:5Hie	pplications <b>Models and Eva</b> ariable regression; ression, Classification; ross-validation; M cision theory include odel Assessment a and Selection – Theory, EM Algored dden Markov Mo	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, Do lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting, rithm dels	ecision T F1-mesu ision sur Bagging	ree; re, a faces	Trair ccura dodel	ing an acy, ar Infere	d testin ea unde <u>4 hour</u> ence an <u>3 hour</u>
backpropagation- Ageneration         Module:3       MI         Regression: Multi-va         Applications of regrestions         classifier models; C         curve); Statistical dee         Module:4       Mo         Model assessment         Averaging, Bayesian         Module:5       Hid         Hidden Markov Me	pplications <b>Models and Eva</b> ariable regression; fi- ression, Classification cross-validation; M cision theory include <b>odel Assessment a</b> and Selection – Theory, EM Algost <b>dden Markov Mo</b> odels (HMM) with	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting, rithm dels h forward-backward and Vierbi alg	ecision T F1-mesu ision sur Bagging gorithms	ree; re, a faces , M ; Sec	Trair ccura dodel	ning an acy, ar Infere	LASSC d testin ea unde <u>4 hour</u> ence an <u>3 hour</u> sificatio
backpropagation- Ageneration         Module:3       MI         Regression: Multi-va         Applications of regression: Multi-va         Applications of regrestion         classifier models; C         curve); Statistical dee         Module:4       Mo         Model assessment         Averaging, Bayesian         Module:5       Hie         Hidden Markov Me         using HMM; Condition	pplications <b>Models and Eva</b> ariable regression; fi- ression, Classification cross-validation; M cision theory include <b>odel Assessment a</b> and Selection – Theory, EM Algost <b>dden Markov Mo</b> odels (HMM) with	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, Do lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting, rithm dels	ecision T F1-mesu ision sur Bagging gorithms	ree; re, a faces , M ; Sec	Trair ccura dodel	ning an acy, ar Infere	LASSC d testin ea unde <u>4 hour</u> ence an <u>3 hour</u> sificatio
backpropagation- Ageneration         Module:3       MI         Regression: Multi-va         Applications of regression: Multi-va         Applications of regrestion         classifier models; C         curve); Statistical dee         Module:4       Mo         Model assessment         Averaging, Bayesian         Module:5       Hie         Hidden Markov Me         using HMM; Condition	pplications <b>Models and Eva</b> ariable regression; fi- ression, Classification cross-validation; M cision theory include <b>odel Assessment a</b> and Selection – Theory, EM Algost <b>dden Markov Mo</b> odels (HMM) with	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting, rithm dels h forward-backward and Vierbi alg	ecision T F1-mesu ision sur Bagging gorithms	ree; re, a faces , M ; Sec	Trair ccura dodel	ning an acy, ar Infere	LASSC d testin ea unde <u>4 hour</u> ence an <u>3 hour</u> sificatio
backpropagation- Age         Module:3       MI         Regression: Multi-va         Applications of regrestions of regrestions         classifier models; C         curve); Statistical decomposition         Module:4       Mo         Model assessment         Averaging, Bayesian         Module:5       Hid         Hidden Markov Mo         using HMM; Conditagging	pplications <b>Models and Eva</b> ariable regression; fi- ression, Classification cross-validation; M cision theory include <b>odel Assessment a</b> and Selection – Theory, EM Algost <b>dden Markov Mo</b> odels (HMM) with	Model evaluation; Least squares reg on – KNN, Naïve Bayes, SVM, De lodel evaluation (precision, recall, ding discriminant functions and dec and Inference Ensemble Learning – Boosting, rithm dels h forward-backward and Vierbi alg	ecision T F1-mesu ision sur Bagging gorithms	ree; re, a faces , M ; Sec	Trair ccura dodel	ning an acy, ar Infere	LASSC d testin ea unde <u>4 hour</u> ence an <u>3 hour</u> sificatio



### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Mining Association Rules in Large Datab scalable frequent item set mining -methods	U	-	-	- Efficient and
Module:7 Clustering				5 hours
K Means, Hierarchical Clustering – Sin spanning tree clustering; BIRCH clustering		, Average link	xage; Ward's algorith	hm; Minimum
Module:8 Contemporary Issues				2 hours
Guest lecture by Industry Experts or R&D	organization			
<i>´</i>		Tota	1 Lecture hours:	30 hours
Text Book(s)				
1. Ethem Alpaydin, Introduction to N	Iachine Learni	ng, MIT Press	, Pearson, Third Edit	ion, 2014.
2. Friedman Jerome, Trevor Hastie,	and Robert	Fibshirani. Th	e Elements of Statis	tical Learning.
Springer-Verlag, 2nd Edition, 2013				U
Reference Books				
1. Kevin P. Murphy, "Machine Learn	ing: A Probabi	listic Perspecti	ve". MIT Press. 2012	_
2. Peter Flach, "Machine Learning: "	0	1		
Cambridge University Press, 2012.			finding that make 9	chie of Data,
Mode of Evaluation: CAT / Assignmen		T / Dustant		
List of Challenging Experiments (India1.Implement Decision Tree learning	cative)			
2. Implement Logistic Regression				
3. Implement classification using Mul		on		
4. Implement classification using SVM	1			
5. Implement Adaboost				
6. Implement Bagging using Random				
7. Implement K-means Clustering to	Find Natural F	atterns in Data	a	
8. Implement Hierarchical clustering				
9. Implement K-mode clustering				
10 Implement Association Rule Minin	0 0	owth		
11. Classification based on association				
12. Implement Gaussian Mixture Mode	0			
13 Evaluating ML algorithm with bala		lanced datasets	5	
14 Comparison of Machine Learning a				
15 Implement k-nearest neighbour alg	orithm			
			tal Laboratory Hou	rs: 30 hours
	id Term Lab,	/ FAT / Proje	ect	
Recommended by Board of Studies	29-01-2021			
Approved by Academic Council	No. 61	Date	18-02-2021	



#### VIT Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

		L T	Р	J	С
CBS3007	8	3 0	2	0	4
Pre-requisite	NIL	Syllab			1
<u> </u>			v. 1.0		
Course Objectives					
	fundamental processes data warehousing and major issues in data	0		1	
	owledge on various data mining concepts and techniques that	can be a	pplie	d to t	ex
mining, web mining					
3. To develop the kr	nowledge for application of data mining and social impacts of dat	ta mining			
E-manual Common (	Determen				
Expected Course (	ribution of data mining to the decision-support systems.				
-	a needed for data mining using preprocessing techniques a	nd anal	u tha		0114
visualization techniq		inu appi	y the	vall	ou
-		lining			
	ng patterns from large amounts of data using Association Rule Mormation from the labeled data using various classifiers and Predi	0			
	s for a variety of linear methods and models	101015			
-	acity to perform a self-directed piece of practical work that requ	ince the	تمما	antion	
		ures the	арри	cation	1 0
data mining techniqu	ies.				
Module:1	Introduction to Data Mining			3 ho	1146
	ction- Related technologies - Machine Learning, DBMS, OLA	D Statio			
			FICS 3	Trages	0
8				0	of
8	ocess, Data Mining Techniques, Knowledge Representation Meth			0	o
the Data Mining Pro	ocess, Data Mining Techniques, Knowledge Representation Meth			ions	
the Data Mining Pro	Decess, Data Mining Techniques, Knowledge Representation Meth Data preprocessing	nods, App	olicat	ions 5 ho	urs
the Data Mining Pro Module:2 Data cleaning, Data	Decess, Data Mining Techniques, Knowledge Representation Meth Data preprocessing a transformation, Data reduction, Discretization and generation	nods, App	olicat	ions 5 ho	urs
the Data Mining Pro Module:2 Data cleaning, Data	Decess, Data Mining Techniques, Knowledge Representation Meth Data preprocessing	nods, App	olicat	ions 5 ho	urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da	Decess, Data Mining Techniques, Knowledge Representation Meth Data preprocessing a transformation, Data reduction, Discretization and generatin ata Mining System, Experiments with Weka - filters, discretization	nods, App	olicat	ions 5 ho	urs ies,
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Data Module:3	Decess, Data Mining Techniques, Knowledge Representation Meth Data preprocessing a transformation, Data reduction, Discretization and generation	nods, App ng concej n	olicat	5 ho erarch	urs ies urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data,	Decess, Data Mining Techniques, Knowledge Representation Meth Data preprocessing a transformation, Data reduction, Discretization and generatin ata Mining System, Experiments with Weka - filters, discretization Data mining knowledge representation	nods, App ng concep n nowledge	plicat	5 ho erarch 4 ho	urs ies urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data,	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge	nods, App ng concep n nowledge	plicat	5 ho erarch 4 ho	urs ies urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data, 1 techniques; Attribut	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge	nods, App ng concep n nowledge	plicat	5 ho erarch 4 ho	urs ies urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data, Task relevant data, Ta	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representing input data and output knowledge analysis: Attribute generalization, Attribute relevant         Data mining algorithms - Association rules	nods, App ng concep n nowledge. nce, Class	olicat	5 ho erarch 4 ho aalizat nparis 4 ho	urs ies urs ior on urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data, T techniques; Attribut Statistical measures Module:4 Motivation and term	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output kn         re-oriented analysis: Attribute generalization, Attribute relevan         Data mining algorithms - Association rules         hinology, Example: mining weather data, Basic idea: item sets, generalization	nods, App ng concep n nowledge nce, Class enerating	visu visu visu visu visu	5 ho erarch 4 ho halizat nparis 4 ho	urs ies urs ior on urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data, T techniques; Attribut Statistical measures Module:4 Motivation and term	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representing input data and output knowledge analysis: Attribute generalization, Attribute relevant         Data mining algorithms - Association rules	nods, App ng concep n nowledge nce, Class enerating	visu visu visu visu visu	5 ho erarch 4 ho halizat nparis 4 ho	urs ies urs ior on urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data, T techniques; Attribut Statistical measures Module:4 Motivation and term	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representing input data and output knowledge, and scalable frequent item set mining methods: Apriori	nods, App ng concep n nowledge nce, Class enerating	visu visu visu visu visu	5 ho erarch 4 ho halizat nparis 4 ho	urs ies urs ior on urs
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data, T techniques; Attribut Statistical measures Module:4 Motivation and term rules efficiently, Eff algorithm, Correlation	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representing input data and output knowledge, Representing input data and output knowledge, and scalable frequent item set mining methods: Apriori on analysis	nods, App ng concep n nowledge nce, Class enerating	visu visu visu visu visu	5 ho erarch 4 ho alizat nparis 4 ho sets	urs ies ior on urs anc wth
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Data Module:3 Task relevant data, 1 techniques; Attribut Statistical measures Module:4 Motivation and term rules efficiently, Eff algorithm, Correlatio Module:5	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representedge, Represent knowledge, Representing input data and o	nods, App ng concep n nowledge nce, Class enerating algorithm	y Visu , Visu , Visu , FP	5 ho erarch 4 ho alizat nparis 2-Grov 5 ho	urs ies ior on urs anc wth
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Da Module:3 Task relevant data, T techniques; Attribut Statistical measures Module:4 Motivation and term rules efficiently, Eff algorithm, Correlation Module:5 Basic learning/mini	Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representing input data and output knowledge, Representing input data and output knowledge, and scalable frequent item sets, generalization, Attribute relevant         Data mining algorithms - Association rules         Discretization         Data mining algorithms - Classification & Prediction         ng tasks, inferring rudimentary rules: 1R, algorithm, Decision	nods, App ng concep n nowledge. ace, Class enerating algorithm	visu visu visu overi	5 ho erarch 4 ho alizat nparis 4 ho sets -Grov 5 ho	urs ies ior on urs anc wth urs les
the Data Mining Pro Module:2 Data cleaning, Data Installing Weka 3 Data Installing Weka 3 Data Module:3 Task relevant data, Ta	Data Mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representing input data and output knowledge, Representing input data and output knowledge, Example: Mining Weather data, Basic idea: item sets, generation         Data mining algorithms - Association rules         Dinology, Example: mining weather data, Basic idea: item sets, generation         Data mining algorithms - Classification & Prediction         mg tasks, inferring rudimentary rules: 1R, algorithm, Decision         ediction task, Statistical (Bayesian) classification, Bayesian net	nods, App ng concep n nowledge. ace, Class enerating algorithm	visu visu visu overi	5 ho erarch 4 ho alizat nparis 4 ho sets -Grov 5 ho	urs ies ior on urs anc wth urs les
the Data Mining Pro- Module:2 Data cleaning, Data Installing Weka 3 Data Installing Weka 3 Data Module:3 Task relevant data,	Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Represent and scalable frequent item set mining methods: Apri	nods, App ng concep n nowledge. ace, Class enerating algorithm	visu visu visu overi	5 ho erarch 4 ho alizat nparis 4 ho sets -Grov 5 ho	urs ies ior on urs anc wth les
the Data Mining Pro- Module:2 Data cleaning, Data Installing Weka 3 Data Installing Weka 3 Data Module:3 Task relevant data,	Data mining Techniques, Knowledge Representation Meth         Data preprocessing         a transformation, Data reduction, Discretization and generatin         ata Mining System, Experiments with Weka - filters, discretization         Data mining knowledge representation         Background knowledge, Representing input data and output knowledge, Representing input data and output knowledge, Representing input data and output knowledge, Example: Attribute generalization, Attribute relevant         Data mining algorithms - Association rules         Dinology, Example: mining weather data, Basic idea: item sets, generalization and scalable frequent item set mining methods: Apriori on analysis         Data mining algorithms - Classification & Prediction         ng tasks, inferring rudimentary rules: 1R, algorithm, Decision         ediction task, Statistical (Bayesian) classification, Bayesian net	nods, App ng concep n nowledge. ace, Class enerating algorithm	visu visu visu overi	5 ho erarch 4 ho alizat nparis 4 ho sets -Grov 5 ho	urs ies ior on urs anc wth les





	criptive analytics: Data Modeling, Trend Analysis, Simple Linear Regression Analysis	
Fore	casting models: Heuristic methods, predictive modeling and pattern discovery, Logis	tic Regression
Logi	t transform, ML estimation, Tests of hypotheses, Wald test, LR test, score test, t	est for overal
regre	ession, multiple logistic regression, forward, backward method, interpretation of param	neters, relation
0	categorical data analysis. Interpreting Regression Models, Implementing Predictive Mod	
	eralized Linear model: link functions such as Poisson, binomial, inverse binomial, inv	
Gam		
Moc	lule:7 Time Series Analysis	11 hours
Tim	e Series Analysis: Auto - Covariance, Auto-correlation and their properties. Explorat	
	rsis, Test for trend and seasonality, Exponential and moving average smoothing, I	
	othing, forecasting based on smoothing	
	ear time series models: Autoregressive, Moving Average, Autoregressive Moving	Average and
	pregressive Integrated Moving Average models; Estimation of ARMA models such a	0
	nation for AR Processes, Maximum likelihood and least squares estimation for ARI	MA Processes
	casting using ARIMA models	
	criptive Analytics: Mathematical optimization, Networks modeling-Multi-objective	optimization
Stoc	hastic modeling, Decision and Risk analysis, Decision trees.	
Moc	lule:8 Contemporary Issues	2 hour
	st lecture by Industry Experts or R&D organization	- 110 011
0 40		
	Total Lecture hours:	45 hours
Text	Total Lecture hours:	45 hours
	t Book(s)	
<b>Tex</b> 1.	t <b>Book(s)</b> Ian H. Witten, Eibe Frank, and Mark A. Hall, Christopher Pal, "Data Mining: Pra	
1.	t <b>Book(s)</b> Ian H. Witten, Eibe Frank, and Mark A. Hall, Christopher Pal, "Data Mining: Pra Learning Tools and Techniques" Morgan Kaufmann Publishers, 4 th Edition, 2017	ctical Machine
	t <b>Book(s)</b> Ian H. Witten, Eibe Frank, and Mark A. Hall, Christopher Pal, "Data Mining: Pra Learning Tools and Techniques" Morgan Kaufmann Publishers, 4 th Edition, 2017 George E. P. Box, Gwilym M. Jenkins, Gregory C. Reinsel, Greta M. Ljung. "Time S	ctical Machine
1. 2.	t <b>Book(s)</b> Ian H. Witten, Eibe Frank, and Mark A. Hall, Christopher Pal, "Data Mining: Pra Learning Tools and Techniques" Morgan Kaufmann Publishers, 4 th Edition, 2017 George E. P. Box, Gwilym M. Jenkins, Gregory C. Reinsel, Greta M. Ljung. "Time S Forecasting and Control", John Wiley, 5 th Edition, 2015	ctical Machine
1. 2. <b>Refe</b>	t <b>Book(s)</b> Ian H. Witten, Eibe Frank, and Mark A. Hall, Christopher Pal, "Data Mining: Pra Learning Tools and Techniques" Morgan Kaufmann Publishers, 4 th Edition, 2017 George E. P. Box, Gwilym M. Jenkins, Gregory C. Reinsel, Greta M. Ljung. "Time S Forecasting and Control", John Wiley, 5 th Edition, 2015 <b>Frence Books</b>	Series Analysis
1. 2.	t <b>Book(s)</b> Ian H. Witten, Eibe Frank, and Mark A. Hall, Christopher Pal, "Data Mining: Pra Learning Tools and Techniques" Morgan Kaufmann Publishers, 4 th Edition, 2017 George E. P. Box, Gwilym M. Jenkins, Gregory C. Reinsel, Greta M. Ljung. "Time S Forecasting and Control", John Wiley, 5 th Edition, 2015 erence Books Jiawei Han and Micheline Kamber, "Data Mining: Concepts and Techniques", Morg	ctical Machine Series Analysis
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11.	Implement k-nearest neighbors alg	gorithm			
12.	Build statistical models using any li	inear regression techniq	ue		
13.	Build statistical models using Nonl	linear regression techniq	ue		
14.	Build statistical models using Logis	stic regression			
15.	Perform forecast analysis using AR	RIMA model			
			Tota	l Laboratory Hours	30 hours
Mod	le of Assessment: Assessments/ l	Mid Term Lab/ FAT	/ Project		
Reco	ommended by Board of Studies	29-01-2021			
App	roved by Academic Council	No. 61	Date	18.02.2021	



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

### CURRICULUM (2019 - 2020)

Course Code	Course Title	L	T	Р	J	С
CBS3008	Introduction to Internet of Things	3	0	2	0	4
Pre-requisite	NIL		Syll	abus	s ver	sion
				v.1.0	)	
Course Objectives:		1.		1		
	principles and concepts of Internet-of-Things use cases, app	olicat	ions,	arch	itect	ure
and technologies.		1				
2. To get an overview	of an end to end IoT system encompassing the edge, cloud a	nd af	plica	ition	tiers	
Expected Course Out	come:					
-	inciples and concepts of Internet-of-Things use cases, applic	ation	s			
	oncepts of Architecture of IoT.					
<ol> <li>Describe Sensor and</li> </ol>	±					
	king and communication for IoT.					
	ata processing and storage.					
_	pplications in various domains using prototype models.					
Module:1 Intro	duction to IoT and Use cases				3 h	ours
Understanding basic co	ncepts of IoT, Consumer IoT vs Industrial Internet, Funda	ment	tal bu	iildin	g blo	ocks,
Use Cases of IoT in var	-				0	
	· · · · · · · · · · · · · · · · · · ·					
Module:2 Archi	tecture				6 h	ours
IoT reference architect	ures, Industrial Internet Reference Architecture, Edge Com	iputi	ng, Io	oT C	Gatev	vays,
Data Ingestion and Dat	a Processing Pipelines, Data Stream Processing.					
Module:3 Senso					6 h	ours
Introduction to sensors	and transducers, integrating sensors to sensor processing bo	ards.				
Module:4 Indus	strial Systems				6 h	ours
	al data acquisition systems, industrial control systems and the	-ir fu	nctio	ins	0 11	ouis
	al data acquisition systems, industrial control systems and the	<u>,11 10</u>	incuo	115.		
Module:5 Netw	orking and Communication for IoT				7 h	ours
Recap of OSI 7 layer a	rchitecture and mapping to IoT architecture, Introduction to	o pro	ximi	ty ne	two	rking
technologies (ZigBee, I	Bluetooth, Serial Communication)	-		-		_
Module:6 Netw	ork protocols				8 h	ours
Industrial network prot	tocols (Modbus, CANbus), Communicating with cloud appl	catic	ons (v	veb s	ervi	ces,
REST, TCP/IP and	UDP/IP sockets, MQTT, WebSockets, protocols. Messa	ige e	encoc	ling	(JSC	)N,
Protocol Buffers).						
	Data Processing and Storage		_			ours
	d their characteristics, time series databases, basic time				ics,	data
summarization and sket	cching, dealing with noisy and missing data, anomaly and out	ier d	etecti	on.		
			<u> </u>		<u> </u>	
	temporary Issues				2 h	ours
Guest lecture by Indust	ry Experts or R&D organization					





VIT Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

	Total Lecture hours:     45 hours	rs
Tex	tt Book(s)	
1.	Samuel Greengard, The Internet of Things, MIT Press Essential Knowledge Series, 2015	
Refe	erence Books	
1.	Ben Fry, Visualizing Data-Exploring and Explaining Data with the Processing Environment, O'Rei	lly
	Media, 2008.	
2.	Andrew K Dennis, Raspberry Pi Computer Architecture Essentials, Packt Publishing, 2016	
Mod	de of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar	
Lab	Experiments	
1.	Setting up the Arduino Development Environment, connecting analog sensors to an Arduino	
	Boarding and reading analog sensor data	
2.	Digital Input and Output reading using and Arduino board and Arduino Development Environme	
3.	Integrate an Arduino Board to a Raspberry Pi computer, send sensor data from Arduino to the R P	i
4.	Setup Python on the R Pi and run sample R Pi programs on the R Pi. Read the data from Arduino	
	using Python language	
5.	Connect a R Pi Camera module to the Raspberry Pi and using Python programming capture still	
	images and video	
6.	Set up TCP/IP socket server on a PC. Send a message from the R Pi to the PC using socket	
-	communication	
7.	Set up a MQTT broker on the PC. Send data from R Pi to PC using MQTT protocol. Receive data	
8.	from PC to R Pi using MQTT protocol	<b>D</b> '
0.	Connect LED lights to an Arduino. Connect the Arduino to the R Pi. Send Message from PC to R	P1
	via MQTT protocol. On receipt of the message, toggle the LED lights on the Arduino	
9.	Set up an account in a cloud service (such as Google / AWS or Azure). Set up a simple Http server	
	using a language of your choice. Push the image captured from the R Pi camera to this web service.	
10	On receiving the image, store the image in a database or file	
10.	Develop a mobile application to view the images captured by the R Pi camera	
	Total Laboratory Hours 30 hou	rs
	de of Assessment: Assessments/ Mid Term Lab/ FAT / Project	
	commended by Board of Studies 29-01-2021	
App	broved by Academic Council No. 61 Date 18-02-2021	





Course code	Course Title	L	Т	Р	J	С
CBS3009	Advanced Social, Text and Media Analytics	3	0	0	0	3
Pre-requisite	NIL		Sy	llabu	s vei	rsior
			,	v. 1.0		
Course Objective						
	e various tools for Text Mining and carry out Pattern Discove	•				<u> </u>
2. To Explore the	use of social network analysis to understand the growing con-	nnectiv	vity an	d com	plex	ity iı
the world around u	us on different scales					
3. To Perform soc	cial media analytics to identify important social actors, subgro	oups at	nd net	work 1	prop	ertie
in social media site	es.					
Expected Course	Outcome					
1	ntribution of text mining to generate new knowledge from na	turall	anonac	re text		
-	nformation from the textual data using various classifiers and			c text		
	ous components of a web that can be used for mining proces		.1015			
-	nedia data using appropriate web mining techniques	5				
		daam	ات معر ا	-1-		
	sting patterns from Social Media Networks using linear metho				1 ·	
	ons to the emerging problems of social media analytics w	vith se	entime	nt ana	alysis	anc
opinion mining						
Module:1 I	ntroduction to Text Mining				5 h	our
	ntroduction to Text Mining ext Mining - Text Representation- Core text mining operation	s - Te	xt min	ing ap		
	ntroduction to Text Mining ext Mining - Text Representation- Core text mining operation	s - Te	xt min	ing ap		
Introduction to Te	ext Mining - Text Representation- Core text mining operation	s - Te	xt min	ing ap	plica	tions
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Introduction to Te Module:2 T	ext Mining - Text Representation- Core text mining operation <b>Text Mining Essentials</b> cocessing techniques - Text Clustering, Text Classification, Te				plica 6 h	tions o <b>ur</b> s
Introduction to Te Module:2 T Text mining Prepr models for inform	ext Mining - Text Representation- Core text mining operation <b>Text Mining Essentials</b> cocessing techniques - Text Clustering, Text Classification, Te ation extraction				plica 6 h	tions ours ilistic
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Introduction to Te         Module:2       T         Text mining Prepr         models for inform         Module:3       V         Web Analytics - V         retrieval         Module:4       V	ext Mining - Text Representation- Core text mining operation <b>Text Mining Essentials</b> cocessing techniques - Text Clustering, Text Classification, Te ation extraction <b>Veb Mining</b> Web analytics tools, Clickstream analysis, A/B testing, onlir <b>Veb Analytics Essentials</b>	opic M ne surv	Todellin veys; V	ng, Pro	plica 6 h obab 5 h earch	ours ours ilistic
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Introduction to Te         Module:2       T         Text mining Prepr         models for inform         Module:3       V         Web Analytics - V         retrieval         Module:4       V         Search engine opti         Module:5       S         Social network ar         networks. Information	ext Mining - Text Representation- Core text mining operation <b>Text Mining Essentials</b> cocessing techniques - Text Clustering, Text Classification, To ation extraction <b>Web Mining</b> Web analytics tools, Clickstream analysis, A/B testing, onlir <b>Web Analytics Essentials</b> Imization, Web crawling and Indexing, Ranking algorithms, W <b>Social Media Networks</b> nd web data and methods. Graphs and Matrices. Basic m	opic M ne surv 7eb tra	Todellin veys; V	ng, Pro Veb so odels	plica 6 h obab 5 h earch 6 h duals	ours ours ours ours
Introduction to Te         Module:2       T         Text mining Prepresent         models for inform         Module:3       V         Web Analytics - Verticeval         Module:4       V         Search engine option         Module:5       S         Social network are         networks. Information         Module:6       S	ext Mining - Text Representation- Core text mining operation <b>Fext Mining Essentials</b> cocessing techniques - Text Clustering, Text Classification, To ation extraction <b>Veb Mining</b> Web analytics tools, Clickstream analysis, A/B testing, onlir <b>Web Analytics Essentials</b> imization, Web crawling and Indexing, Ranking algorithms, W <b>Social Media Networks</b> ad web data and methods. Graphs and Matrices. Basic m ation visualization.	ppic M ne surv ⁷ eb tra easure	fic modelling	ng, Pro	plica 6 h obab: 5 h earch 6 h duals 7 h	ours ours ours ours and ours
Introduction to Te         Module:2       T         Text mining Preprese         models for inform         Module:3       V         Web Analytics - Vertrieval         Module:4       V         Search engine opti         Module:5       S         Social network ar         networks. Information         Module:6       S	ext Mining - Text Representation- Core text mining operation <b>Text Mining Essentials</b> cocessing techniques - Text Clustering, Text Classification, To ation extraction <b>Web Mining</b> Web analytics tools, Clickstream analysis, A/B testing, onlir <b>Web Analytics Essentials</b> imization, Web crawling and Indexing, Ranking algorithms, W <b>Focial Media Networks</b> nd web data and methods. Graphs and Matrices. Basic m ation visualization. <b>Focial Media Analytics</b>	ppic M ne surv ⁷ eb tra easure	fic modelling	ng, Pro	plica 6 h obab: 5 h earch 6 h duals 7 h	ours ours ours ours and ours
Introduction to Te         Module:2       T         Text mining Prepression       Module:3       V         Module:3       V         Web Analytics - Vertrieval       V         Module:4       V         Search engine option       S         Module:5       S         Social network are       S         Module:6       S         Making connection       S	ext Mining - Text Representation- Core text mining operation <b>Text Mining Essentials</b> roccessing techniques - Text Clustering, Text Classification, Technic extraction <b>Web Mining</b> Web analytics tools, Clickstream analysis, A/B testing, onlir <b>Web Analytics Essentials</b> mization, Web crawling and Indexing, Ranking algorithms, Web <b>ocial Media Networks</b> nd web data and methods. Graphs and Matrices. Basic metion visualization. <b>Jocial Media Analytics</b> poss: Link analysis. Random graphs and network evolution.	ppic M ne surv ⁷ eb tra easure	fic modelling	ng, Pro	plica 6 h obab 5 h earch 6 h duals 7 h dfilia	our our our our and our





Mo	odule:8	Contemporary Issues				2 hour
Gu	est lecture b	y Industry Experts or R&D o	rganization			
				Total	Lecture hours:	45 hours
Te	xt Book(s)					
1.	Bing Liu,	Web Data Mining-Exploring	g Hyperlinks, Con	tents, and	Usage Data, Spr	inger, Second
	Edition, 20	011.				_
2.	Reza Zafa	arani, Mohammad Ali Abba	isi and Huan Liu	, Social N	Iedia Mining-An	Introduction,
	Cambridge	e University Press, 2014.				
Re	ference Bo	oks				
1.	Bing Liu, S	Sentiment Analysis: Mining Op	oinions, Sentiments	, and Emot	tions, Cambridge U	University
	Press, Seco	ond Edition, 2020.			_	-
2.	Ronen Fel	dman and James Sanger, The	Text Mining Hand	lbook: Adv	ranced Approache	s in Analyzing
	Unstructur	red Data, Cambridge Universit	ty Press, First Edition	on, 2009.		
Mo	ode of Eval	uation: CAT / Assignment	/ Quiz / FAT / P	roject / Se	eminar	
Re	commende	d by Board of Studies	29-01-2021	*		
Ap	proved by A	Academic Council	No. 61	Date	18-02-2021	





Course Code	Course Title	L	Τ	Р	J	С
CBS3010	Mobile Computing	3	0	2	0	4
Pre-requisite	NIL		Syl	labus		ion
				<b>v.</b> (	1.0	
Course Objectives		0110	tolo	m la c. m		aatallit
	arious wireless & cellular communication networks and vari	ous	tele	pnon	e and	satemit
networks.	1		1	1		cc ·
	edge on various Adhoc and sensor networks routing pro	otoco	n an	ia en	ergy (	erncien
protocol.	we drive with Coordination and a network and append to be a		antic			-
	working with Cognitive radio networks and recent telecom- velopment of various network protocol using simulation to		Catio	)11 11et	WOIK	8
Expected Course (		015.				
<u> </u>	mpleting the course, the student should be able to					
2			1.	66		
	working principles of mobile networks and Con	ntrast	dı	tterer	nt ty	pes c
telecommunication						
-	h, handoff management and wireless fundamentals.	o	d -		ort:	ainati-
	ET and Sensor networks including architecture, routing	g and	u po	ower	optin	nizatio
technique.	ve ratio networks and its applications.					
	telecommunication networks, resource management					
	pment of various wireless network protocols using simulation	on to	olo			
0. Design & develo	sinent of various wheless network protocols using sinulate	511 10	015			
Module:1 Intro	duction					7 hour
Overview of wirele	ss and mobile infrastructure; Preliminary concepts on c	ellula	r ar	chited	ture;	Design
objectives and perfe	rmance issues; Radio resource management and interface;	; Proj	paga	tion a	ind p	ath los
models; Channel int	erference and frequency reuse; Cell splitting; Channel assig	gnmei	nt st	rategi	es; O	verviev
of generations:- 1G	to 5G.					
I						
	tion and handoff management					8 hour
	ation management (HLR and VLR); Mobility models cha					
movement (Randon	n walk, Fluid flow, Markovian, Activity based); Mobility	mod	dels	chara		0
•		1 0		•	1	
movement of group	os of nodes (Reference point-based group mobility mode					
movement of group mobility model); Sta	tic (Always vs. Never update, Reporting Cells, Location A	reas)	and	Dyna	amic	ocatio
movement of group mobility model); Sta management schem	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa	reas) aging	and (Sir	Dyna nultar	amic I neous	locatio paginį
movement of group mobility model); Sta management schem Sequential paging); I	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa Location management and Mobile IP; Overview of handof	reas) aging ff pro	and (Sin	Dyna nultar ; Fac	amic I neous tors a	locatio paginş ffectin
movement of group mobility model); Sta management schem Sequential paging); I handoffs and perfor	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa	reas) aging ff pro	and (Sin	Dyna nultar ; Fac	amic I neous tors a	locatio paginş ffectin
movement of group mobility model); Sta management schem Sequential paging); I handoffs and perfor	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa Location management and Mobile IP; Overview of handof	reas) aging ff pro	and (Sin	Dyna nultar ; Fac	amic I neous tors a	locatio paging ffectin
movement of group mobility model); Sta management schem Sequential paging); I handoffs and perfor horizontal, vertical).	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa Location management and Mobile IP; Overview of handof mance evaluation metrics; Handoff strategies; Different ty	reas) aging ff pro	and (Sin	Dyna nultar ; Fac	amic I neous tors a Es (so:	locatio paging ffectin ft, harc
movement of group mobility model); Sta management schem Sequential paging); I handoffs and perfor horizontal, vertical). Module:3 Wire	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa Location management and Mobile IP; Overview of handof mance evaluation metrics; Handoff strategies; Different ty ess transmission fundamentals	reas) aging ff pro pes o	and (Sir ocess of ha	Dyna nultar ; Fac .ndoff	amic 1 neous tors a Ts (so:	locatio paginş ffectin ft, harc 7 hour
movement of group mobility model); Sta management schem Sequential paging); I handoffs and perfor horizontal, vertical). Module:3 Wire Introduction to nar	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa Location management and Mobile IP; Overview of handof mance evaluation metrics; Handoff strategies; Different ty ess transmission fundamentals row and wideband systems; Spread spectrum; Frequency	reas) aging ff pro pes o	and (Sir ocess of ha	Dyna nultar ;; Fac .ndoff g; Int	amic i neous tors a is (so: roduc	locatio paging ffectin ft, hard 7 hour
movement of group mobility model); Sta management schem Sequential paging); I handoffs and perfor horizontal, vertical). Module:3 Wire Introduction to nar MIMO; MIMO Ch	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa Location management and Mobile IP; Overview of handof mance evaluation metrics; Handoff strategies; Different ty ess transmission fundamentals row and wideband systems; Spread spectrum; Frequency annel Capacity and diversity gain; Introduction to OFD	reas) aging ff pro pes o y hop M; N	and (Sir ocess of ha oping	Dyna nultar ; Fac ndoff g; Int O-OF	amic I neous tors a fs (so: roduc FDM	locatio paginį ffectin ft, hard 7 hour ction t systen
movement of group mobility model); Sta management schem Sequential paging); I handoffs and perfor horizontal, vertical). Module:3 Wire Introduction to nar MIMO; MIMO Ch	tic (Always vs. Never update, Reporting Cells, Location A es (Time, Movement, Distance, Profile Based); Terminal Pa Location management and Mobile IP; Overview of handof mance evaluation metrics; Handoff strategies; Different ty ess transmission fundamentals row and wideband systems; Spread spectrum; Frequency annel Capacity and diversity gain; Introduction to OFD rol (FDMA, TDMA, CDMA, SDMA); Wireless local area	reas) aging ff pro pes o y hop M; N	and (Sir ocess of ha oping	Dyna nultar ; Fac ndoff g; Int O-OF	amic I neous tors a fs (so: roduc FDM	location paging ffectin ft, harc 7 hour ction to system



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#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Module:4	Mobile Ad-hoc networks				4 hours
Characteristic	cs and applications; Coverage	and connectivity	problems; l	Routing in MAN	ETs.
	1				1
Module:5	Wireless sensor networks				5 hours
Concepts, ba	asic architecture, design ob	jectives and app	plications; S	ensing and cor	nmunication range;
	d connectivity; Sensor pla		laying and	aggregation; Er	nergy consumption;
Clustering of	sensors; Energy efficient Ro	uting (LEACH).			
Module:6	Cognitive radio networks	<u> </u>			5 hours
	dynamic spectrum access;		direct spec	trum sensing:	
	ity and co-existence issues; A				opeetrani onanis,
1	, , , , , , , , , , , , , , , , , , ,	11 C	)		
Module:7	D2D communications in	5G cellular netw	vorks		7 hours
Introduction	to D2D communications; H	High level require	ments for 5	G architecture;	Introduction to the
radio resourc	e management, power contro	ol and mode selec	tion proble	ms; Millimeter w	vave communication
in 5G.					
Module:8	Contemporary Issues				2 hours
Guest lecture	by Industry Experts or R&I	) organization	77.4.1	Tart we had not	45 1
	\		Total	Lecture hours:	45 hours
Text Book(s1.	/	tione Decrete E	h	00	
5	Schiller, Mobile Communica				
	Goldsmith, Wireless Comm	unications. Camb	riage Unive	rsity Press, 2012	•
Reference B		1	135.1.1		
	ojmenovic, Handbook of Wi	· · · · · · · · · · · · · · · · · · ·		1 0	3
	iglieri, Andrea J. Goldsmith			2	d H. Vincent Poor,
-	les of Cognitive Radio. Cam				
Mode of Eva	aluation: CAT / Assignme	nt / Quiz / FAT	' / Project	/ Seminar	
	lenging Experiments (Indi				
0	Development of different wir	eless network pro	tocols using	network simula	tors such as NS-3 /
OMNET++.					
	Protocol				
	g Protocol ort Protocol				
1	stion Control Protocol				
	ation Protocol				
	y Protocol				
	<u> </u>		Tota	1 hours	30 Hours
Mode of Ass	sessment: Assessments/ N	/lid Term Lab/ 1			
	led by Board of Studies	29-01-2021	,		
-	y Academic Council	No. 61	Date	18-02-2021	



# Vellore Institute of Technology

#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Course Code	Course Title	L	Т	Р	J	С
CBS3013	Conversational Systems	3	0	2	0	4
Pre-requisite	NIL		Syl	labu	is ve	rsior
				v.1.	.0	
<b>Course Objectives:</b>						
1. Enable attendees	o acquire knowledge on chatbots and its terminologies					
2. Work with machin	e learning concepts and different algorithms to build custom	mode	l.			
3. Understand on co	nversational experiences and provide better customer experien	nces				
Expected Course (	Outcome:					
1. Understand the fu	ndamentals of conversational systems and foundational block	s of p	rogra	mmi	ing.	
2. Apply the natural	language processing techniques in building conversational syst	ems.				
3. Design and build	chatbots and conversational intelligent systems.					
4. Analyse the sign	ificance of machine learning methods and artificial intell	igence	in	conv	versa	tiona
technologies.	U	0				
0	tics on conversational systems using performance metrics.					
,	, 01					
Module:1 Fur	damentals of Conversational Systems				6 ł	nours
Introduction: Overv	iew, Case studies, Explanation about different modes of e	ngage	ment	for	a h	umar
being, History and	impact of AI. Underlying technologies: Natural Langua	ge Pr	oces	sing,	Art	ificia
Intelligence and M	achine Learning, NLG, Speech-To-Text, Text-To-Speech	Con	npute	er V	ision	ı etc
Introduction to Top	o players in Market – Google, MS, Amazon &Market tren	ds. M	essag	ring	Platf	form
	op) and Smart speakers – Alexa, Google Home and other n					
Legal Considerations	.,					
0						
Module:2 For	ndational Blocks for Programming					nour

Blocks for Programming Basic Python programming concepts, Node Basics, Coding Best Practices, Evaluation Test.

Natural Language Processing Module:3

12 hours Introduction: Brief history, Basic Concepts, Phases of NLP, Application of chatbots etc. General chatbot architecture, Basic concepts in chatbots: Intents, Entities, Utterances, Variables and Slots, Fulfilment, Lexical Knowledge Networks (WordNet, Verbnet, PropBank, etc.). Lexical Analysis, Part-of-Speech Tagging, Parsing/Syntactic analysis, Semantic Analysis, Word Sense Disambiguation. Information Extraction, Sentiment Analysis, NLP using Python - Make use of any of the NLP libraries like NLTK, spaCy, StanfordNLP etc., Affective NLG.

Module:4	Building a chatbot/Conversational AI Systems	10 hours
Fundamentals	of Conversational Systems (NLU, DM and NLG). Chatbot framework	ork & Architecture,
Conversational	Flow & Design, Intent Classification (ML and DL based tec	chniques), Dialogue
Management	Strategies, Natural Language Generation.UX design, APIs and	SDKs, Usage of
Conversational	Design Tools. Introduction to popular chatbot frameworks - G	boogle Dialog flow,
Microsoft Bot	Framework, Amazon Lex, RASA Channels: Facebook Messenger, Ge	oogle Home, Alexa,
WhatsApp, Cu	stom Apps.Overview of CE Testing techniques, A/B Testing, Intro	oduction to Testing
Frameworks -	Botium /Mocha, Chai.Security & Compliance - Data Managemen	nt, Storage, GDPR,





PC	I.Building a	Voice/Chat Bot, Case Study	y			
Mo	odule:5	Role of ML/AI in Conve	ersational Tec	hnologies		6 hours
Un	derstanding	on how Conversational Sy	ystems uses M	L technologies	in ASR, NLP, Ad	vanced Dialog
ma	nagement,	Language Translation, En	notion/Sentim	ent Analysis,	Information extra	ction, etc. to
effe	ectively con-	verse. Case Study.				
Mc	odule:6	Contact Centres				4 hours
-		D Contact centres – Impact	& Terminolo	ogies, Case stud	ies & Trends, Scor	
		nt in contact centre		0,	, <u>1</u>	
М	odule:7	Orazione e Communati				2 1
		<b>Overview on Conversation</b> Analytics: The need of it ,I	2		al Matrice Summer	3 hours
Ser	nsory Appli	cations overview,XR Tech ad market innovations overv	nologies in C			
Mo	odule:8	Contemporary Issues				2 hours
Gu	est lecture b	y Industry Experts or R&D	organization		ł	
				Total Le	cture hours:	45 hours
Te	xt Book(s)				ł	
1.	Micheal M	cTear, Conversational AI: D	Dialogue Systen	ns, Conversation	nal Agents and chat	bots, 2020, 1 st
	Edition, M	lorgan and Claypool.				
2.	Luis Ferna	undo D Haro, Zoraida Calle	jas, Satosh Na	kamura, Conve	rsational Dialogue S	systems for the
	Next Deca	ide, 2021,1 st Edition, Springe	er.			
Re	ference Bo					
1.	2	thanam, Chatbots and Conv		1		
2.		ez-marin and Ismael Pascual		rsational Agents	s And Natural Lang	Jage
		n, 2011, 1 st Edition, IGI Glob	1			
Mo	ode of Eval	uation:CAT / Assignment	z / Quiz / FA	T / Project / S	Seminar	
Lis	t of Challe	nging Experiments (Indic	ative)			
1.		basics of python programmi		onversational A	Ι	
2.	Impleme	ntation of lexical analysis	—			
3.		ntation of syntactic analysis				
4.	Impleme	ntation of Sentimental Analy	ysis			
5.	Impleme	ntation of natural language p	processing usin	g python librari	es.	
6.	Testing of	of chatbot frameworks				
7.	Impleme	ntation of voice bots				
8.	Impleme	ntation of a generic chat bot	5			
9.		ntation of a bot for a class re		n application.		
10.		ntation of a bot for a simple	medical diagn	osis application		
				otal Laborator	~	30 Hours
				' FAT / Projec	ct	
		d by Board of Studies	22-05-2021 No. 62	Data	16-07-2021	
лр	proved by A	Academic Council	110.02	Date	10-07-2021	



#### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act. 1956)

#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

	Course Title	L	Τ	Р	J	С
CBS3014	Modern Web Applications	3	0	2	0	4
Pre-requisite	NIL	5	Sylla		versio	n
				v.1.	0	
Course Objectives	s: and analyse the basic concepts of web programming and inter	not oro	tocol	6		
-	the client-server model of Internet programming works.	liet pro		15.		
	the uses of scripting languages and their limitations.					
5. To demonstrates	the uses of scripting languages and then initiations.					
Expected Course	Outcome:					
-	protocols and web architecture.					
2. Apply HTML an	d CSS effectively to create interactive websites.					
3. Implement client	-side scripting using JavaScript to design dynamic websites.					
4. Develop XML ba	ased web applications.					
5. Implement serve	r-side scripting using PHP.					
6. Design PHP app	lication with Database connectivity.					
					-	
	duction to Internet & World Wide Web				4 h	
	ernet & World- Wide Web, Web Browsers, Web Servers, Un					
Tools and Web Pro	ogramming Languages. Web Standards, Categories of Web Ap	nlicati				
		pheat	ons,	Char	acteri	st1c
of Web Application	ns, Tiered Architecture	phead	ons,	Char	acteri	stıc
					acteri	stıc
Module:2 Hype	ertext Mark Up Language (HTML) and Cascading Style S	Sheets	(CSS	S)	6 h	our
Module:2 Hype Basic HTML page	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, N	Sheets Ieta El	(CSS	<b>S)</b> nts, (	<b>6 h</b> Casca	o <b>ur</b> din
Module:2 Hype Basic HTML page Style Sheets: Inline	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS	Sheets Ieta El	(CSS	<b>S)</b> nts, (	<b>6 h</b> Casca	o <b>ur</b> din
Module:2 Hype Basic HTML page Style Sheets: Inline	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS	Sheets Ieta El	(CSS	<b>S)</b> nts, (	<b>6 h</b> Casca	o <b>ur</b> din
Module:2 Hype Basic HTML page Style Sheets: Inline components drop c	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, N e, Internal and External Style Sheet, Bootstrap - CS lown	Sheets Ieta El	(CSS	<b>S)</b> nts, (	6 h Casca rms,	our din CS
Module:2     Hype       Basic     HTML page       Style     Sheets:       Inline       components     drop d       Module:3     Java S	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, N e, Internal and External Style Sheet, Bootstrap - CS lown	Sheets Aeta El S Text	(CSS leme:	<b>S)</b> nts, ( S fo:	6 ho Casca rms, 8 ho	our ding CSS
Module:2     Hype       Basic HTML page       Style Sheets: Inline       components drop c       Module:3     Java S       Introduction to Jav	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS down Script a Scripts, Objects in Java Script, Dynamic HTML with Java Sc	Sheets Aeta El S Text	(CSS leme:	<b>S)</b> nts, ( S fo:	6 ho Casca rms, 8 ho	our din CS
Module:2     Hype       Basic HTML page       Style Sheets: Inline       components drop c       Module:3     Java S       Introduction to Jav	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, N e, Internal and External Style Sheet, Bootstrap - CS lown	Sheets Aeta El S Text	(CSS leme:	<b>S)</b> nts, ( S fo:	6 ho Casca rms, 8 ho	our din CS
Module:2       Hype         Basic HTML page       Style Sheets: Inline         Style Sheets: Inline       components drop d         Module:3       Java S         Introduction to Jav       JS Button, JS popor	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java S ver, Document Object Model (DOM) with JavaScript	Sheets Aeta El S Text	(CSS leme:	<b>S)</b> nts, ( S fo:	6 ho Casca rms, 8 ho - JS A	our ding CSS ours
Module:2HypeBasic HTML pageStyle Sheets: Inlinecomponents drop cModule:3Java SIntroduction to JavJS Button, JS poporModule:4Exter	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java So ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML)	Sheets Aeta El S Text cript, B	(CSS leme: , CS	<b>S)</b> nts, ( S for trap	6 ho Casca rms, 8 ho - JS A	our ding CSS lier
Module:2       Hype         Basic       HTML page         Style       Sheets:         Inino       components         Module:3       Java S         Introduction       to Jav         JS       Button, JS         Module:4       Exter         Introduction, Struct	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java Sover, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular	Sheets Aeta El S Text cript, B	(CSS leme: , CS	<b>S)</b> nts, ( S for trap	6 ho Casca rms, 8 ho - JS A	our ding CSS lier
Module:2HypeBasic HTML pageStyle Sheets: Inlinecomponents drop cModule:3Java SIntroduction to JavJS Button, JS poporModule:4Exter	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java Sover, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular	Sheets Aeta El S Text cript, B	(CSS leme: , CS	<b>S)</b> nts, ( S for trap	6 ho Casca rms, 8 ho - JS A	our din CS ler
Module:2     Hype       Basic HTML page       Style Sheets: Inline       components drop c       Module:3     Java S       Introduction to Jav       JS Button, JS popor       Module:4     Exter       Introduction, Struct       Language Transform	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java S ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL)	Sheets Aeta El S Text cript, B	(CSS leme: , CS	<b>S)</b> nts, ( S for trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles	Dur ding CSS Durs llert hee
Module:2     Hype       Basic HTML page       Style Sheets: Inline       components drop c       Module:3     Java S       Introduction to Jav       JS Button, JS popor       Module:4     Exter       Introduction, Struct       Language Transform       Module:5     Basic	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java So ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL)	Sheets Aeta El S Text cript, B	(CS: leme: , CS Boots	<b>S)</b> nts, ( S for trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles	our ding CSS ours ller hee
Module:2     Hype       Basic HTML page       Style Sheets: Inline       components drop c       Module:3     Java S       Introduction to Jav       JS Button, JS popor       Module:4     Exter       Introduction, Struct       Language Transform       Module:5     Basic	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java S ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL)	Sheets Aeta El S Text cript, B	(CS: leme: , CS Boots	<b>S)</b> nts, ( S for trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles	Dur ding CSS Durs llert hee
Module:2       Hype         Basic HTML page       Style Sheets: Inline         Style Sheets: Inline       components drop c         Module:3       Java S         Introduction to Jav       JS Button, JS popor         Module:4       Exter         Introduction, Struct       Language Transform         Module:5       Basic         Introduction to PH	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java So ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL)	Sheets Aeta El S Text cript, B	(CS: leme: , CS Boots	<b>S)</b> nts, ( S for trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles	our din, CS ours ller hee
Module:2     Hype       Basic     HTML page       Style     Sheets:       Initroduction     Initroduction       JS     Button, JS       Module:4     Exter       Introduction, Struct       Language     Transform       Module:5     Basic       Introduction to PH       Module:6     Serve	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS lown Script a Scripts, Objects in Java Script, Dynamic HTML with Java So ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL) PHP Programs IP, Numbers and Strings, Literals and Variables, Operators and	Sheets Aeta El S Text cript, B ies, Ex d Func	(CS: leme: , CS Boots	<b>S</b> ) nts, ( S for trap trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles 6 ho ys. 7 ho	Dur din CS Dur ler hee Dur
Module:2     Hype       Basic     HTML page       Style     Sheets:       Inino     components       drop c       Module:3     Java S       Introduction to Jav       JS Button, JS popor       Module:4     Exter       Introduction, Struct       Language Transform       Module:5     Basic       Introduction to PH       Module:6     Serve	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS down Script a Scripts, Objects in Java Script, Dynamic HTML with Java S ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL) PHP Programs IP, Numbers and Strings, Literals and Variables, Operators and trols, Using Values Returned From, Forms Using PHP - User	Sheets Aeta El S Text cript, B ies, Ex d Func	(CS: leme: , CS Boots	<b>S</b> ) nts, ( S for trap trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles 6 ho ys. 7 ho	Dur dina CSS Durs lert hee
Module:2       Hype         Basic HTML page       Style Sheets: Inline         Style Sheets: Inline       components drop d         Module:3       Java S         Introduction to Jav       JS Button, JS popor         Module:4       Exter         Introduction, Struct       Language Transform         Module:5       Basic         Introduction to PH       Module:6         Serve       Creating Form Con	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS down Script a Scripts, Objects in Java Script, Dynamic HTML with Java S ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL) PHP Programs IP, Numbers and Strings, Literals and Variables, Operators and trols, Using Values Returned From, Forms Using PHP - User	Sheets Aeta El S Text cript, B ies, Ex d Func	(CS: leme: , CS Boots	<b>S</b> ) nts, ( S for trap trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles 6 ho ys. 7 ho	our din CS our ller hee
Module:2       Hype         Basic HTML page         Style Sheets: Inline         components drop d         Module:3       Java S         Introduction to Jav         JS Button, JS popor         Module:4       Exter         Introduction, Struct         Language Transform         Module:5       Basic         Introduction to PH         Module:6       Serve         Creating Form Con         Session, Authorizat	ertext Mark Up Language (HTML) and Cascading Style S , Text Formatting, Table, Headers, Linking, Images, List, M e, Internal and External Style Sheet, Bootstrap - CS down Script a Scripts, Objects in Java Script, Dynamic HTML with Java S ver, Document Object Model (DOM) with JavaScript nsible Markup Language (XML) cturing Data, Document Type Definition, XML Vocabular ms (XSL) PHP Programs IP, Numbers and Strings, Literals and Variables, Operators and trols, Using Values Returned From, Forms Using PHP - User	Sheets Aeta El S Text cript, B ies, Ex d Func	(CS: leme: , CS Boots	<b>S</b> ) nts, ( S for trap trap	6 ho Casca rms, 8 ho - JS A 6 ho Styles 6 ho ys. 7 ho	our din CS our ler hee our ing

Connecting to MySQL Server, Selecting Databases, Checking for Errors, Closing the MySQL Server





Cor	nnection, Inserting, Viewing, Updating an	nd Deleting Recon	ds, Manipu	lating joined tables.	
	dule:8 Contemporary issues				2 hours
Gue	est lecture by industry experts				
			Total Le	cture hours:	45 hours
	kt Book				
1.	Paul Deitel, Harvey Deitel, Abbey De	itel, Internet & V	Vorld Wide	Web - How to Pro	ogram, 2020 6ª
	edition, Pearson Education.				
Ref	erence Books				
1.	Fritz Schneider, Thomas Powell, JavaS	Script – The Com	plete Refere	ence, 2017, 3 rd Editi	on, McGraw
	Hill.				
2.	Steven Holzener, PHP – The Complet	e Reference,2017	, 1 st Edition	, Mc-Graw Hill	
	de of Evaluation: CAT / Assignment	/ Quiz / FAT /	Project /	Seminar	
	t of Experiments				
1.	Design static web pages required for an			8	
2.	a. Write JavaScript program to validate	the fields require	ed for Book	Store - registration	page.
	b. Create and Validate the Login page				
	c. After successful login, update the bo	ook details dynam	ically.		
3.	a. Write an XML file which will display				wing:
	Title of the book, Author Name, ISBN	N number, Publisł	ner name, E	dition, Price	
	b. Write a Document Type Definition	(DTD) to validat	e the above	XML file.	
4.	a. Write PHP Program to Convert all t	he previous form	s (Book Sto	re Registration Pag	e and Login
	Page) to PHP forms.				
	b. Define Cart to select books and num	nber of books, m	aintain Sessi	ion for the page.	
	c. Validate the Session data before com	pleting the Orde	r.		
5.	Write a PHP Code to make database co	onnection and pe	rform vario	us CRUD operation	ns
		*	To	otal Laboratory H	ours 30 hours
	de of Assessment: Assessments/Midt		1	-	
	commended by Board of Studies	22-05-2021	1		
App	proved by Academic Council	No. 62	Date	15-07-2021	



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

### CURRICULUM (2019 - 2020)

Course C		L	Τ	Р	J	C
CBS301		3	0	0	0	3
Pre-requisite	NIL	S	yllab			m
				v.1.(	)	
Course Objec						
	owledge about IS Auditing procedures					
	the acquisition and development of IS controls					
3.Implementat	ion of Disaster Recovery Planning in an organization					
Expected Cor	urse Outcome:					
1. Identify the	procedures involved in auditing process.					
2.Understandin	ng of policies, procedures and standards in Information System manage	gemen	nt			
3.Describe the	disaster recovery plan and Business Continuity Plan					
4.Identify the r	maintenance and support activities in ISA					
5. Understand	the IS network Infrastructure and assets protection					
	1					
Module:1	Process of Auditing IS				6 ho	u
	of IS Audit Function – Risk Analysis – Internal Controls – Performin	g an I	S Au	dit –		
-	t – The Evolving IS Audit process	5				
Module:2	Governance and Management of IT				7 ho	
	vernance – IS Strategy – IT Investment and allocation processes - Po	licies	and	Proc		
-	nent – IS Management practices –IS Organizational structure and res					
-	nning – Auditing Business Continuity	ponsi	omu	_3 — 1	Dush	IC:
Continuity Fia.	Inning – Auditing Business Continuity					
Module:3	IS Operations, Maintenance and Support				7 ho	
	- IS Hardware –IS Architecture and Software – IS Network Inf	Frostru	cture	<b>`</b>		
		lastiu	cture	. – .	Tuui	111
	and Operations				<b>7</b> 1	
Module:4	IS Acquisition, Development and DRP				7 ho	
A 11.1 A 1					D.	ste
0 11	ication Controls - Auditing Systems Development Acquisition and	Maint	enano	ce –	Disa	
0 11	ication Controls - Auditing Systems Development Acquisition and	Maint	enano	ce –	Disa	
Recovery Plan	ication Controls – Auditing Systems Development Acquisition and I ning	Maint	enano	ce –		
Recovery Plan: Module:5	ication Controls – Auditing Systems Development Acquisition and Ining Protection of Information Assets				8 ho	
Recovery Plan Module:5 Importance of	ication Controls – Auditing Systems Development Acquisition and Ining Protection of Information Assets f Information Security Management - Logical Access – Network	Infras	truct	ure S	8 ho Secur	rity
Recovery Plan Module:5 Importance of	ication Controls – Auditing Systems Development Acquisition and Ining Protection of Information Assets	Infras	truct	ure S	8 ho Secur	rit
Recovery Plan Module:5 Importance of Auditing Info	ication Controls – Auditing Systems Development Acquisition and Ining Protection of Information Assets f Information Security Management - Logical Access – Network	Infras	truct	ure S	8 ho Secur	rit
Recovery Plan Module:5 Importance of Auditing Info	ication Controls – Auditing Systems Development Acquisition and Ening Protection of Information Assets f Information Security Management - Logical Access – Network rmation Security Management Framework - Environmental Exp	Infras	truct	ure S	8 ho Secur	rity
Recovery Plan Module:5 Importance of Auditing Info Physical Acces	ication Controls – Auditing Systems Development Acquisition and Ening Protection of Information Assets f Information Security Management - Logical Access – Network rmation Security Management Framework - Environmental Exp	Infras	truct	ure S	8 ho Secur	rity ol
Recovery Plan Module:5 Importance of Auditing Info Physical Acces Module:6	ication Controls – Auditing Systems Development Acquisition and Ining Protection of Information Assets f Information Security Management - Logical Access – Network rmation Security Management Framework - Environmental Exp s Exposures and Controls System Management	Infras	truct s an	ure S d Co	8 ho Secur ontro 4 ho	rity ol
Recovery Plan Module:5 Importance of Auditing Info Physical Acces Module:6 IT processes -	ication Controls – Auditing Systems Development Acquisition and Ining         Protection of Information Assets         f Information Security Management - Logical Access – Network         rmation Security Management Framework - Environmental Exposures and Controls	Infras	truct s an	ure S d Co	8 ho Secur ontro 4 ho	
Recovery Plan Module:5 Importance of Auditing Info Physical Acces Module:6 IT processes - Maintenance- 0	ication Controls – Auditing Systems Development Acquisition and Ining         Protection of Information Assets         f Information Security Management - Logical Access – Network         rmation Security Management Framework - Environmental Exposures and Controls         System Management         Systems Software - Label Checking - Library Protection – Memor         Open Systems – Database Technology - Auditing DBMS Recovery	Infras	truct s an	ure S d Co on –	8 ho Secur ontro 4 ho Syste	nity ol
Recovery Plan Module:5 Importance of Auditing Info Physical Acces Module:6 IT processes - Maintenance- ( Module 7	ication Controls – Auditing Systems Development Acquisition and Ining         Protection of Information Assets         f Information Security Management - Logical Access – Network         rmation Security Management Framework - Environmental Exp         s Exposures and Controls         System Management         Systems Software - Label Checking - Library Protection – Memor         Open Systems – Database Technology - Auditing DBMS Recovery         Application Control and Maintenance	Infras posure y Pro	truct s and tectic	ure S d Co on –	8 ho Secur ontro 4 ho Syste 4 ho	rity ol oui em
Recovery Plan Module:5 Importance of Auditing Info Physical Acces Module:6 IT processes - Maintenance- O Module 7 Application Ri	ication Controls – Auditing Systems Development Acquisition and Ining         Protection of Information Assets         f Information Security Management - Logical Access – Network         rmation Security Management Framework - Environmental Exposures and Controls         System Management         Systems Software - Label Checking - Library Protection – Memor         Open Systems – Database Technology - Auditing DBMS Recovery         Application Control and Maintenance         sks- End User Computing Application Risks-Electronic data Interch	Infras posure y Pro	truct s and tection	ure S d Co on –	8 ho Secur ontro 4 ho Syste 4 ho n Ris	rit ol ou en ou sk
Recovery Plan Module:5 Importance of Auditing Info Physical Acces Module:6 IT processes - Maintenance- O Module 7 Application Ri Application C	ication Controls – Auditing Systems Development Acquisition and Ining         Protection of Information Assets         f Information Security Management - Logical Access – Network         rmation Security Management Framework - Environmental Exp         s Exposures and Controls         System Management         Systems Software - Label Checking - Library Protection – Memor         Open Systems – Database Technology - Auditing DBMS Recovery         Application Control and Maintenance	Infras posure y Pro	truct s and tection	ure S d Co on –	8 ho Secur ontro 4 ho Syste 4 ho n Ris	rit ol ou en ou sk





Mo	dule 8	Contemporary Issues				2 hours
Gu	est lecture l	by Industry Experts or R&D of	organization		<u>.</u>	
				Total Le	cture hours:	45 hours
Te	xt Book(s)				<u>.</u>	
1.	Sandra Se	enft, Frederick Gallegos, Ale	eksandra Davis, Ir	nformation	Technology Con	ntrol and Audit,
	2013, 4 th e	edition, Auerbach Publications	5.			
2.	Angel R.	Otero, Information Technolog	gy Control and Au	dit, 2019, 5	th edition, CRC P	ress.
Re	ference Bo	ooks				
1.	Jack J. Cł	namplain, Auditing Informatio	on Systems, 2003, 2	2 nd edition,	Wiley publishers.	
2.	Ron Web	er, Information System Contr	ol and Audit, 2014	, 4 th edition	n, Pearson Publica	ition
Mo	ode of Eval	luation: CAT / Assignment	/ Quiz / FAT /	Project /	Seminar	
Re	commende	ed by Board of Studies	22-05-2021			
Ap	proved by	Academic Council	No. 62	Date	15-07-2021	





Course Code	Course Title	L	Τ	Р	J	С
CBS3016	Cognitive Science & Analytics	3	0	2	0	4
Pre-requisite	NIL		Syll	abus	versi	ion
				v.1	.0	
Course Objectives						
	the way in which cognitive science is methodologically dist					
	iplinary field where established fields of research-inclu	iding l	Psych	ology	y, Co	mput
	stics, Neuroscience.					
	ls in analyzing, interpreting, and assessing the empirical data	a and re	esearc	ch teo	chniqu	ies th
contribute to co	0					
	central modeling techniques in cognitive science, includ			nal co	ompu	tation
approaches, neu	aral network/deep learning approaches, and dynamical appr	oaches				
Europeted Courses	Outcomo					
Expected Course 1. To understand	the basic principles and process of cognitive science					
	lerstand the learning model and apply the same to appropria	te <del>r</del> eal	world	lann	licatio	ns
	te qualitative and quantitative skill and critical thinking on					
	odology to real world applications	coginu			. Dy a	рртуп
	inderstand and apply declarative and logic models					
0	concept of cognitive learning			1	1.	
6. To demonstra	te the acquired inter-disciplinary knowledge in language 1	process	ing a	nd aj	pplica	tion o
6. To demonstra		process	ing a	nd aj	pplica	tion o
6. To demonstra different resea	te the acquired inter-disciplinary knowledge in language f rch approaches with cognitive science	orocess	ing a	nd a		
6. To demonstra different resea Module:1 Int	te the acquired inter-disciplinary knowledge in language 1					7 hou
6. To demonstra different resea Module:1 Int Introduction to the	tte the acquired inter-disciplinary knowledge in language f rch approaches with cognitive science roduction to Cognitive Science	guage:	defin	ition	Affo	7 <b>hou</b> rdance
6. To demonstra different resea Module:1 Int Introduction to the	tte the acquired inter-disciplinary knowledge in language p rch approaches with cognitive science roduction to Cognitive Science e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema	guage:	defin	ition	Affo	7 <b>hou</b> rdanc
6. To demonstra different resea Module:1 Int Introduction to the Categories and con	tte the acquired inter-disciplinary knowledge in language p rch approaches with cognitive science roduction to Cognitive Science e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema	guage:	defin	ition	Affo	7 <b>hou</b> rdance
<ol> <li>To demonstradifferent resea</li> <li>Module:1 Introduction to the Categories and con perception, Logic; I</li> <li>Module:2 Co</li> </ol>	<pre>ite the acquired inter-disciplinary knowledge in language p rch approaches with cognitive science roduction to Cognitive Science e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. ncept Hierarchies</pre>	guage: intics, (	defin fand p	ition pragn	Affo natics)	7 hou: rdance ) Dire 7 hou:
6. To demonstra different resea Module:1 Int Introduction to the Categories and con perception, Logic; I	<pre>ite the acquired inter-disciplinary knowledge in language p rch approaches with cognitive science roduction to Cognitive Science e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. ncept Hierarchies</pre>	guage: intics, (	defin fand p	ition pragn	Affo natics)	7 hour rdance ) Dire 7 hour
<ol> <li>To demonstra different resea</li> <li>Module:1 Introduction to the Categories and con perception, Logic; I</li> <li>Module:2 Co</li> <li>A brief history of c</li> </ol>	<pre>ite the acquired inter-disciplinary knowledge in language p rch approaches with cognitive science roduction to Cognitive Science e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. ncept Hierarchies</pre>	guage: intics, ( e brain	defin fand p	ition pragn	Affo natics)	7 hou rdance ) Dire 7 hou wledg
<ol> <li>To demonstradifferent resea</li> <li>Module:1 Introduction to the Categories and con perception, Logic; I</li> <li>Module:2 Co</li> <li>A brief history of c</li> <li>Syntax, semantics,</li> </ol>	<pre>ite the acquired inter-disciplinary knowledge in language prch approaches with cognitive science roduction to Cognitive Science e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. ncept Hierarchies ognitive science. Processing of sensory information in th</pre>	guage: intics, ( e brain g men	defin fand p , Ling	ition pragn guistion s Me	Affonatics)	7 hou rdanc ) Dire 7 hou wledg
<ol> <li>To demonstradifferent resea</li> <li>Module:1 Introduction to the Categories and conperception, Logic; I</li> <li>Module:2 Co</li> <li>A brief history of c</li> <li>Syntax, semantics, concerns in philoso</li> </ol>	the the acquired inter-disciplinary knowledge in language prediction to Cognitive science <b>Froduction to Cognitive Science</b> te study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema: Machine learning. <b>Incept Hierarchies</b> ognitive science. Processing of sensory information in the (and pragmatics), Ecological Psychology, constructing	guage: intics, ( e brain g men	defin fand p , Ling	ition pragn guistion s Me	Affonatics)	7 hou: rdance ) Dire 7 hou: wledg ologic
<ol> <li>To demonstradifferent resea</li> <li>Module:1 Introduction to the Categories and conperception, Logic; I</li> <li>Module:2 Co</li> <li>A brief history of c</li> <li>Syntax, semantics, concerns in philosolinguistic, Affordan</li> </ol>	the the acquired inter-disciplinary knowledge in language prediction to Cognitive science <b>roduction to Cognitive Science</b> e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. <b>ncept Hierarchies</b> ognitive science. Processing of sensory information in the (and pragmatics), Ecological Psychology, constructing ophy, Discretization and generating concept hierarchies, Date learning in robotics, Explicit vs. implicit memory	guage: intics, ( e brain g men	defin fand p , Ling	ition oragn guistio	Affonatics) c kno ethoden, Gen	7 hou rdance ) Dire 7 hou wledg ologic nerativ
<ol> <li>To demonstradifferent resea</li> <li>Module:1 Int Introduction to the Categories and con perception, Logic; I</li> <li>Module:2 Co A brief history of c Syntax, semantics, concerns in philoso linguistic, Affordan</li> <li>Module:3 A</li> </ol>	the the acquired inter-disciplinary knowledge in language prediction to Cognitive science troduction to Cognitive Science te study of cognitive sciences. Neural Network Models- language prediction to Cognitive sciences. Neural Network Models- language prediction in the science science is study of cognitive science. Neural Network Models: Syntax, semical Machine learning. Incept Hierarchies ognitive science. Processing of sensory information in the science. Processing of sensory information in the prediction and generating concept hierarchies, Data ce learning in robotics, Explicit vs. implicit memory Inatomy of brain	guage: intics, ( e brain g men ta Min	defin fand p , Ling nories ing Sy	ition pragn guistion Me ystem	Affonatics)	7 hour rdance ) Direc 7 hour wledg ologic nerativ
6. To demonstradifferent resea         Module:1       Int         Introduction to the Categories and conperception, Logic; I         Module:2       Co         A brief history of c         Syntax, semantics, concerns in philoso         linguistic, Affordan         Module:3       A	the the acquired inter-disciplinary knowledge in language prechapproaches with cognitive science <b>roduction to Cognitive Science</b> e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. <b>ncept Hierarchies</b> ognitive science. Processing of sensory information in the (and pragmatics), Ecological Psychology, constructing ophy, Discretization and generating concept hierarchies, Date learning in robotics, Explicit vs. implicit memory <b>natomy of brain</b> ce and psychology, Brain Imaging, Brain and language, Af	guage: antics, ( e brain g men ta Min fordanc	defin and p , Ling nories ing Sy	ition pragm guistio s Me ystem	Affonatics) c kno ethode n, Ger	7 hour rdance ) Dire 7 hour wledg ologic nerativ
6. To demonstra different resea Module:1 Int Introduction to the Categories and con perception, Logic; I Module:2 Co A brief history of c Syntax, semantics, concerns in philoso linguistic, Affordan Module:3 A Artificial intelligence	The term of the acquired inter-disciplinary knowledge in language prechapproaches with cognitive science Troduction to Cognitive Science Troduction to Cognitive Science The study of cognitive sciences. Neural Network Models- language, Concept learning: Linguistic knowledge: Syntax, sema: Machine learning. The study of science. Processing of sensory information in the generating concept hierarchies, Data ce learning in robotics, Explicit vs. implicit memory The study of brain The and psychology, Brain Imaging, Brain and language, Affesting (three-boxes) model of memory Structure and constitution of the study of memory Structure and constitution of the study of the study.	guage: intics, ( e brain g men ta Min fordance	defin and p , Ling nories ing Sy ce lea	ition pragm guistion s Me ystem rning prain	Affonatics)	7 hou: rdance ) Dire 7 hou: wledg ologic nerativ 7 hou: obotic EMRI,
6. To demonstradifferent resea         Module:1       Int         Introduction to the Categories and conperception, Logic; I         Module:2       Co         A brief history of c         Syntax, semantics, concerns in philoso         linguistic, Affordan         Module:3       A	The term of the acquired inter-disciplinary knowledge in language prechapproaches with cognitive science Froduction to Cognitive Science Froduction to Cognitive Science Froduction to Cognitive sciences. Neural Network Models- language, Syntax, sema Machine learning: Linguistic knowledge: Syntax, sema Machine learning. Incept Hierarchies Ognitive science. Processing of sensory information in the science of sensory information in the sensory of sensory information in the	guage: intics, ( e brain g men ta Min fordance	defin and p , Ling nories ing Sy ce lea	ition pragm guistion s Me ystem rning prain	Affonatics)	7 hou: rdance ) Dire 7 hou: wledg ologic nerativ 7 hou: obotic EMRI,
<ol> <li>To demonstradifferent resea</li> <li>Module:1 Int Introduction to the Categories and conperception, Logic; I</li> <li>Module:2 Co</li> <li>A brief history of c</li> <li>Syntax, semantics, concerns in philoso</li> <li>linguistic, Affordan</li> <li>Module:3 A</li> <li>Artificial intelligend</li> <li>Information process</li> <li>MEG, Language d</li> </ol>	The term of the acquired inter-disciplinary knowledge in language prechapproaches with cognitive science Troduction to Cognitive Science Troduction to Cognitive Science The study of cognitive sciences. Neural Network Models- language, Concept learning: Linguistic knowledge: Syntax, sema: Machine learning. The study of science. Processing of sensory information in the generating concept hierarchies, Data ce learning in robotics, Explicit vs. implicit memory The study of brain The and psychology, Brain Imaging, Brain and language, Affesting (three-boxes) model of memory Structure and constitution of the study of memory Structure and constitution of the study of the study.	guage: intics, ( e brain g men ta Min fordance	defin and p , Ling nories ing Sy ce lea	ition pragm guistion s Me ystem rning prain	Affonatics) c kno ethoden, Ger g in re fammer	7 hou rdance ) Dire 7 hou wledg ologic herativ 7 hou obotic TMRI, y.
6. To demonstra different resea Module:1 Int Introduction to the Categories and con perception, Logic; I Module:2 Co A brief history of c Syntax, semantics, concerns in philoso linguistic, Affordan Module:3 A Artificial intelligence Information process MEG, Language d	the the acquired inter-disciplinary knowledge in language prechapproaches with cognitive science <b>roduction to Cognitive Science</b> e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. <b>ncept Hierarchies</b> ognitive science. Processing of sensory information in the (and pragmatics), Ecological Psychology, constructing ophy, Discretization and generating concept hierarchies, Date learning in robotics, Explicit vs. implicit memory <b>natomy of brain</b> ce and psychology, Brain Imaging, Brain and language, After science, Development Information processing (three-boxes)	guage: antics, ( e brain g men ta Min fordanc ents of oxes) n	defin and p and p , Ling nories ing Sy ce lea the b nodel	ition pragn guistio s Me ystem rning prain of m	Affonatics) c kno ethoden, Gen	7 hour rdance ) Direct 7 hour wledg ologic nerativ 7 hour obotic MRI, y.
6. To demonstradifferent resea         Module:1       Int         Introduction to the Categories and comperception, Logic; I         Module:2       Co         A brief history of c         Syntax, semantics, concerns in philoso         linguistic, Affordan         Module:3       A         Artificial intelligence         Information process         MEG, Language d         Module:4       M         Brief history of ne	tte the acquired inter-disciplinary knowledge in language prehapproaches with cognitive science roduction to Cognitive Science e study of cognitive sciences. Neural Network Models- lan cepts; Concept learning: Linguistic knowledge: Syntax, sema Machine learning. ncept Hierarchies ognitive science. Processing of sensory information in th , (and pragmatics), Ecological Psychology, constructing ophy, Discretization and generating concept hierarchies, Da ice learning in robotics, Explicit vs. implicit memory matomy of brain ce and psychology, Brain Imaging, Brain and language, Af ssing (three-boxes) model of memory Structure and constitu isorders, Development Information processing (three-b Memory Models	guage: intics, ( e brain g men ta Min fordance ents of oxes) n	defin and p and p , Ling nories ing Sy ce lea the b nodel nent	ition pragm guistion s Me ystem rning prain of m Sens	Affonatics)	7 hour rdance ) Direct 7 hour wledg ologic herativ 7 hour obotic FMRI, y.





Mod	lule:5	Sensory Information fusion	5 hours
		odels Information fusion, the great past tense debate, Human visu	
		beet theory; Heuristics and biases Looking at brain signals.	lai attenuon, Dounded
Taulo	fianty, P108	sect meory, meunsues and biases Looking at brain signais.	
Mod	lule:6	Modelling	6 hours
		to cognition, The great past tense debate, Computational mod	
		omputers, Cybernetics, Cognitivist and emergent stand points, Con	,
	-	bints in social cognition,	-pourional mouels of
utter			
Mod	lule:7	Information processing	5 hours
Proc	essing of se	nsory information in the brain. From physics to meaning, Analog vs	. Digital: Code duality.
	-	ective, Applications of computational models of attentional Context	
	mas; Social		)***8
Mod	lule:8	Contemporary issues	2 hours
		Industry Experts or R&D organization	
		Total Lecture hours	45 hours
	t Book		
1.	Pradeep	KumarMallick, Samarjeet Borah," Emerging Trends and Appli	cations in Cognitive
	Computin	g", 2019, IGI Global Publishers.	
Refe	rence Boo	ks	
1.	Jose Luis	Bermudez, "Cognitive Science: An Introduction to the Science	of the Mind", 2020
	Cambridge	e University Press, New York.	
Mod	le of Evalu	ation: CAT / Assignment / Quiz / FAT / Project / Seminar	
		ging Experiments (Indicative)	
1.		and practice: Cognitive Science and its methodology concerns in phil	1 /
2.		ntal approach to studying the working human brain and body. How to	use Brain Voyager
-		or. How to use the BESA dipole simulator.	
3.	1	ntal approach to processing sensory information in the brain using pyt	
4.		and practice: Written materials needed to get a CogNeuro research st	
5.		ff the ground: Runsheets, SOPs, questionnaires, informed consent for on to EEG recordings. Theory, physiology, practicalaspects of record	
5.		ded brain potentials.	
6.	-	ysis: How to get from the raw recording to specific brain waves. An ex	xample analysis.
7.		temming operation in python using NLTK	J
8.		emmatization in python using NLTK	
9.		arts of speech tagging in python using NLTK	
10.	-	d running Robot programs – Activity of PICK and Place of an object	
11.	-	lation model using Rockwell ARENA 11.0 to show the functions / p	
		ring work cell.	
12.		n modelling of four machine system using Rockwell ARENA 11.0.	
13.		rtificial Neural Network by implementing the Backpropagation algori	thm and test the same
	using appr	opriate data sets.	



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CURRICULUM (2019 - 2020)

14.	Evaluating ML algorithm with bala	nced and unb	alanced	datasets Comparison of Machi	ine Le	arning
	algorithms.					
15.	Apply EM algorithm to cluster a se	t of data store	ed in a .C	CSV file. Use the same data, se	t for c	lustering
	using k- Means algorithm. Compar	e the results o	of these t	wo algorithms and comment o	on the	quality
	of clustering. You can add Java/Py	thon ML libra	ary classe	s/API in the program.		
				Total Laboratory H	ours	30 hours
Mod	le of Assessment: Assessment/Mi	dterm Exam	h/FAT	-		
Rece	ommended by Board of Studies	22-05-2021				
App	roved by Academic Council	No. 62	Date	15-07-2021		





Course Code	Course title	L	T	Р	J	С
CBS4001	Robotics and Embedded Systems	3	0	2	0	4
Pre-requisite	NIL	5	Sylla	ous v	versi	on
				v. 1.	0	
Course Objectives:						
	oncepts of embedded system design, peripherals and its model	ing				
-	tance of RTOS and illustrate various real world examples					
3. To introduce basics	s of robot, mathematics and its applications					
<b>F</b> 10 0						
Expected Course O						
	edge about embedded system design and basics of robot.		1 1	dar		: +la
2. Ability to unders microcontrollers.	stand the internal architecture and interfacing of different	perip	nera	dev	ices	With
	and the modelling of hardware software requirements and the	r trac	le-of	fs.		
•	nd its issues for real time system design					
	us real world case studies					
	a component or a product applying all the relevant stand	lards	and	wit	ງ <b>ຕ</b> ອງ	alistic
constraints	a component of a produce appring an the recount sum	auruo	unu		.1 100	lioure
constituints						
Module:1 Intr	oduction to Embedded System				5 h	ours
	s General computing systems, History of Embedded systems,	Pur	pose	of E		
systems, Microproces	sor and Microcontroller, Hardware architecture of the real tim	e sys	tems			
		e sys	tems			
Module:2 Dev	vices and Communication Buses					
Module:2DevI/O types, serial and	vices and Communication Buses parallel communication devices, wireless communication devi	ices,	timen	and	cou	nting
Module:2DevI/O types, serial and devices, watchdog time	vices and Communication Buses parallel communication devices, wireless communication dev mer, real time clock, serial bus communication protocols,	ices, paral	timer lel co	and	cou iunic	nting
Module:2DevI/O types, serial and devices, watchdog time	vices and Communication Buses parallel communication devices, wireless communication devi	ices, paral	timer lel co	and	cou iunic	0
Module:2 Dev I/O types, serial and devices, watchdog tin network using ISA, P	vices and Communication Buses parallel communication devices, wireless communication devi mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols	ices, paral	timer lel co	and	cou iunic oth.	nting ation
Module:2DevI/O types, serial and devices, watchdog tin network using ISA, PModule:3Pro	vices and Communication Buses parallel communication devices, wireless communication devi mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling	ices, paral , USI	timer lel co 3, Blu	and and aetoo	cou iunic oth. 6 h	nting ation
Module:2DevI/O types, serial and devices, watchdog tim network using ISA, PeModule:3Pro Concepts, Fundamer	vices and Communication Buses parallel communication devices, wireless communication devi mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode	ices, paral , USI lling	timer lel co 3, Blu Lang	and ann aetoc	cou iunic oth. <u>6 h</u> e (U	nting ation ours ML),
Module:2DevI/O types, serial and devices, watchdog tin network using ISA, PModule:3Pro Concepts, Fundament Hardware Software tree	vices and Communication Buses parallel communication devices, wireless communication devi mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling	ices, paral , USI lling	timer lel co 3, Blu Lang	and ann aetoc	cou iunic oth. <u>6 h</u> e (U	nting ation ours ML),
Module:2DevI/O types, serial and devices, watchdog tim network using ISA, PeModule:3Pro Concepts, Fundamer	vices and Communication Buses parallel communication devices, wireless communication devi mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode	ices, paral , USI lling	timer lel co 3, Blu Lang	and ann aetoc	cou iunic oth. <u>6 h</u> e (U	nting ation ours ML),
Module:2DevI/O types, serial and devices, watchdog tin network using ISA, PModule:3ProModule:3ProConcepts, Fundamer Hardware Software tr system.	vices and Communication Buses parallel communication devices, wireless communication devi- mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m	ices, paral , USI lling	timer lel co 3, Blu Lang	and ann aetoc	cou ounic oth. 6 h e (U proc	nting ation ours ML), essor
Module:2       Dev         I/O types, serial and       devices, watchdog times         network using ISA, Peroperative       Module:3         Module:3       Program         Hardware Software transference       Hardware transference         Module:4       Read	vices and Communication Buses parallel communication devices, wireless communication devi- mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m	ices, paral , USI lling nodel	timer lel co 3, Bh Lang for r	and omm uetoo guag nulti	cou nunic oth. 6 h e (U proc 7 h	nting ation ours ML),
Module:2DevI/O types, serial and devices, watchdog tim network using ISA, PModule:3ProConcepts, Fundament Hardware Software tr system.Module:4ReaOperating systemImage: Software tr	vices and Communication Buses parallel communication devices, wireless communication devi- mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m	ices, paral , USI lling nodel	timer lel co 3, Bh Lang for r	and omm uetoo guag nulti	cou nunic oth. 6 h e (U proc 7 h	nting ation ML), essor
Module:2DevI/O types, serial and devices, watchdog tim network using ISA, PModule:3ProConcepts, Fundament Hardware Software tr system.Module:4ReaOperating systemImage: Software tr	<b>Prices and Communication Buses</b> parallel communication devices, wireless communication devices, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols <b>gram Modelling</b> ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m <b>LTime Operating Systems</b> basics, Tasks, Process and Threads, Multiprocessing a	ices, paral , USI lling nodel	timer lel co 3, Bh Lang for r	and omm uetoo guag nulti	cou nunic oth. 6 h e (U proc 7 h	nting ation ML), essor
Module:2DevI/O types, serial and devices, watchdog tin network using ISA, PeModule:3Pro Pro Concepts, Fundament Hardware Software tr system.Module:4Rea Operating system I communication, task	<b>Prices and Communication Buses</b> parallel communication devices, wireless communication devices, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols <b>gram Modelling</b> ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m <b>LTime Operating Systems</b> basics, Tasks, Process and Threads, Multiprocessing a	ices, paral , USI lling nodel	timer lel co 3, Bh Lang for r	and omm uetoo guag nulti	cou uunic oth. 6 h e (U proc 7 h ing,	nting ation ML), essor
Module:2DevI/O types, serial and devices, watchdog tin network using ISA, PaModule:3ProConcepts, Fundament Hardware Software tr system.Module:4ReaOperating system I communication, taskModule:5Exa	<b>vices and Communication Buses</b> parallel communication devices, wireless communication devi- mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols <b>gram Modelling</b> ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m <b>LTime Operating Systems</b> basics, Tasks, Process and Threads, Multiprocessing a synchronization, qualities of good RTOS.	ices, paral , USI lling nodel und	timer lel co 3, Blu Lang for r mult	and omm uetoo guag nulti	cou uunic oth. 6 h e (U proc 7 h ing, 7 h	nting ation ours ML), essor task
Module:2DevI/O types, serial and devices, watchdog tim network using ISA, PeModule:3ProConcepts, Fundamer Hardware Software tr system.Module:4ReaOperating system I communication, taskModule:5ExaMobile phones, RFI	vices and Communication Buses parallel communication devices, wireless communication dev mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m d Time Operating Systems basics, Tasks, Process and Threads, Multiprocessing a synchronization, qualities of good RTOS.	ices, paral , USI lling nodel und	timer lel co 3, Blu Lang for r mult	and omm uetoo guag nulti	cou uunic oth. 6 h e (U proc 7 h ing, 7 h	nting ation ours ML), essor task
Module:2DevI/O types, serial and devices, watchdog tin network using ISA, PoModule:3ProConcepts, Fundamer Hardware Software tr system.Module:4ReaOperating system I communication, taskModule:5ExaMobile phones, RFI Popular microcontrol	vices and Communication Buses parallel communication devices, wireless communication devi- mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m d Time Operating Systems basics, Tasks, Process and Threads, Multiprocessing a synchronization, qualities of good RTOS.	ices, paral , USI lling nodel und	timer lel co 3, Blu Lang for r mult	and omm uetoo guag nulti	cou uunic oth. 6 h e (U proc 7 h ing, 7 h rface	nting ation ML), essor task task
Module:2DevI/O types, serial and devices, watchdog time network using ISA, PeModule:3Program Program Concepts, Fundament Hardware Software transfer System.Module:4Rea Operating system I communication, taskModule:5Exa Mobile phones, RFI Popular microcontrolModule:6Intra	vices and Communication Buses parallel communication devices, wireless communication devi- mer, real time clock, serial bus communication protocols, CI, PCT-X, and Internet embedded system network protocols gram Modelling ntal issues in Hardware software co-design, Unified Mode rade-offs - DFG model, state machine programming model, m d Time Operating Systems basics, Tasks, Process and Threads, Multiprocessing a synchronization, qualities of good RTOS.	ices, paral , USI lling nodel und	timer lel co 3, Blu Lang for r mult	and omm uetoo guag nulti	cou uunic oth. 6 h e (U proc 7 h ing, 7 h rface	nting ation ours ML), essor task



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### CURRICULUM (2019 - 2020)

Mo	dule:7	Kinematics and Algorith	ms			7 hours
Kin	ematics of s	erial robots, Kinematics of	parallel robots,	Motion plann	ing and cont	rol, Sensing distance
and	direction, Li	ne Following Algorithms, F	eedback System	ns, Other topic	s on advance	robotic techniques
	dule:8	Contemporary issues				2 hours
Gue	est lecture by	Industry Experts or R&D of	organization			
				Total Lectur	10 10 000 000	45 hours
Tar	$\mathbf{T} = \mathbf{D} = \mathbf{D} \mathbf{D} \mathbf{D}$			Total Lectur	re nours:	45 nours
1 ex	t Book(s)	V, "Introduction to Embedo	ded Systems" 2	nd Edition Mc	Graw Hill 20	)17
2.		Ghosal, "Robotics: Fundame				
	erence Boo		intal Concepts :	and marysis,		cisity 11035, 2000.
1.		, "Embedded Systems: An	Integrated Ar	proach" 1st e	dition Dears	on Education India
1.	2012.	, Embedded Systems. Am	megrated M	proach ,1st e	union, i caiso	on Education mula,
2.		l, "Embedded Systems- Ar	chitecture Pro	oramming and	Design" 3r	d Edition McGraw
		ation, 2017.	eniteetare, 110		, besign , si	d Edition, meetaw
Mo		ation: CAT / Digital Assig	enment / Oui	z / FAT / La	b	
		, , , , , , , , , , , , , , , , , , , ,		, ,	-	
List	of Challen	ging Experiments (Indica	tive)			
1.		Operations using 8051				
2.	Interfacing	ADC and DAC				
3.	Interfacing	LED and PWM				
4.	Interfacing	real time clock and serial po	rt			
5.	Interfacing	keyboard and LCD				
6.	Flashing LE	EDS				
7.	Interfacing	stepper motor and temperat	ure sensor			
8.	Study of rol	potic arm and its configurati	ons			
9.	Study of rol	potic end effectors				
				Total Laborat	•	30 hours
				FAT / Project	t	
		by Board of Studies	29-01-2021		10.00.0004	
App	proved by A	cademic Council	No. 61	Date	18-02-2021	





CBS4002Cryptology and Analysis300003Pre-equisiteNILSyllabus versionCourse Objectives:	Course Code	Course Title	L	Т	Р	J	С
Course Objectives:       v.1.0         1. To learn the emerging concepts of cryptography and algorithms       v.1.0         2. To defend the security attacks on information systems using secure algorithms and Authentication process       s.1.0         3. To categorize and analyze the key concepts of cryptanalysis and quantum cryptography       Expected Course Outcome:         1. Infer the need of security to introduced strong cryptosystems.       2. Analyze the cryptographic algorithms for information security.         3. Identify the need of security to introduced strong cryptographic secure communication and challenges related to the secure applications       5. Ability to identify the need of quantum cryptographic solutions.         Module:1       Introduction to Cryptography       6 hours         Introduction to Cryptography: Elementary number theory, Pseudo-random bit generation, Elementary cryptosystems.       8 hours         Basic security services: confidentiality, integrity, availability, non-repudiation, privacy       8 hours         Module:2       Basic Symmetric Key Cryptosystems       8 hours         Stream Cipher: Basic Ideas, Hardware and Software Implementations, Examples with some prominent ciphers: DES, AES, Modes of Operation; Hash Functions; Authentication       9 hours         Module:3       Advanced Symmetric Key Cryptosystems       5 hours         Block Ciphers: DES, AES, Modes of Operation; Hash Functions; Authentication       9 hours         RSA, ECC; Digital signatures <t< td=""><td>CBS4002</td><td>Cryptology and Analysis</td><td>3</td><td>0</td><td>0</td><td>0</td><td>3</td></t<>	CBS4002	Cryptology and Analysis	3	0	0	0	3
Course Objectives:         1. To learn the emerging concepts of cryptography and algorithms         2. To defend the security attacks on information systems using secure algorithms and Authentication process         3.To categorize and analyze the key concepts of cryptanalysis and quantum cryptography <b>Expected Course Outcome:</b> 1. Infer the need of security to introduced strong cryptosystems.         2. Analyze the cryptographic algorithms for information security.         3. Identify the need of security to introduced strong cryptosystems.         4. Identify the requirements for secure communication and challenges related to the secure applications         5. Ability to identify the need of quantum cryptographic solutions.         Module:1       Introduction to Cryptography         6 hours         Introduction to Cryptography: Elementary number theory, Pseudo-random bit generation, Elementary cryptosystems.         Basic Scurity services: confidentiality, integrity, availability, non-repudiation, privacy         Module:2       Basic Symmetric Key Cryptosystems       8 hours         Stream Cipher: Basic Ideas, Hardware and Software Implementations, Examples with some prominent ciphers: A5/1, Grain family, RC4, Salsa and ChaCha, 11C128, SNOW family, ZUC         Module:3       Advanced Symmetric Key Cryptosystems       5 hours         Block Ciphers: DES, AES, Modes of Operation; Hash Functions; Authentication       5 hours         RSA, ECC; Digital signa	Pre-requisite	NIL	5	Syllat	ous v	versi	on
1. To learn the emerging concepts of cryptography and algorithms         2. To defend the security attacks on information systems using secure algorithms and Authentication process         3. To categorize and analyze the key concepts of cryptanalysis and quantum cryptography         Expected Course Outcome:         1. Infer the need of security to introduced strong cryptosystems.         2. Analyze the cryptographic algorithms for information security.         3. Identify the authentication schemes for membership authorization.         4. Identify the requirements for secure communication and challenges related to the secure applications         5. Ability to identify the need of quantum cryptography solutions.         Module:1       Introduction to Cryptography         6 hours         Introduction to Cryptography: Elementary number theory, Pseudo-random bit generation, Elementary cryptosystems.         Basic security services: confidentiality, integrity, availability, non-repudiation, privacy         Module:2       Basic Symmetric Key Cryptosystems       8 hours         Stream Cipher: Basic Ideas, Hardware and Software Implementations, Examples with some prominent ciphers: $\Delta 5/1$ , Grain family, RC4, Salsa and ChaCha, HC128, SNOW family, ZUC       Module:3         Module:3       Advanced Symmetric Key Cryptosystems       5 hours         Block Ciphers: DES, AES, Modes of Operation; Hash Functions; Authentication       Module:4       Public Key Cryptosystems       6 hours <t< td=""><td></td><td></td><td></td><td></td><td>v.1.</td><td>0</td><td></td></t<>					v.1.	0	
2. To defend the security attacks on information systems using secure algorithms and Authentication process         3.To categorize and analyze the key concepts of cryptanalysis and quantum cryptography         Expected Course Outcome:         1. Infer the need of security to introduced strong cryptosystems.         2. Analyze the cryptographic algorithms for information security.         3. Identify the authentication schemes for membership authorization.         4. Identify the requirements for secure communication and challenges related to the secure applications         5. Ability to identify the need of quantum cryptographic solutions.         Module:1       Introduction to Cryptography         6 hours         Introduction to Cryptography: Elementary number theory, Pseudo-random bit generation, Elementary cryptosystems.         Basic Security services: confidentiality, integrity, availability, non-repudiation, privacy         Module:2       Basic Symmetric Key Cryptosystems       8 hours         Stream Cipher: Basic Ideas, Hardware and Software Implementations, Examples with some prominent ciphers: A5/1, Grain family, RC4, Salsa and ChaCha, HC128, SNOW family, ZUC         Module:3       Advanced Symmetric Key Cryptosystems       5 hours         Block Ciphers: DES, AES, Modes of Operation; Hash Functions; Authentication       8 hours         RSA, ECC; Digital signatures       6 hours         Module:5       Basic Security Applications       6 hours							
process         3.To categorize and analyze the key concepts of cryptanalysis and quantum cryptography         Expected Course Outcome:         1. Infer the need of security to introduced strong cryptosystems.         2. Analyze the cryptographic algorithms for information security.         3. Identify the authentication schemes for membership authorization.         4. Identify the requirements for secure communication and challenges related to the secure applications         5. Ability to identify the need of quantum cryptographic solutions.         Module:1       Introduction to Cryptography         6 hours         Introduction to Cryptography: Elementary number theory, Pseudo-random bit generation, Elementary cryptosystems.         Basic security services: confidentiality, integrity, availability, non-repudiation, privacy         Module:2       Basic Symmetric Key Cryptosystems       8 hours         Stream Cipher: Basic Ideas, Hardware and Software Implementations, Examples with some prominent ciphers: A5/1, Grain family, RC4, Salsa and ChaCha, HC128, SNOW family, ZUC         Module:3       Advanced Symmetric Key Cryptosystems       5 hours         Block Ciphers: DES, AES, Modes of Operation; Hash Functions; Authentication       Module:         Module:4       Public Key Cryptosystems       6 hours         RSA, ECC; Digital signatures       6 hours         Module:5       Basic Security Applications       6 hours     <			1 .				
Expected Course Outcome:         1. Infer the need of security to introduced strong cryptosystems.         2. Analyze the cryptographic algorithms for information security.         3. Identify the authentication schemes for membership authorization.         4. Identify the requirements for secure communication and challenges related to the secure applications         5. Ability to identify the need of quantum cryptographic solutions.         Module:1       Introduction to Cryptography         6 hours         Introduction to Cryptography: Elementary number theory, Pseudo-random bit generation, Elementary cryptosystems.         Basic security services: confidentiality, integrity, availability, non-repudiation, privacy         Module:2       Basic Symmetric Key Cryptosystems       8 hours         Stream Cipher: Basic Ideas, Hardware and Software Implementations, Examples with some prominent ciphers: A5/1, Grain family, RC4, Salsa and ChaCha, HC128, SNOW family, ZUC       Module:3         Module:3       Advanced Symmetric Key Cryptosystems       5 hours         Block Ciphers: DES, AES, Modes of Operation; Hash Functions; Authentication       Module:4       Public Key Cryptosystems         RSA, ECC; Digital signatures       5 hours       6 hours         Electronic commerce (anonymous cash, micro-payments), Key management, Zero-knowledge protocols       Module:6         Module:7       Post-Quantum Cryptography       8 hours         Post-Q	process				tıcatı	on	
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Signatures, Threshold Cryptography         Module:8       Contemporary issues       2 hour         Guest lecture by Industry Experts or R&D organization	Post-Quantum Crypt	ography, Public-Key Post-Quantum Cryptographic Algorithms	s, Sta	iteful	Has	sh-Ba	ased
Module:8       Contemporary issues       2 hour         Guest lecture by Industry Experts or R&D organization       2 hour							
Guest lecture by Industry Experts or R&D organization							
	Module:8 Co	ontemporary issues				2	hour
Total Lecture hours:     45 hours	Guest lecture by Indu						
		Total Lecture ho	urs:			45 h	iours



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

Te	Text Book(s)								
1.	W. Stallings, Cryptography and Network Security: Principles and Practice, 7th Edition, Pearson, 2017.								
2.	A. J. Menezes, P. C. van Oorschot, and	l S. A. Vanstone,	Handbook	of Applied Cryptography., CRC					
	Press, 2011								
Re	ference Books								
1.	C. S. Mukherjee, D. Roy, S. Maitra, De	esign & Cryptana	lysis of ZU	JC - A Stream Cipher in Mobile					
	Telephony. Springer, 2020								
2.	D. R. Stinson, Cryptography, Theory and	d Practice. CRC P	ress, 2014.						
Mo	Mode of Evaluation: CAT / Assignment / Quiz / FAT								
Re	Recommended by Board of Studies 29-01-2021								
Ap	proved by Academic Council	No. 61	Date	18-02-2021					





CBS4003	Course Title L	Τ	Р	J	С
CD34003	Quantum Computation & Quantum Information3	0	2	0	4
Pre-requisite	NIL Sy	yllab			on
			v. 1.	0	
Course Objective					
	he fundamental concepts on quantum computing				
	do computation using quantum algorithms				
3. To process secur	re information in various modern-day applications				
Expected Course	Outcome:				
1. Understand the l	basic concepts on quantum computing				
2. Able to impleme	ent quantum algorithms for performing computations on quantum con	npute	ers		
3. Generate perfect	tly unpredictable random numbers to ensure the strongest level of enci	ryptio	on		
4. Ensure secure co	ommunication using quantum key distribution method				
5. Evaluate and stat	ndardize quantum-resistant public-key cryptographic algorithms				
6. Perform quantur	m computations to solve simple problems				
Module:1 I	ntroduction to Quantum Information			6 h	ours
	Measurements, Quantum Entanglement: Quantum Teleportation, Su	iper-	dens		
	intum gates and circuits.	T -			
	Quantum Algorithms Basic				ours
Deutsch-Jozsa, Sin	non, Grover, Shor, Implication of Grover's and Simon's algorithms	s tov	vard	s cla	ssica
symmetric key cryp	otosystems				
Module:3 C	Duantum Algorithms Advanced			8 h	ours
	Quantum Algorithms Advanced or's algorithm towards factorization and Discrete Logarithm based c	lassi	cal p		
Implication of Sho	Quantum Algorithms Advanced or's algorithm towards factorization and Discrete Logarithm based c	classi	cal p		
Implication of Sho cryptosystems	or's algorithm towards factorization and Discrete Logarithm based c	classi	cal p	oubli	
Implication of She         cryptosystems         Module:4       Q				oublio 7 h	c key
Implication of Sho         cryptosystems         Module:4       Quantum True Ra	or's algorithm towards factorization and Discrete Logarithm based c Quantum True Random Number Generators (QTRNG):			oublio 7 h	c key
Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ	<b>Quantum True Random Number Generators (QTRNG):</b> andom Number Generators (QTRNG): Detailed design and issues cts and applications			7 h	c key nours
Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ         Module:5       B	Der's algorithm towards factorization and Discrete Logarithm based composition of the second			7 h	c key
Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ         Module:5       B         Quantum key distription	Der's algorithm towards factorization and Discrete Logarithm based contract and the contract of the contract o			7 h ntum 4 h	ours
Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ         Module:5       B         Quantum key distribution         Module:6       A	Der's algorithm towards factorization and Discrete Logarithm based contract of the second structure for the second struct	s of	quai	7 h 7 h ntum 4 h	ours
Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ         Module:5       B         Quantum key distribution         Module:6       A	Der's algorithm towards factorization and Discrete Logarithm based contract and the contract of the contract o	s of	quai	7 h 7 h ntum 4 h	c key nours
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Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ         Module:5       B         Quantum key distri         Module:6       A         Variations in Semi-         Module:7       In         Refer to https://doi       In	Der's algorithm towards factorization and Discrete Logarithm based contract of the second structure for the second struct	s of	quar	7 h ntum 4 h acts 6 h	
Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ         Module:5       B         Quantum key distribution       A         Variations in Semi-       Module:6       A         Module:7       In         Refer to https://o       this list.         Module:8       Q	Description       Description         Output       True Random Number Generators (QTRNG):         andom Number Generators (QTRNG): Detailed design and issues         cts and applications         Basic Quantum key distribution         ibution (QKD): BB84, Ekert, Semi-Quantum QKD protocols         Advanced Quantum key distribution         Quantum QKD protocols, Issues of Device Independence, Commerce         ntroductory topics in Post-Quantum Cryptography         csrc.nist.gov/projects/post-quantum-cryptography. May discuss any         Contemporary Issues	s of	quar	7 h ntum 4 h ucts 6 h ners	c key nours nours nours nours from
Implication of Sho         cryptosystems         Module:4       Q         Quantum True Ra         Commercial produ         Module:5       B         Quantum key distribution       A         Variations in Semi-       Module:6       A         Module:7       In         Refer to https://o       this list.         Module:8       Q	Quantum True Random Number Generators (QTRNG): andom Number Generators (QTRNG): Detailed design and issues cts and applications Basic Quantum key distribution ibution (QKD): BB84, Ekert, Semi-Quantum QKD protocols dvanced Quantum key distribution Quantum QKD protocols, Issues of Device Independence, Commercent ntroductory topics in Post-Quantum Cryptography csrc.nist.gov/projects/post-quantum-cryptography. May discuss any	s of cial p two	quar	7 h ntum 4 h acts 6 h ners 2 h	ours nours nours



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## VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Te	xt Book(s)
1.	M. A. Nielsen and I. L. Chuang, Quantum Computation and Quantum Information, Cambridge
	University Press. 2010.
2.	Chris Bernhardt, Quantum Computing for Everyone, MIT Press 2019.
Ret	ference Books
1.	Presskil Lecture notes: Available online: http://www.theory.caltech.edu/~preskill/ph229/
2.	NIST Post Quantum Cryptography, Available online: https://csrc.nist.gov/projects/post-quantum-
	cryptography/
Mo	ode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar
Lis	t of Challenging Experiments (Indicative)
1.	Introduction of quantum Instruction Set Architecture for quantum computations
2.	Use of quantum instruction language such as Quil, etc. for performing any quantum computations
3.	Programs using bits and qubits
4.	Implementation of quantum algorithms - Deutsch-Jozsa problem, Simon's algorithm and Shor's
	algorithm
5.	Implement classical logics using quantum circuits
6.	Program to implement Quantum counting
7.	Program for Quantum optimization algorithms
8.	Program for quantum walk to solve problems include search and sampling without errors
9.	Implementation of Quantum algorithm for solving linear systems of equations
	Total Laboratory Hours 30 hours
Mo	ode of Assessment: Assessments/ Mid Term Lab/ FAT / Project
Re	commended by Board of Studies 29-01-2021
Ap	proved by Academic Council No. 61 Date 18-02-2021

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Course Code	Course Title	L	Т	Р	J	C
CBS4004	Image Processing and Pattern Recognition	3	0	0	4	4
Pre-requisite	NIL		Syllab			1
				v. 1.0		
Course Objective						
	indamental concepts of image processing and pattern recog					
	arious image processing steps and their applications in real					
	idents to incorporate pattern recognition in image process	ing and	its imp	portar	nce in	rea
time applications.						
E-monto d Commo	<u></u>					
Expected Course	sic concepts of image processing with mathematical interpre	tation				
	ledge of different image enhancement, and image registratio					
	e various image segmentation and morphological operations		-	ofob	Acts	
	cepts of color image processing.	5 101 pai		01 00	cets	
-	indamental concepts of various feature extraction techniq	ues and	l recon		the in	naa
scene from image f	-	ues and	i iccog	SIIIZC		nag
0	plement image processing techniques for various real-time	applicat	tions si	ich as	indu	stra
medicine and defer		арриса	10115 50		, mau	.stry
incurrence and deren	15C.					
Module:1 D	igital Image Fundamentals				8 ho	our
	e processing systems and its applications. Basic image file f	ormats				
	Geometric and photometric models; Digitization - sa		quant	tizatio	n; In	nag
-	epresentation, neighbourhood metrics.	1 0	1			C
	nage Enhancement				6 ho	
	trast stretching, histogram specification, local contrast enl				ing, li	nea
and order statistic	filtering, sharpening, spatial convolution, Gaussian smoothi	ng, Do <b>(</b>	G, LoC	j.		
	nage registration	·	,	Г	6 ho	
-	ono-modal/multimodal image registration; Global/local	registra	tion;	I ransi	torm	and
similarity measures	for registration; Intensity/pixel interpolation.					
Module:4 M	orphological processing				5 ho	011#
	iltering Basics: Dilation and Erosion Operators, Ope	ning ar	nd Clo	sing		
	ects Skeletons-Thinning and Thickening boundaries, Conve					
	0	,	- r			
Module:5 In	nage Segmentation				7 ho	our
	ixel classification; Grey level thresholding, global/lo	cal thr	eshold	ing;	Optin	nun
thresholding - B	ayes analysis, Otsu method; Derivative based edge	detect	ion o	perate	ors, d	edg
detection/linking,	Canny edge detector; Region growing, split/merge techniqu	les.				_
Module:6 Co	olor Image Processing				5 ho	Jur
	olor Image Processing different colour models - RGB, CMY, HSI, YCbCr, Lab;	False c	olour;	Pseuc		





Mo	dule:7	Image/Object features ex	xtraction			6 hours		
Tex	tural featur	es - gray level co-occurrence	matrix; Moments;	Connected	l component analysis;	Convex hull;		
Distance transform, medial axis transform, skeletonization/thinning, shape properties								
Module:8     Contemporary issues     2 hours								
Gu	est lecture b	y Industry Experts or R&D o	organization					
				Tota	Il Lecture hours:	45 hours		
Te	xt Book(s)	•						
1.	Rafael C. C	Gonzalez and Richard E. Wo	ods, Digital Image	Processing	g, 4 th Edition, Pearson	, 2018.		
2.	William K	Pratt, Digital Image Process	ing, 4 th Edition, Jo	hn Wiley, 2	2007.			
Ref	ference Bo	oks						
1.	Maria Peti	ou and Panagiota Bosdogian	nni, "Image Proce	ssing: The	Fundamentals", 2 nd	edition, John		
	Wiley, 201	0	_	-		-		
2.	Kenneth F	. Castleman, "Digital Image	Processing", 2 nd E	dition, Pear	rson, 2010			
Mo	de of Eval	uation: CAT / Assignment	/ Quiz / FAT /	Project /	Seminar			
Ree	commende	d by Board of Studies	29-01-2021					
1	Approved by Academic CouncilNo. 61Date18-02-2021							



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

### CURRICULUM (2019 - 2020)

<b>Course Code</b>	Course Title	L	Т	Р	J	С
CBS4005	Enterprise systems	3	0	2	0	4
Pre-requisite	NIL		Sylla	ıbus ve	rsio	n
				v.1.0		
Course Objectives:						
	essential concepts of ERP involved in business proc					
	the design and implementation of ERP architecture					
3. To familiarize with	n various tools and technologies for developing ERI	of for large	projec	t		
Expected Course Ou	itcome:					
	nd deploy simple web applications using MVC arch	itecture				
2. Evaluate SOA and						
3. Ability to design an	nd implement CRM models					
	tive network and application					
-	ional opportunities and challenges in the design sys	tem				
0	model for ERP for large projects					
Module:1 Mode	el - View - Control (MVC)architecture				61	nours
Overview of MVC -N	MVC method of software development in a 3-ti	er environ	ment	-Contr	ol (l	MVC)
development in a 3-tier	r environment.					
	s and Technologies					nours
0	es: - Microsoft .NET framework, PHP, Ruby on Ra	ils, JavaScr	ript, A	jax and		
Overview of SAP and	Oracle Applications					
Module:3 ERP	Architecture and Generic Modules				81	nours
	nitecture (SOA) - Principles of loose coupling – e	encapsulation	on - I	nter-or		
	Planning (ERP) systems and their architecture - Ger	-		-		•
-	t, Investment - Examples of Domain Specific Modu					, ,
Module:4 ERP	Technologies					nours
	ngineering - Decision Support System - On-Line	Analytical	Proce	ssing -	Elect	
Business Process Reen						
Business Process Reen	omer Relationship Management (CRM) - Supplier F					RM)
Business Process Reen Data Exchange - Custo	omer Relationship Management (CRM) - Supplier F				nt (SI	
Business Process Reen Data Exchange - Custo Module:5 ERP		Relationship	o Man	agemer	nt (SI 61	nours
Business Process Reer Data Exchange - Custo Module:5 ERP Overview of MPLS - V	omer Relationship Management (CRM) - Supplier F Networking & Security Virtual Private Networks (VPN) – Firewalls - Netw	Relationship ork monite	o Man	agemer	nt (SI 61 orcer	nours
Business Process Reen         Data Exchange - Custo         Module:5       ERP         Overview of MPLS - V         of policies - ERP Secu	omer Relationship Management (CRM) - Supplier F Networking & Security	Relationship ork monito ess control	o Man oring <i>a</i> l – Ro	agemer und enfe iles - sir	nt (SI 61 orcer	nours
Business Process Reer Data Exchange - Custo Module:5 ERP Overview of MPLS - V of policies - ERP Secu on -Directory servers -	omer Relationship Management (CRM) - Supplier F Networking & Security Virtual Private Networks (VPN) – Firewalls - Netw urity Issues – Authentication – Authorisation - Acc - Audit trails - Digital signatures – Encryption - revi	Relationship ork monito ess control	o Man oring <i>a</i> l – Ro	agemer und enfe iles - sir	nt (Sl 61 orcen ngle-	nours ment sign-
Business Process Reen         Data Exchange - Custo         Module:5       ERP         Overview of MPLS - Volume         of policies - ERP Secu         on -Directory servers -         Module:6       Soft	omer Relationship Management (CRM) - Supplier F Networking & Security Virtual Private Networks (VPN) – Firewalls - Networks urity Issues – Authentication – Authorisation - Acc - Audit trails - Digital signatures – Encryption - review tware Architectures for Enterprise Systems	Relationship ork monito ess control ew of IPSe	o Man oring a l – Ro ec - SS	agemer und enfa iles - sin L	nt (SI 61 orcer ngle 51	nours ment sign-
Business Process Reen         Data Exchange - Custo         Module:5       ERP         Overview of MPLS - V         of policies - ERP Secu         on -Directory servers -         Module:6       Soft         Software: Acquisition	omer Relationship Management (CRM) - Supplier F Networking & Security Virtual Private Networks (VPN) – Firewalls - Netw urity Issues – Authentication – Authorisation - Acc - Audit trails - Digital signatures – Encryption - revi tware Architectures for Enterprise Systems Process – Tendering - conditions of contract - Co	Contended of the second	o Man oring a l – Ro ec - SS	agemer and enfo les - sin L e shelf	nt (SI orcen ngle 51 soft	nours ment sign- nours ware
Business Process Reer         Data Exchange - Custo         Module:5       ERP         Overview of MPLS - V         of policies - ERP Secu         on -Directory servers -         Module:6       Soft         Software: Acquisition         (COTS) Implementation	omer Relationship Management (CRM) - Supplier F Networking & Security Virtual Private Networks (VPN) – Firewalls - Networks urity Issues – Authentication – Authorisation - Acc - Audit trails - Digital signatures – Encryption - review tware Architectures for Enterprise Systems	Contended of the second	o Man oring a l – Ro ec - SS	agemer and enfo les - sin L e shelf	nt (SI orcen ngle 51 soft	nours ment sign- nours ware





Mod	dule:7	Hardware Architectures	for Enterprise S	ystems		5 hours
Hare	dware: Serve	ers –Storage area networks - S	torage units - Ba	ick-up strate	gies - Local Area N	etwork
(LAI	N) technolo	gies and products - Data Cen	tres - Hardware	Acquisition	- Disaster Recovery	
Mod	dule:8	Contemporary issues				2 hours
Gue	est lecture b	y Industry Experts or R&D or	rganization		·	
				Total Le	cture Hours:	45 hours
Tex	tbook	-			·	
1.	Alexis Leo	on, Enterprise Resource Plann	ning, 2020,4 th Ed	ition, Tata N	IcGraw Hill.	
Refe	erence Boo					
1.		. E., Enterprise Resource Plan	nning and Supply	y Chain Man	agement, 2016, Spr	inger.
2.		K, Sanjay M, Anbuudayasa				
		ntals of Design and Implemen			p	8
Mod		ation: CAT / Assignment /	-	-	eminar	
WIO		ation: CAT / Assignment /	Quiz / I'MI /		Ciiiiiai	
List	ofChallon	ging Experiments (Indicati				
1.		in ASP.NET MVC web applic	/			
2.		he client/server architecture o		w to use the	user interface	
3.		stomer, material master data. I				
<u> </u>		nodel of customer relationship		1		for catalogue
	and online				Serve Systems	101 entirogue
5.		nodel of Supplier Relationship	Management fo	or Healthcar	e system	
6.	Configure	e and test a VPN connection of	on a personal cor	nputer	•	
7.	Firewalls	configuration	•			
8.		nfiguration and implementation				
9.	Use CASI	E tools to aid ERP Software a	equisition proces	ss - Case stu	dy	
10.	Use CASI	E tools to aid ERP hardware a	equisition proce			
					l Laboratory Hour	s: 30 hours
		sments: Assessments/Midt		T		
Rec		1 by Board of Studies cademic Council	22-05-2021 No. 62			
				Date	15-07-2021	





B. Tech Computer Science and Engineering and Business Systems

## **UNIVERSITY CORE**

## (AY 2019 - 2020)

B. Tech. Computer Science and Engineering and Business Systems

(in collaboration with TCS)





Sl. No.	Course Code	Course Title	Page No.
1.	CBS1002	Object Oriented Programming	104
2.	CBS1901	Technical Answers for Real World Problems (TARP)	106
3.	CBS1902	Industrial Project	107
4.	CBS1903	Comprehensive Examination	108
5.	CBS1904	Capstone Project	110
6.	CHY1701	Engineering Chemistry	111
7.	CSE1008	Programming in C	114
8.	ENG1013	Business Communication and Value Science - I	117
9.	ENG1014	Business Communication and Value Science - II	119
10.	ENG1017	Business Communication and Value Science - III	121
11.	ENG1018	Business Communication and Value Science - IV	123
12.	ENG1901	Technical English - I	125
13.	ENG1902	Technical English - II	128
14.	ENG1903	Advanced Technical English	131
15.	HUM1021	Ethics and Values	133
16.	MAT1017	Probability and Statistics	135
17.	MGT2001	Introduction to Innovation, IP Management and Entrepreneurship	137
18.	PHY1005	Modern Physics	139
19.	FLC4097	Foreign Language Course Basket	141



### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

### CURRICULUM (2019 - 2020)

Course Co	ode	Course Title	L	T	Р	J	C
CBS1002		Object Oriented Programming	3	0	2	0	4
Pre-requisite		NIL	Syl	labus	s ver	sion	
				v.	1.0		
Course Object	ives:						
1. To provide	basic cha	uracteristics of OOP through C++.					
2. To impart s	skills on v	arious kinds of overloading and inheritance.					
3. To introduc	ce pointe	rs and file handling in C++ together with exception handli	ng mec	hanisi	n.		
Expected Cour	rse Outc	ome:					
-		course, students will be able to:					
1. Realize the	need and	features of OOP and idealize how C++ differs from C.					
2. Infer know	ledge on	various types of overloading.					
		eritance while proposing solution for the given problem.					
		effective memory management.					
1		of pointers in virtual functions.					
1	1	ndling in C++ and handle exceptions.					
		ed knowledge by applying the learned techniques to solve v	arious r	eal-w	orld		
problems.				etti ii	0110		
P-0.0-00-00-00-00-00-00-00-00-00-00-00-00							
Module:1	Introd	uction				3 ho	urs
			mming	chara		3 ho	
	t-oriented	programming? Why do we need object oriented? Progra	mming	chara			
What is object object-oriented	t-oriented d languag	programming? Why do we need object oriented? Progra es.	mming	chara	icteri	stics	of
What is object object-oriented Module:2	t-oriented d languag C++ 1	programming? Why do we need object oriented? Progra es. Programming Basics			icteri	stics 4 ho	of
What is object object-oriented Module:2	t-oriented d languag C++ 1	programming? Why do we need object oriented? Progra es.			icteri	stics 4 ho	of
What is object object-oriented Module:2	t-oriented d languag <b>C++</b> l cout. Dir	programming? Why do we need object oriented? Progra es. Programming Basics			ions.	stics 4 ho	of
What is object object-oriented Module:2 Output using Module:3	t-oriented d languag C++ l cout. Dir Opera	programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T	Гуре со	nvers	ions.	stics 4 ho 7 ho	of urs
What is object object-oriented Module:2 Output using Module:3 Overloading	t-oriented d languag C++ 1 cout. Dir Opera unary op	programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T	Гуре со	nvers	ions.	stics 4 ho 7 ho	of urs
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What is object object-oriented Module:2 Output using Module:3 Overloading an overloading an	t-oriented d languag C++ 1 cout. Dir Opera unary op nd conver	Programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T tor overloading: perations. Overloading binary operators, data converse rsion keywords. Explicit and Mutable.	Type cos	nvers tfalls	ions.	stics 4 ho 7 ho oper 8 ho	ur: ur: ato
What is object object-oriented Module:2 Output using Module:3 Overloading an overloading an	t-oriented d languag C++ 1 cout. Dir Opera unary op nd conver	Programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T tor overloading: perations. Overloading binary operators, data converse rsion keywords. Explicit and Mutable.	Type cos	nvers tfalls	ions.	stics 4 ho 7 ho oper 8 ho	of urs ato
What is object object-oriented Module:2 Output using Module:3 Overloading an overloading an Module:4 Concept of in	<ul> <li>c-oriented</li> <li>d languag</li> <li>C++ 1</li> <li>cout. Dir</li> <li>Opera</li> <li>unary op</li> <li>nd conver</li> <li>Inheriance</li> </ul>	Programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T tor overloading: perations. Overloading binary operators, data converse rsion keywords. Explicit and Mutable.	Type control for the second se	nvers tfalls nemt	of	stics 4 ho 7 ho oper 8 ho uncti	ur: ate
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What is object object-oriented Module:2 Output using Module:3 Overloading an overloading an Module:4 Concept of in inheritance in	C++ 1 cout. Dir Opera unary op nd conves Inheritanc the Eng	Programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T tor overloading: perations. Overloading binary operators, data converse rsion keywords. Explicit and Mutable.	Type co- ion, pi ctors, r	nvers tfalls nemb	of of oer fu	stics 4 ho 7 ho oper 8 ho uncti	ur: ate
What is object object-oriented Module:2 Output using Module:3 Overloading overloading an Module:4 Concept of in inheritance in private inherit	<ul> <li>coriented</li> <li>languag</li> <li>C++ l</li> <li>cout. Dir</li> <li>Opera</li> <li>unary op</li> <li>d conver</li> <li>Inheritance</li> <li>the Eng</li> <li>ance, agg</li> <li>Pointed</li> </ul>	Programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T tor overloading: perations. Overloading binary operators, data converse rsion keywords. Explicit and Mutable. Itance e. Derived class and based class. Derived class constru- clish distance class, class hierarchies, inheritance and grap gregation: Classes within classes, inheritance and program ers & Virtual Function	Type cost ion, pi ctors, r phics sh develop	nvers tfalls nemt napes	of of	stics 4 ho 7 ho oper 8 ho uncti olic a 7 ho	ur: ur: and ur:
What is object object-oriented Module:2 Output using Module:3 Overloading overloading an Module:4 Concept of in inheritance in private inherit	<ul> <li>coriented</li> <li>d languag</li> <li>C++ 1</li> <li>cout. Dir</li> <li>Opera</li> <li>unary op</li> <li>nd convert</li> <li>Inheritance</li> <li>the Engrance, agg</li> <li>pointed</li> <li>d pointed</li> </ul>	Programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T tor overloading: perations. Overloading binary operators, data converse resion keywords. Explicit and Mutable. Explicit and Mutable. Etance e. Derived class and based class. Derived class constru- dish distance class, class hierarchies, inheritance and grap pregation: Classes within classes, inheritance and program ers & Virtual Function ers. The address of operator and pointer and arrays	Type con ion, pi ctors, r phics sh develop s. Poin	nvers tfalls nemb napes oment	of of of	stics 4 ho 7 ho oper 8 ho uncti olic a 7 ho Facti	
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What is object object-oriented Module:2 Output using Module:3 Overloading overloading an Module:4 Concept of in inheritance in private inherit Module:5 Addresses an pointer and 0	<ul> <li>coriented</li> <li>languag</li> <li>C++ 1</li> <li>cout. Dir</li> <li>Opera</li> <li>unary op</li> <li>nd conver</li> <li>Inheritance</li> <li>the Engrance, agg</li> <li>Pointed</li> <li>d pointed</li> <li>C-types s</li> <li>ual Function</li> </ul>	Programming? Why do we need object oriented? Progra es. Programming Basics ectives, Input with cin, Type bool, The setw manipulator, T tor overloading: perations. Overloading binary operators, data converse resion keywords. Explicit and Mutable. Explicit and Mutable. Explicit and Mutable. Explicit distance class and based class. Derived class constru- glish distance class, class hierarchies, inheritance and grap gregation: Classes within classes, inheritance and program ers & Virtual Function ers. The address of operator and pointer and arrays string. Memory management: New and Delete, pointer ettion, friend function, Static function, Assignment and	Type cost ion, pi ion, pi ctors, r phics sh develop s. Poin s. Poin s to ob	nvers tfalls memb napes oment ter a ojects	of of of of , pub	stics 4 ho 7 ho oper 8 ho uncti olic a 7 ho Facti	ur ur and ur or and



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## VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

	lule:6	Streams And Files				8 hours
		s, Stream Errors, Disk File I/		1 .		0
		ion, overloading the extracti		operators,	memory a	is a stream object,
com	mand line	arguments, and printer output	•			
	lule:7	Generic Programming and	-			6 hours
Func	tion temp	lates, Class templates, Exception	on handling techni	ques.		
M - 1	10	Contant Inc.				21
	ule:8	Contemporary Issues				2 hours
Gues	st lecture t	by Industry Experts or R&D o	0	<b>Τ</b>		45 1
<b>T</b>	<b>D</b> 1()			Total Lect	ure hours:	45 hours
-	$\frac{\text{Book}(s)}{D^{1}}$		( 1 D )	D 1' 2	· · · · · · · · · · · · · · · · · · ·	' DLIID 11'1
1.	2014.	a Jana, "C++ and Object-Orie	nted Programming	g Paradigm	Inira Eait	ion, PhiPublishers,
2.		m, "Object Oriented Program	aming and C++"	Dervised F	dition Nor	x Ago International
Ζ.	к кајага 2007.	in, Object Oriented Program	111111111111111111111111111111111111	Kevised r	Latuon, INEV	w Age International,
Pofo	rence Bo	olza				
1.		Mh Thaker, "Programming In	C++" First Editi	on USA IS	TE 2002	
2.		B. Lippman, Josée Lajoie and F				tion O'Roilly 2013
		uation: CAT / Assignment ,				uon, o Keniy, 2015.
MICG		uation. Chi / Assignment /		10,000 / 50	,111111a1	
List	of Challe	nging Experiments (Indicat	ive)			
1.		amental constructs in C++ inc		Objects		
2.		ructors and Destructors	0	)		
3.		of Overloading				
4.		of inheritance				
5.	71	ers and Inheritance				
6.	Virtuz	ll Functions				
7.		reams				
				<b>Fotal Labo</b>	ratory hour	rs 20 hours
Mo	de of Ass	essments: Assessments/Mie			J	
		ed by Board of Studies	07-06-2019			
		Academic Council	No. 55	Date	13-06-201	9
11			1	1	1	

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Course Code		Course Title	2		L	Τ	P J	0
CBS1901	Technical Answ	ers for Real Wor	ld Proble	ms (TARP)	1	0	0 4	2
Pre-requisite	115 Credits Earned				Syll	abus	versio	'n
						v. 1	.0	
Course Objectiv	es:							
1. To help studen	nts to identify the need fo	r developing new	er technol	ogies for indu	strial/s	ociet	al need	S
	ents to propose and imp	olement relevant	technolog	y for the dev	velopm	ent c	of the	
prototypes / p								
	students learn to the u	se the methodol	ogies avai	lable for ana	lyzing	the o	develop	bed
prototypes / p	roducts							
Expected Cours	e Outcome:							
At the end of the	course, the student will	be able to						
1. Identify real l	ife problems related to so	ociety						
2. Apply approp	priate technology(ies) to a	ddress the identifi	ed proble	ns using engi	neering	g prin	ciples a	ınd
arrive at inno	vative solutions							
Module1							15 hou	urs
1. Identification	of real-life problems							
2. Field visits ca	n be arranged by the facu	lty concerned						
3. $6 - 10$ studen	ts can form a team (withi	n the same / diffe	erent discip	oline)				
4. Minimum of	eight hours on self-manag	ged team activity						
5. Appropriate s	cientific methodologies t	o be utilized to so	lve the ide	entified issue				
6. Solution sho	ould be in the form	n of fabrication	n/coding/	modeling/pro	oduct	desi	gn/pro	cess
design/releva	nt scientific methodology	v(ies)						
7. Consolidated	report to be submitted for	or assessment						
8. Participation,	involvement and contri	bution in group	discussion	s during the	contac	t ho	urs will	l be
	odalities for the continue		2	1				
,	me to be evaluated in ter	rms of technical,	economic,	social, enviro	onment	al, p	olitical	and
demographic								
	of each group member to							
	omponent to have three							
	tion: (No FAT) Contin		- ,		lark w	eigh	tage of	•
- ,	ct report to be submitte	-	and proje	ct reviews				
	by Board of Studies	29-01-2021		10.00.000	1			
Approved by Ac	ademic Council	No:61	Date	18-02-202	1			





		<b>Course Title</b>			L	Т	Р	J	С
CBS1902		Industrial Project	ţ		0	0	0	0	1
Pre-requisite	Completion of mi	nimum of Two sem	esters			Sylla	bus	versio	n
•						v.1			
<b>Course Objectives</b>	:								
The course is desig	ned so as to expose	the students to indu	istry ei	nvironmen	t and	d to ta	ake u	p on-	- site
assignment as traine	es or interns.								
Expected Course (	Outcome:								
At the end of this in	ternship the student sl	hould be able to:							
1. Have an exposur	re to industrial practice	es and to work in team	ms						
2. Communicate ef	ffectively								
3. Understand the	impact of engineerin	g solutions in a gloł	bal, ec	onomic, e	nviro	nmen	tal ar	nd soo	cietal
3. Understand the context	impact of engineerin	g solutions in a glob	oal, ec	onomic, e	nviro	nmen	tal ar	nd soo	cietal
context	impact of engineerin lity to engage in resear	0 0			nviro	nmen	tal ar	nd soo	cietal
context 4. Develop the abil		0 0			nviro	nmen	tal ar	nd soo	cietal
<ul><li>context</li><li>4. Develop the abil</li><li>5. Comprehend co</li></ul>	lity to engage in resear	ch and to involve in l			nviro	nmen	tal ar	nd soo	cietal
<ul><li>context</li><li>4. Develop the abil</li><li>5. Comprehend co</li></ul>	lity to engage in resear ntemporary issues	ch and to involve in l			nviro	nmen	tal ar	nd soo	cietal
<ul><li>context</li><li>4. Develop the abil</li><li>5. Comprehend co</li></ul>	lity to engage in resear ntemporary issues	ch and to involve in l			nviro	nmen	tal ar		
<ul><li>context</li><li>4. Develop the abil</li><li>5. Comprehend co</li><li>6. Engage in establ</li></ul>	lity to engage in resear ntemporary issues lishing his/her digital f	ch and to involve in l				nmen	tal ar		
<ul> <li>context</li> <li>4. Develop the abilities</li> <li>5. Comprehend contents</li> </ul>	lity to engage in resear ntemporary issues lishing his/her digital f	ch and to involve in l			nviro	nmen	tal ar		cietal Zeeks
<ul> <li>context</li> <li>4. Develop the abilities</li> <li>5. Comprehend contents</li> <li>6. Engage in establicies</li> <li>Contents</li> <li>Four weeks of work</li> </ul>	lity to engage in resear ntemporary issues lishing his/her digital f	ch and to involve in l				nmen	tal ar		
<ul> <li>context</li> <li>4. Develop the abilities</li> <li>5. Comprehend contents</li> <li>6. Engage in establic</li> <li>Contents</li> <li>Four weeks of work</li> <li>Supervised by an experimental system of the system of the</li></ul>	lity to engage in resear ntemporary issues lishing his/her digital f	ch and to involve in l	life-lon	g learning		nmen	tal ar		
<ul> <li>context</li> <li>4. Develop the abilities</li> <li>5. Comprehend contents</li> <li>6. Engage in establic</li> <li>Contents</li> <li>Four weeks of work</li> <li>Supervised by an experimental system of the system of the</li></ul>	lity to engage in resear intemporary issues lishing his/her digital f at industry site. pert at the industry.	ch and to involve in l	life-lon	g learning		nmen	tal ar		



### VIT® Vellore Institute of Technology

B. Tech Computer Science and Engineering and Business Systems

		L	I	Р	J	C
Comprehensive Examination		0	0	0	0	1
Minimum of 115 credits should be earned		S	yllabı	is ve	rsio	n
			V	1.0		
	*	Minimum of 115 credits should be earned	Minimum of 115 credits should be earned S	Minimum of 115 credits should be earned Syllabu	Minimum of 115 credits should be earned Syllabus ve v. 1.0	Minimum of 115 credits should be earned Syllabus version v. 1.0

To evaluate the overall understanding of the students in the core areas of B. Tech CSE and Business Systems

### **Expected Course Outcome:**

At the end of the course, the student will be able to

1. Define, explain, evaluate, and interpret the fundamental knowledge pertaining to the field domain of Computer science and Engineering and apply that essential knowledge to the field of Business systems.

### Module:1 Programming in C, Object Oriented Programming, Data Structures and Algorithms

C fundamentals – Iterations, Arrays-Pointers, Functions, Structures. C++ classes, Objects, Inheritance, Virtual function- Exception Handling-Generic Templates-Files. Asymptotic Notations- The Big-O, Omega and Theta notation- Stack, Queue, Linked List, Applications of Stack, Queue, and Linked List. - Tree, Binary Tree, Tree Traversals, Binary Search Tree- Graph, Minimum Spanning Tree, Shortest Path Algorithm-Searching - Binary, Linear, BFS, DFS-. Sorting - Insertion, Selection, Shell, Quick and Merge Sort.

# Module:2Design and analysis of Algorithms, Computer Organization and Architecture, Formal<br/>languages and Automata theory

Classes of complexity, Analyzing the Time and Space complexity- Iterative and recursive, Algorithmic strategies: Brute force, Greedy, Dynamic programming, Graph algorithms: DFS, BFS, MST, Shortest path algorithm. Instructions-Addressing Modes-Instruction Pipelining-Data Representation-Characteristics of Memories- Memory Hierarchy-Cache Memory- I/O fundamentals- I/O Techniques -Direct Memory Access - Interrupts RAID architecture-Flynn's classification. Finite Automata-Deterministic Finite Automata, Non- Deterministic Finite Automata-Equivalence of NFA and DFA-Applications of NFA-Finite Automata with Epsilon Transition- Regular Languages, Building Regular Expressions, DFA to Regular Expressions-Pumping Lemma for Regular Language-Applications of Pumping Lemma-Context Free Grammar-Derivations and Definitions-Language of a Grammar, Inferences and Ambiguity-Sentential Forms-Construction and Yield of a Parse Tree-PDA-Acceptance by Final State-PDA-Acceptance by Empty Stack-Turing Machine and Halting Problem-Multitape Turingmachines.

Module:3 Principles of Operating Systems, Database systems, Software Engineering Methodologies





B. Tech Computer Science and Engineering and Business Systems

Operating System Services, OS Types, Process, System Calls, CPU Scheduling Algorithms, Inter-Process Communication, Deadlock, Memory Allocation, Virtual Memory, Paging, Segmentation, Page Replacement Algorithms, File Allocation Methods, Directory Implementation Methods, I/O Devices, Disk Scheduling algorithms. Data Abstraction, Data Independence, Entity-Relationship Model, Relational Model,

Integrity Constraints, Functional Dependencies, Normal Forms, Dependency Preservation, Relational Algebra, Query Optimization, Transaction Processing, Concurrency Control and Recovery Techniques, Database Storage Strategies, Authentication and Authorization. Process Models- Cost benefit Analysis-COCOMO model- DFD- ER-Design models- Object Oriented Design-Testing- Levels of Testing-Software Project Management-Project Scheduling-Risk Analysis-Quality Metrics- Configuration Management.

Module:4 Computer Networks, Information security

Computer networks and distributed systems, Classifications of computer networks, Various Connection Topology, Protocols and Standards, OSI model, Transmission Media, LAN, Bandwidth utilization, Error Detection and Error Correction, Flow Control and Error control protocols, Logical addressing, UDP,TCP, Congestion Control, Quality of Service (QoS), DNS, DDNS, TELNET, EMAIL, FTP, WWW, HTTP, SNMP, Bluetooth, Firewalls, Basic concepts of Cryptography. Confidentiality, integrity and availability -Discretionary, mandatory, roll-based and task-based models - Spatio-temporal models - Confidentiality policies, integrity policies, hybrid policies - Control of access and information flow - Data privacy, introduction to digital forensics – Security Architecture (Operating Systems, Database)

Module:5	Introduction	to IP	man	agement	and	Entrepreneu	ırship,	Fundan	nentals	of
	Management,	Marke	ting	Research	&	Marketing	manag	gement,	Financ	cial
	management									

Strategic Management, Business Processes and Capabilities-based Approach to Strategy, Five Forces of Industry Attractiveness that Shape Strategy, Mergers & Acquisitions, Corporate Governance, Leadership Styles, Change Management, Contribution of Management Thinkers: Taylor, Fayol, Elton Mayo etc., Work Stress and Stress Management, Organizational structure, Organizational Culture, Managerial Ethics, Corporate social responsibility, Attributes of a leader, Contemporary issues in management, Concept of IP Management, Use in marketing, Debt, Venture Capital and other forms of Financing, Types of Intellectual Property, Elements of Marketing Mix, Analyzing needs & trends in Environment - Macro, Economic, Political, Technical & Social, Product Life cycle concept, New Product development & strategy, Marketing Channels in retailing, Marketing Communication, Marketing Research Techniques, Strategy and Planning for Internet Marketing, Relationship, networks and customer relationship management, Business to Business marketing strategy, Financial Environments, The Capital Asset Pricing Model (CAPM), Analysis in leverage study.

Mode of Evaluation: CAT / Assignment /	′ Quiz / FAT / L	ab	
Recommended by Board of Studies	29-01-2021		
Approved by Academic Council	No. 61	Date	18-02-2021



Course Code	Course	e Title		L	Τ	Р	J	С
CBS1904	Capstone	Project		0	0	0	0	12
Pre-requisite	As per the academ	nic regulations		Sy	llabu	s ver	sion	
					1	v. 1.0		
<b>Course Objectives:</b>								
To provide sufficient			-	-	nent a	ınd a	nalys	sis o
suitable process so as to	o enhance the technica	al skill sets in the c	hosen field	l.				
Expected Course Ou								
At the end of the course								
	c problem statements	for ill-defined real	life proble	ms with reas	sonabl	le ass	ump	tions
and constraints.	1 1 /		<i>c</i> ·					
	e search and / or paten							
_	ents / Design and Ana	-	erations and	d document	the re	sults.		
	alysis / benchmarking							
•	sults and arrive at scien		-	/ solution				
6. Document the res	sults in the form of tec	hnical report / pr	esentation					
0								
Contents	1 ,1 ,1 1	1 ' 1 1'	<u>0 · 1 · </u>			0		1 .
-	hay be a theoretical ar			-				•
other related activitie	orrelation and analysis	s of data, softwar	e developi	ment, applie	ed res	earch	1 and	1 an
	ne or two semesters ba	used on the compl	etion of rec	nuired numb	er of	credi	ts as	ner
the academic regulat		ised on the compr		quired manne		crear	10 40	per
0	ork or a group project,	with a maximum	of 3 studer	nts.				
	jects, the individual pr				fv the	indiv	viduz	ıl's
contribution to the g	,	-)		· · · · · · · · · · · · · · · · · ·				
	r outside the university	, in any relevant ir	dustry or 1	esearch inst	itution	1.		
	peer reviewed journals		2				tage	
1	,						2	
Mode of Evaluation:	Periodic reviews, Pre	esentation, Final	oral viva,	Poster sub	missi	on		
Recommended by Bo		29-01-2021						
Approved by Academ	nic Council	No:61	Date	18-02-202	21			



VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

Course Code	Course Title	L	Т	Р	J	С
CHY1701	Engineering Chemistry	3	0	2	0	4
Pre-requisite	Chemistry of 12 th standard or equivalent		-		versi	on
				v. 1.(	)	
Course Objectives:						
•	ogical aspects of applied chemistry					
2. To lay foundation	for practical application of chemistry in engineering aspo	ects				
Expected Course Outco						
	iar with the water treatment, corrosion and its control, e	0	0			
	els and their applications, basic aspects of electrochen	nistry	and o	electi	coche	emical
energy storage devices	S					
	. 751 1 1			- 1		
	ater Technology				ours	. 1
	ater - hardness, DO, TDS in water and their determinat ion by EDTA; Modern techniques of water analy				-	
Disadvantages of hard wa		/\$1\$	ior in	laust	riai	use -
Disadvantages of hard wa	ater in industries.					
Module: 2 W	Vater Treatment			8 h	ours	
	ds: - Lime-soda, Zeolite and ion exchange processe	s an	d the			tions
8	or domestic use (ICMR and WHO); Unit processes in			-	-	
-	Sedimentation with coagulant- Sand Filtratio - chlor					
	ltration- activated carbon filtration; Disinfection met					
-	everse Osmosis; Electro dialysis.					-
·	· · · · · · · · · · · · · · · · · · ·					
Module: 3	Corrosion				Ć	6 hour
Dry and wet corrosion	- detrimental effects to buildings, machines, devices	& 0	lecora	tive	art f	orms,
emphasizing Differential	aeration, Pitting, Galvanic and Stress corrosion crack	ing;	Factor	s tha	it en	hance
corrosion and choice of p	parameters to mitigate corrosion.					
Module: 4 C	Corrosion Control				4	l hour
-	athodic protection – sacrificial anodic and impressed cu		-			
-	patings: electroplating and electroless plating, PVD				-	-
	asic concepts of Eutectic composition and Eutectic mix	xture	s - Sel	ected	l exa	mples
- Ferrous and non-ferrou	is alloys.					
Module: 5 E	Electrochemical Energy Systems				6	6 hour
	nventional primary and secondary batteries; High energy	<i></i>				0.
•	es - Primary and secondary, its Chemistry, advantages a	-				
	el cells, Solid-oxide fuel cells- working principles, adva	-				
cells – Types – Importan	nce of silicon single crystal, polycrystalline and amorphe	ous s	silicon	sola	r cell	s, dye
					111	L





B. Tech Computer Science and Engineering and Business Systems

sensitized solar cells - working principles, characteristics and applications.

#### Module: 6

Module: 7

Fuels and Combustion

8 hours

6 hours

Calorific value - Definition of LCV, HCV. Measurement of calorific value using bomb calorimeter and Boy's calorimeter including numerical problems. Controlled combustion of fuels - Air fuel ratio – minimum quantity of air by volume and by weight-Numerical problems-three way catalytic converter-selective catalytic reduction of NOX; Knocking in IC engines - Octane and Cetane number – Anti-knocking agents.

Polymers

Difference between thermoplastics and thermosetting plastics; Engineering application of plastics - ABS, PVC, PTFE and Bakelite; Compounding of plastics: molding of plastics for Car parts, bottle caps (Injection molding), Pipes, Hoses (Extrusion molding), Mobile Phone Cases, Battery Trays, (Compression molding), Fiber reinforced polymers, Composites (Transfer molding), PET bottles (blow molding); Conducting polymers - Polyacetylene- Mechanism of conduction – applications (polymers in sensors, self-cleaning windows)

Mod	Iule: 8         Contemporary issues:	2 hour
Lectu	ire by Industry Experts	
	Total Lecture hours:	45 hour
Tex	Book(s)	
1.	Sashi Chawla, A Text book of Engineering Chemistry, Dhanpat Rai Publishing Co.,	Pvt. Ltd.,
	Educational and Technical Publishers, New Delhi, 3rd Ed., 2015.	
2.	O.G. Palanna, McGraw Hill Education (India) Pvt. Ltd., 9th Reprint, 2015.	
3.	B. Sivasankar, Engineering Chemistry 1st Ed., McGraw Hill Education, 2008	
4.	"Photovoltaic Solar Energy: From Fundamentals to Applications", Angèle Reinders et	al., Wiley
	publishers, 2017.	, ,
Refe	erence Books	
1	O.V. Roussak and H.D. Gesser, Applied Chemistry - A Text Book for Engineers and Tec	hnologists
1	Springer Science Business Media, New York, 2 nd Edition, 2013.	,11101081313,
2		
2	S. S. Dara, A Text book of Engineering Chemistry, S. Chand & Co Ltd., New Delhi, 20 th Edi	tion, 2013.
Mod	le of Evaluation: Internal Assessment (CAT, Quizzes, Digital Assignments) & FAT	
	of Experiments	
1.	Water Purification: Estimation of water hardness by EDTA method and its removal by	3 hours
	ion-exchange resin	
	Water Quality Monitoring:	6 hours
2.	Assessment of total dissolved oxygen in different water samples by Winkler's method	
	Estimation of sulphate/chloride in drinking water by conductivity method	
		1 < 1
	Material Analysis: Quantitative colorimetric determination of divalent metal ions of	6 hours
3. 4/5.		6 hours
	Material Analysis: Quantitative colorimetric determination of divalent metal ions of	6 hours 3 hours





7.	Iron in carbon steel by potentiometry	3 hours
8.	Construction and working of an Zn-Cu electrochemical cell	3 hours
9.	Determination of viscosity-average molecular weight of different natural/synthetic polymers	6 hours
10.	<ul> <li>Preparation/demonstration of a working model relevant to syllabus. Ex.</li> <li>1. Construction and working of electrochemical energy system – students should demonstrate working of the system.</li> <li>2. Model corrosion studies (buckling of Steel under applied load).</li> <li>3. Demonstration of BOD/COD</li> </ul>	Non- contact hours
	le of Evaluation: CAT / Assignment / Quiz / FAT / Lab	

Recommended by Board of Studies	31-05-2019		
Approved by Academic Council	No:55	Date	13-06-2019



### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

CSE1008         Programming in C         3         0         2         0           Pre-requisite         NIL         Syllabus version         v.1.0           Course Objectives:         v.1.0         Course objectives:         v.1.0           1. To impart essential problem solving skills through general problem solving concepts.         2. To provide basic knowledge on programming essentials using C as implementation tool.         3. To introduce the Unix file system interface and introduce various programming methodsusing C.           Expected Course Outcome:         After completion of this course, students will be able to:         1. Propose solutions for a given problem using algorithm and flowchart designs.           2. Infer the fundamental programming elements in C language and learn to apply basiccontrol structure in C.         3. Visualize the capabilities of modular programming approach in C and demonstrate thesame in the roworld scenario.           4. Understand the basic principles of pointers and their association with various data structures duri implementations.         5. Demonstrate the applications of structures and unions.           6. Apply various input, output and error handling functions in C while solving the given problem through unix system interface.         3 hot           7. Showcase the attained knowledge by applying them to solve various real-world problems.         4 hot           Module:1         General Problem-Solving Concepts         3 hot           Algorithm and Flowchart for problem solving with Sequential Logic	Course Co			Course			L	Τ	Р	J	C
Course Objectives:         v.1.0           1. To impart essential problem solving skills through general problem solving concepts.         2.           2. To provide basic knowledge on programming essentials using C as implementation tool.         3.           3. To introduce the Unix file system interface and introduce various programming methodsusing C.           Expected Course Outcome:           After completion of this course, students will be able to:           1. Propose solutions for a given problem using algorithm and flowchart designs.           2. Infer the fundamental programming elements in C language and learn to apply basiccontrol structur in C.           3. Visualize the capabilities of modular programming approach in C and demonstrate thesame in the reworld scenario.           4. Understand the basic principles of pointers and their association with various data structures durin implementations.           5. Demonstrate the applications of structures and unions.           6. Apply various input, output and error handling functions in C while solving the given problem through unix system interface.           7. Showcase the attained knowledge by applying them to solve various real-world problems.           Module:1         General Problem-Solving Concepts           Algorithm and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loo Imperative languages: Introduction to imperative language; syntax and constructs of a specific langua (ANSI C)           Module:2         Types Operator and Expressions with discussion of var				Programm	ing in C			-		-	4
Course Objectives:       1.         1. To impart essential problem solving skills through general problem solving concepts.         2. To provide basic knowledge on programming essentials using C as implementation tool.         3. To introduce the Unix file system interface and introduce various programming methodsusing C.         Expected Course Outcome:         After completion of this course, students will be able to:         1. Propose solutions for a given problem using algorithm and flowchart designs.         2. Infer the fundamental programming elements in C language and learn to apply basiccontrol structure in C.         3. Visualize the capabilities of modular programming approach in C and demonstrate thesame in the reword scenario.         4. Understand the basic principles of pointers and their association with various data structures durin implementations.         5. Demonstrate the applications of structures and unions.         6. Apply various input, output and error handling functions in C while solving the given proble through unix system interface.         7. Showcase the attained knowledge by applying them to solve various real-world problems.         Module:1       General Problem-Solving Concepts         Algorithm and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loo Imperative languages: Introduction to imperative language; syntax and constructs of a specific language (ANSI C)         Module:2       Types Operator and Expressions with discussion of variable naming and Hungarian Notation <tr< td=""><td>Pre-requisite</td><th>N</th><th>IL</th><th></th><th></th><td></td><td>Sy</td><td></td><td></td><td>sion</td><td></td></tr<>	Pre-requisite	N	IL				Sy			sion	
1. To impart essential problem solving skills through general problem solving concepts.         2. To provide basic knowledge on programming essentials using C as implementation tool.         3. To introduce the Unix file system interface and introduce various programming methodsusing C. <b>Expected Course Outcome:</b> After completion of this course, students will be able to:         1. Propose solutions for a given problem using algorithm and flowchart designs.         2. Infer the fundamental programming elements in C language and learn to apply basiccontrol structure in C.         3. Visualize the capabilities of modular programming approach in C and demonstrate thesame in the reworld scenario.         4. Understand the basic principles of pointers and their association with various data structures durit implementations.         5. Demonstrate the applications of structures and unions.         6. Apply various input, output and error handling functions in C while solving the given proble through unix system interface.         7. Showcase the attained knowledge by applying them to solve various real-world problems.         Module:1       General Problem-Solving Concepts         Algorithm and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loo Imperative languages: Introduction to imperative language; syntax and constructs of a specific languag (ANSI C)         Module:2       Types Operator and Expressions with discussion of variable naming and Hungarian Notation         Variable Names, Data Type and Sizes (Little Endian Big En									v.1.0		
<ol> <li>2. To provide basic knowledge on programming essentials using C as implementation tool.</li> <li>3. To introduce the Unix file system interface and introduce various programming methodsusing C.</li> <li>Expected Course Outcome:         <ul> <li>After completion of this course, students will be able to:</li></ul></li></ol>	,										
3. To introduce the Unix file system interface and introduce various programming methodsusing C.         Expected Course Outcome:         After completion of this course, students will be able to:         1. Propose solutions for a given problem using algorithm and flowchart designs.         2. Infer the fundamental programming elements in C language and learn to apply basiccontrol structure in C.         3. Visualize the capabilities of modular programming approach in C and demonstrate thesame in the reworld scenario.         4. Understand the basic principles of pointers and their association with various data structures during implementations.         5. Demonstrate the applications of structures and unions.         6. Apply various input, output and error handling functions in C while solving the given proble through unix system interface.         7. Showcase the attained knowledge by applying them to solve various real-world problems.         Module:1       General Problem-Solving Concepts       3 hor         Algorithm and Flowchart for problem solving with Sequential Logic Structure, Decisions and Loo       Inspective languages: Introduction to imperative language; syntax and constructs of a specific langua (ANSI C)         Module:2       Types Operator and Expressions with discussion of variable naming and Hungarian Notation       4 hor         Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations, Arithme Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operator Bitwise Operators, Assignment Operators and Expressions, Preced	-	-	0	0 0	-	8	-				
Expected Course Outcome:         After completion of this course, students will be able to:         1. Propose solutions for a given problem using algorithm and flowchart designs.         2. Infer the fundamental programming elements in C language and learn to apply basiccontrol structur in C.         3. Visualize the capabilities of modular programming approach in C and demonstrate thesame in the reworld scenario.         4. Understand the basic principles of pointers and their association with various data structures durin implementations.         5. Demonstrate the applications of structures and unions.         6. Apply various input, output and error handling functions in C while solving the given proble through unix system interface.         7. Showcase the attained knowledge by applying them to solve various real-world problems.         Module:1       General Problem-Solving Concepts       3 hore align and How production to imperative language; syntax and constructs of a specific langua (ANSI C)         Module:2       Types Operator and Expressions with discussion of variable naming and Hungarian Notation       4 hore and Hungarian Notation         Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations, Arithme Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operator Bitwise Operators, Assignment Operators and Expressions, Precedence and Order of Evaluation, prof variable naming and Hungarian Notation         Variable naming and Hungarian Notation       Thom programming         Module:3       Control Flow with discuss	-	-		-	-	-					
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and Hungarian Notation         Variable Names, Data Type and Sizes (Little Endian Big Endian), Constants, Declarations, Arithme         Operators, Relational Operators, Logical Operators, Type Conversion, Increment Decrement Operator         Bitwise Operators, Assignment Operators and Expressions, Precedence and Order of Evaluation, prop         variable naming and Hungarian Notation         Module:3       Control Flow with discussion on structured and unstructured 7 hou         programming         Statements and Blocks, If-Else-If, Switch, Loops - while, do, for, break and continue, Goto Lab	(ANSI C)		-					-		0	0
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Variable naming and Hungarian Notation         Module:3       Control Flow with discussion on structured and unstructured 7 hou programming         Statements and Blocks, If-Else-If, Switch, Loops - while, do, for, break and continue, Goto Lab	Operators, Relation	onal Operato	ors, Logical C	perators, Typ	pe Conversion	n, Increment	Dec	reme	ent Oj	perate	or
Module:3       Control Flow with discussion on structured and unstructured       7 hou programming         Statements and Blocks, If-Else-If, Switch, Loops - while, do, for, break and continue, Goto Lab	Bitwise Operators	s, Assignmen	nt Operators a	and Expression	ons, Preceden	ce and Orde	r of	Eval	uation	, pro	pe
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				iscussion	on structure	ed and u	nstru	ictur	ed	7 ho	ur
structured and un- structured programming	Statements and I	Blocks, If-El	lse-If, Switch	, Loops - w	hile, do, for	, break and	con	tinue	, Got	o La	be
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B. Tech Computer Science and Engineering and Business Systems

Module:4	Functions and Program Structure with discussion on standard	6 hours
	library actions, parameter passing and returning type, C main return as integer, Externation National Provide	
	Register Variables, Scope Rules, Block structure, Initialisation, Recursion, Preary Functions and return types	epiocessoi
Module:5	Pointers and Arrays	8 hours
character Poi Row/column	address, Pointers and Function Arguments, Pointers and Arrays, Address nters and Functions, Pointer Arrays, Pointer to Pointer, Multi-dimensional major formats, Initialisation of Pointer Arrays, Command line arguments, nplicated declarations and how they are evaluated.	array and
Module:6	Structures & Input/Output	9 hour
	res, Structures and Functions, Array of structures, Pointer of structures, S	
1	utput: Standard I/O, Formatted Output - printf, Formated Input - scanf, Varia , file access including FILE structure, fopen, stdin, sdtout and stderr, Error	0
0	perror and error.h, Line I/O, related miscellaneous functions	
including exit, Module:7		6 hour
including exit, Module:7 File Descripto Discussions o	perror and error.h, Line I/O, related miscellaneous functions Unix system Interface & Programmingmethods	6 hour ccess -Isee
including exit, Module:7 File Descripto Discussions o Programming	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.	6 hour ccess -Isee
including exit, Module:7 File Descripto Discussions o Programming utility. Module:8	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function	6 hour ccess - Isee ion, makef
including exit, Module:7 File Descripto Discussions o Programming utility. Module:8	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues	6 hour ccess - Isee ion, makef 2 hour
including exit, <b>Module:7</b> File Descripto Discussions o Programming utility. <b>Module:8</b> Guest lecture b	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues         y Industry Experts or R&D organization         Total Lecture hours:	6 hour ccess - Isee ion, makef
including exit, Module:7 File Descripto Discussions o Programming utility. Module:8 Guest lecture b Text Book(s)	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues         y Industry Experts or R&D organization         Total Lecture hours:	6 hour ccess - Isec ion, makef 2 hour 45 hour
including exit, Module:7 File Descripto Discussions o Programming utility. Module:8 Guest lecture b Text Book(s) 1. B. W. K	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues         y Industry Experts or R&D organization         Total Lecture hours:	6 hour ccess - Isec ion, makef 2 hour 45 hour
including exit,         Module:7         File Descripte         Discussions o         Programming         utility.         Module:8         Guest lecture b         Text Book(s)         1.       B. W. K         2015.         2.       Gary J 1	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues         y Industry Experts or R&D organization         Total Lecture hours:	6 hour ccess - Isec ion, makef 2 hour 45 hour arson, June
Module:7         File Descripte         Discussions o         Programming         utility.         Module:8         Guest lecture b         1.       B. W. K         2015.         2.       Gary J I         Fourth         3.       B. Gott	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues         y Industry Experts or R&D organization         Total Lecture hours:         Gernighan and D. M. Ritchi, "The C Programming Language", Second Edition, Pears         Bronson, "ANSI C Programming", Fourth Edition, Cengage Learning India Privation	6 hour ccess - Isee ion, makef 2 hour 45 hour arson, June te Limited
Module:7         File Descripte         Discussions o         Programming         utility.         Module:8         Guest lecture b         1.       B. W. K         2015.         2.       Gary J I         Fourth         3.       B. Gott	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues         y Industry Experts or R&D organization         Total Lecture hours:         Image: Conson, "ANSI C Programming", Fourth Edition, Cengage Learning India Privatedition, 2016.         fried, "Programming in C", Second Edition, Schaum Outline Series, Tata Mears, 1996.	6 hour ccess - Isee ion, makef 2 hour 45 hour arson, June te Limited
including exit, Module:7 File Descripto Discussions o Programming utility. Module:8 Guest lecture b Text Book(s) 1. B. W. K 2015. 2. Gary J I Fourth 3. B. Gott Publisho Reference Bo	perror and error.h, Line I/O, related miscellaneous functions         Unix system Interface & Programmingmethods         or, Low level I/O - read and write, Open, create, close and unlink, Random ac         n Listing Directory, Storage allocator.         Method: Debugging, Macro, User Defined Header, User Defined Library Function         Contemporary Issues         y Industry Experts or R&D organization         Total Lecture hours:         Image: Conson, "ANSI C Programming", Fourth Edition, Cengage Learning India Privatedition, 2016.         fried, "Programming in C", Second Edition, Schaum Outline Series, Tata Mears, 1996.	6 hour ccess - Isee ion, makef 2 hour 45 hour arson, June te Limited

## Mode of Evaluation: CAT / Assignment / Quiz / FAT / Project / Seminar





List	of Challenging Experiments (Indicativ	ve)					
1.	Algorithm and flowcharts of small problems like GCD						
2.	Small but tricky codes (use of operators and expressions)						
3.	Solving sequences (applications of control structures)						
4.	Proper parameter passing (User defined	functions)					
5.	Command line Arguments (Understandi	ng main( ))					
6.	Variable parameter (Pointers and Arrays)	)					
7.	Pointer to functions (Pointer and function	ons)					
8.	User defined header (Creation of headers	s)					
9.	Make file utility (unix make file)						
10.	Multi file program and user defined libra	ries (Use of pre	-processor dire	ctives)			
11.	Interesting substring matching / searching	ng programs (St	ring matching a	undsearching)			
			Total L	aboratory Hours	30 hours		
Mo	de of Assessment: Assessments/ Mid	Term Lab/ F.	AT / Project				
Rec	commended by Board of Studies	07-06-2019					
App	proved by Academic Council	No. 55	Date	13-06-2019			



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

### CURRICULUM (2019 - 2020)

	Course title	L	Т	Р	J	C
ENG1013	Business Communication & Value Science – I	1	0	2	0	2
Pre-requisite	Basic Knowledge of high school English		Sylla	ıbus	vers	ioı
				v. 1.(	)	
Course Objectives						
	e concepts of life skills and its importance					
	ents to look within and create a better version of self.					
3. To introduce the	m to key concepts of values, life skills and business communication	ation				
Expected Course	Outcome					
	eed for life skills and values.					
	ners with basics of pronunciation					
-	trengths and opportunities					
e	skills to different situations					
	basic tenets of communication					
	ommunication practices in different types of communication.					
Module:1	Elementary Grammar & Vocabulary Enrichment				2 ho	ur
Understanding bas	ic grammar-Parts of Speech; reading newspapers for vo	cabular	y de	velop	omen	t
Understanding Ten	ses& Common mistakes in everyday conversation.					
Module:2	Phonics in English				2 ho	ur
Sounds – Vowels a	nd Consonants – Minimal Pairs- Consonant Clusters- Past	Tense I	Marke	er an	d Plu	ıra
Marker.Activity: Wo	orksheets, Exercises					
Module:3	Communication Skills				2 ho	
					nal i	inc
	nunication Skills Barriers of communication, Types of con	nmunica	ation-	Vei	Dai	
	nunication Skills Barriers of communication, Types of con tive communication.	nmunica	ation-	Vei		
Non-verbal &Effec	tive communication.		ation-			urs
Non-verbal &Effec Module:4	tive communication. Introduction to Life Skills				2 ho	
Non-verbal &Effec Module:4 Stress management	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of				2 ho	
Non-verbal &Effec Module:4 Stress management	tive communication. Introduction to Life Skills				2 ho	
Non-verbal &Effec Module:4 Stress management skills and values you	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of			What	2 ho	the
Non-verbal &Effec Module:4 Stress management skills and values you Module:5	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of a can identify, what can you relate to?	Happin	ess. V	What	2 ho are 2 ho	the ure
Non-verbal &Effec Module:4 Stress management skills and values you Module:5 Impromptu, Impo	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of a can identify, what can you relate to? Art of Public Speaking ortance of Non-verbal Communication, Technical Talks, D	Happin	ess. V	What	2 ho are 2 ho	the ure
Non-verbal &Effec Module:4 Stress management skills and values you Module:5	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of a can identify, what can you relate to? Art of Public Speaking ortance of Non-verbal Communication, Technical Talks, D	Happin	ess. V	What	2 ho are 2 ho	the ure
Non-verbal &Effec Module:4 Stress management skills and values you Module:5 Impromptu, Impo Presentations – Inc	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of a can identify, what can you relate to? Art of Public Speaking ortance of Non-verbal Communication, Technical Talks, D	Happin	ess. V	What Prof	2 ho are 2 ho	the urs
Non-verbal &Effec Module:4 Stress management skills and values you Module:5 Impromptu, Impo Presentations – Ine Module:6	Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of a can identify, what can you relate to? Art of Public Speaking ortance of Non-verbal Communication, Technical Talks, D dividual & Group	Happin	ess. V	What Prof	2 ho are 2 ho fessio	the urs
Non-verbal &Effec Module:4 Stress management skills and values you Module:5 Impromptu, Impo Presentations – Ind Module:6 Summary writing, st	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of a can identify, what can you relate to? Art of Public Speaking ortance of Non-verbal Communication, Technical Talks, D dividual & Group Writing Skill cory writing and creating a Podcast	Happin	ess. V	What	2 ho are 2 ho fession 2 ho	ure ure
Non-verbal &Effec Module:4 Stress management skills and values you Module:5 Impromptu, Impo Presentations – Ind Module:6 Summary writing, st Module:7	The second se	Happin	ess. V	Prof	2 ho are 2 ho fession 2 ho 3 ho	urs urs urs
Non-verbal &Effec Module:4 Stress management skills and values you Module:5 Impromptu, Impo Presentations – Inc Module:6 Summary writing, st Module:7 Letter-Formal, Ema	tive communication. Introduction to Life Skills , working with rhythm and balance, teamwork - Pursuit of a can identify, what can you relate to? Art of Public Speaking ortance of Non-verbal Communication, Technical Talks, D dividual & Group Writing Skill cory writing and creating a Podcast	Happin Dynamic	ess. V	What Prof	2 ho are 2 ho cessic 2 ho 3 ho Resu	the ura na ura me





Mod	lule: 8	Contemporary Issues				2 hours
Gue	st lecture by	Industry Experts or R&D org	anization			
				Total	Lecture hours:	15 hours
Lab	Experimen	ts:				
1	Listening: (	Casual and Academic				
2	Speaking: S	ocializing Skills - Introducing	Oneself- His / He	er Goals &	SWOT	
3	Group Dis	cussion: Factual, controversial	and abstract issue	S		
4	Presentatio	n skill: JAM, Narrating a story	/anecdote			
5	Writing: Tr	avelogue				
6	Public Spea	iking: Extempore /Monologu	es			
7	Roleplay: U	Inderstanding Inter and Cross	-Cultural Commur	nication Nu	lances	
8		community service-work with		1	1 /	
9		Famous Personalities motivati			ties	
10	Soft skills -	Mock Job/Placement Intervi	ews/ Video Resum			
				Total Lal	ooratory hours:	30 hours
Tex	t Book(s)				·	
1.	Kumar.San	jay & Pushplata, Communicat	tion Skills, 2 nd Edit	ion, OUP,	2015	
2.	Koneru, Ar	runaProfessional Speaking Ski	lls, OUP, 2015.			
Refe	erence Book	S				
1.	Mc'carthy,I	Michael &O'dell,Felicity, Engl	ish Vocabulary in u	use,CUP,20	)10	
2.	SarojHirem	ath, Saroj, Business communi	cation, NiraliPraka	ishan, 2018		
Mod	le of Evalua	tion: CAT / Assignment /	Quiz / FAT			
Rec	ommended	by Board of Studies	07-06-2019			
App	roved by Ac	ademic Council	No. 55	Date	13-06-2019	





Course code	Course title L	Τ	Р	J	С
ENG1014	Business Communication & Value Science – II 1	0	2	0	2
Pre-requisite	S	yllab	us ve	ersio	n
		V	7 <b>. 1.0</b>		
<b>Course Objectiv</b>	ves:				
1. To develop eff	ective writing, reading, presentation and group discussion skills.				
2. To help studen	ts identify personality traits and evolve as a better team player.				
3. To introduce the	hem to key concepts of morality, behaviour & beliefs and diversity & inc	lusion	1		
Expected Cours	se Outcome:				
1. Integrate electr	onic/social media to share concepts and ideas				
2. Acquire technic	cal writing skills				
3. Apply different	t tools for quick reading.				
	e basic concepts of Morality and Diversity				
5. Articulate opin	ions on a topic with the objective of influencing others				
6. Demonstrate th	he basics of presentation and effective writing skills				
Module:1	Public Speaking and Presentation Skills			3 hou	are
Participate in 'Joi	in Hands Movement'. Individual identification of social issues - Each I	ndivio	lual o	choo	se
one particular soc	cial issue which they would like to address - Common errors, punctuatio	n rule	es and	l wo	rds
C. C 1					
often confused.					
often confused.					
Module:2	Lucid Writing			3 hou	urs
Module:2	Lucid Writing tudents to go through the links given about Catherine Morris and Jo	Danie			urs
Module:2 Encourage the st	6		McN	Iaho	urs
Module:2 Encourage the st writing technique	tudents to go through the links given about Catherine Morris and Joss - Speed Reading session: Introduction to skimming and scanning; pract		McN ne sar	/Iaho ne.	urs n's
Module:2 Encourage the su writing technique Module:3	tudents to go through the links given about Catherine Morris and Joss - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills	tice th	McN Me sar	/Iaho ne. <b>3 ho</b> u	urs n's
Module:2 Encourage the su writing technique Module:3 Team work and h	tudents to go through the links given about Catherine Morris and Joss - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p	tice th	McN Me sar	/Iaho ne. <b>3 ho</b> u	urs n's
Module:2 Encourage the su writing technique Module:3	tudents to go through the links given about Catherine Morris and Joss - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p	tice th	McN Me sar	/Iaho ne. <b>3 ho</b> u	urs n's
Module:2 Encourage the su writing technique Module:3 Team work and h Belbin's 8 team pl	tudents to go through the links given about Catherine Morris and Joss - Speed Reading session: Introduction to skimming and scanning; pract <b>Communication Skills</b> now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles	tice th	McN ne sar ality	//aho ne. <b>3 hou</b> traits	urs n's
Module:2 Encourage the set writing technique Module:3 Team work and h Belbin's 8 team pl Module:4	tudents to go through the links given about Catherine Morris and Jo s - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills	tice th	McN ne sar ality	/Iaho ne. <b>3 ho</b> u	urs n's urs
Module:2 Encourage the set writing technique Module:3 Team work and h Belbin's 8 team pl Module:4	tudents to go through the links given about Catherine Morris and Joss - Speed Reading session: Introduction to skimming and scanning; pract <b>Communication Skills</b> now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles	tice th	McN ne sar ality	//aho ne. <b>3 hou</b> traits	ure n': ure s -
Module:2 Encourage the set writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book	tudents to go through the links given about Catherine Morris and Jo ss - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values	tice th	McM ne sarr nality	/aho ne. <b>3 hou</b> traits <b>3 hou</b>	urs n's urs
Module:2 Encourage the set writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book Module:5	tudents to go through the links given about Catherine Morris and Jo s - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values Data Interpretation	tice th	McM ne sarr nality	//aho ne. <b>3 hou</b> traits	urs n's urs
Module:2 Encourage the set writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book Module:5	tudents to go through the links given about Catherine Morris and Jo ss - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values	tice th	McM ne sarr nality	/aho ne. <b>3 hou</b> traits <b>3 hou</b>	urs n's urs
Module:2 Encourage the set writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book Module:5 Interpretation of	tudents to go through the links given about Catherine Morris and Jo ss - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values Data Interpretation f Data & Transcoding	tice th	McM ne sarr nality	/aho ne. 3 hou traits 3 hou 2 hou	urs n's urs s -
Module:2 Encourage the st writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book Module:5 Interpretation of Module: 6	tudents to go through the links given about Catherine Morris and Jo s - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values Data Interpretation f Data & Transcoding Contemporary Issues	tice th	McM ne sarr nality	/aho ne. <b>3 hou</b> traits <b>3 hou</b>	urs n's urs s -
Module:2 Encourage the st writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book Module:5 Interpretation of Module: 6	tudents to go through the links given about Catherine Morris and Joss - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values Data Interpretation f Data & Transcoding Contemporary Issues Y Industry Experts or R&D organization		McM ne sar ality	/aho ne. 3 hou traits 3 hou 2 hou 1 ho	
Module:2 Encourage the st writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book Module:5 Interpretation of Module: 6 Guest lecture by	tudents to go through the links given about Catherine Morris and Jo s - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values Data Interpretation f Data & Transcoding Contemporary Issues Industry Experts or R&D organization Total Lecture hou		McM ne sar ality	/aho ne. 3 hou traits 3 hou 2 hou	
Module:2 Encourage the set writing technique Module:3 Team work and h Belbin's 8 team pl Module:4 Reviewing a book Module:5 Interpretation of Module: 6 Guest lecture by	tudents to go through the links given about Catherine Morris and Jo s - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values Data Interpretation f Data & Transcoding Contemporary Issues r Industry Experts or R&D organization Total Lecture hou ing Experiments (Indicative)		McM ne sar ality	/aho ne. 3 hou traits 3 hou 2 hou 1 ho	
Module:2         Encourage the structure         writing technique         Module:3         Team work and h         Belbin's 8 team pl         Module:4         Reviewing a book         Module:5         Interpretation of         Guest lecture by         List of Challeng         1       Debates: Soc	tudents to go through the links given about Catherine Morris and Jo s - Speed Reading session: Introduction to skimming and scanning; pract Communication Skills now individuals contribute- Belbin's 8 Team Roles and Lindgren's Big 5 p layer styles Soft Skills x, a video, a film -Values and Life Skills: TCS values Data Interpretation f Data & Transcoding Contemporary Issues Industry Experts or R&D organization Total Lecture hou		McM ne sar ality	/aho ne. 3 hou traits 3 hou 2 hou 1 ho	





3	Design a logo: Creating Vision, Mission, Value statement, tagline					
4	Soft skills: Role playson social issues					
5	Soft Skills : Discussion on social issues					
6	Presentation skills: Understanding diversity: PPT presentations					
7	Report Writing: Role of NGO: a visit to the sight for a hands-on experience and submit a r	report				
8	Resume: Video resume					
	Total Lecture hours:	30 hours				
	$a \rightarrow t \mathbf{P}_{a} a 1_{a} (a)$					
le	ext Book(s)					
1 e	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice,	3rd edition,				
		3rd edition,				
1.	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice,	3rd edition,				
1.	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice, Oxford University Press, 2015.	3rd edition,				
1. <b>Re</b>	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice, Oxford University Press, 2015. eference Books					
1. <b>Re</b> 1.	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice, Oxford University Press, 2015.         eference Books         Kalam, A.A. (2015). Guiding Souls: Dialogues on the purpose of Life.PrabhatPrakashan					
1. <b>Re</b> 1.	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice, Oxford University Press, 2015.         eference Books         Kalam, A.A. (2015). Guiding Souls: Dialogues on the purpose of Life.PrabhatPrakashan         Alred, G. J., Brusaw, C. T., &Oliu, W. E. (2011). Handbook of Technical Writing, Tenth E					
1. <b>Re</b> 1. 2.	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice, Oxford University Press, 2015.         eference Books         Kalam, A.A. (2015). Guiding Souls: Dialogues on the purpose of Life.PrabhatPrakashan         Alred, G. J., Brusaw, C. T., &Oliu, W. E. (2011). Handbook of Technical Writing, Tenth E ed.). St. Martin's Press					
<ol> <li>Re</li> <li>1.</li> <li>2.</li> <li>3</li> <li>Mo</li> </ol>	Raman, Meenakshi& Sangeeta Sharma. Technical Communication: Principles and Practice, Oxford University Press, 2015.         eference Books         Kalam, A.A. (2015). Guiding Souls: Dialogues on the purpose of Life.PrabhatPrakashan         Alred, G. J., Brusaw, C. T., &Oliu, W. E. (2011). Handbook of Technical Writing, Tenth E         ed.). St. Martin's Press         Sherman, Barbara.(2014).Skimming and Scanning Techniques.Liberty University Press.					





Course code	Course title	L T P J C
ENG 1017	Business Communication & Value Science – III	1 0 2 0 2
Pre-requisite	NIL	Syllabus version
		v.1.0
Course Objecti	ves:	
1. To develop te	chnical writing skills	
	learners with Self-analysis techniques like SWOT & TOWS	
3. To introduce	students to key concepts of Pluralism & cultural spaces, Cross-cu	ltural Communication
and Science of N		
Expected Cour	se Outcome:	
1. Apply the basi	c principles of SWOT & life positions.	
2. Write effective	e sentences by exposure to grammatical rules	
	e concepts of Global, glocal and trans locational	
4. Define and red	cognize the importance of Artificial Intelligence	
	ols of technical writing	
6. Exhibit unders	standing of diversity and cross-cultural communication	
Module:1	SWOT Vs. TOWS	2 hours
The Balancing A	-+ (Cale Analysis) Designational of CWOT 9 life analysis of the	11 1
The Dalaheng A	ct (Self Analysis) - basic principles of SWO1 & life positions. Ted ta	llks on biomimicry
	ct (Self Analysis) - Basic principles of SWOT & life positions. Ted ta	llks on biomimicry
Module:2		lks on biomimicry
Module:2	English Grammar & Vocabulary	
Module:2		
Module:2 Error Detection,	English Grammar & Vocabulary Voice (Active & passive) Text Completion (Closed/ open)	2 hours
Module:2 Error Detection, Module:3	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces	2 hours
Module:2 Error Detection, Module:3 Awareness and	English Grammar & Vocabulary Voice (Active & passive) Text Completion (Closed/ open)	2 hours
Module:2 Error Detection, Module:3 Awareness and	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces	2 hours
Module:2 Error Detection, Module:3	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using	2 hours 2 hours Phir Miley Sur Mera
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communic	2 hours       2 hours       Phir Miley Sur Merz       cation       2 hours
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using	2 hours       2 hours       Phir Miley Sur Merz       cation       2 hours
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communic         ommon mistakes made in cross-cultural communication. Ve	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communic         pmmon mistakes made in cross-cultural communication. Ve (approach is through Ted and YouTube videos).	2 hours       2 hours       Phir Miley Sur Merz       cation       2 hours
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co communication ( Module:5	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communic         pmmon mistakes made in cross-cultural communication. Ve (approach is through Ted and YouTube videos).         Technical Writing	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours       rbal and non-verba
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co communication ( Module:5 a) Report writin	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communic         promon mistakes made in cross-cultural communication. Ve (approach is through Ted and YouTube videos).         Technical Writing         g -Basic rules of Report writing through examples	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours       rbal and non-verba
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co communication ( Module:5 a) Report writin	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communic         pmmon mistakes made in cross-cultural communication. Ve (approach is through Ted and YouTube videos).         Technical Writing	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours       rbal and non-verba
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co communication ( Module:5 a) Report writin	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communic         promon mistakes made in cross-cultural communication. Ve (approach is through Ted and YouTube videos).         Technical Writing         g -Basic rules of Report writing through examples	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours       rbal and non-verba       2 hours       2 hours
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co communication ( Module:5 a) Report writin b) Technical Pr Module:6	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communication. Ve (approach is through Ted and YouTube videos).         Technical Writing         g -Basic rules of Report writing through examples         oposal - "How will a voice assistant evolve in 25 years from now?"         Motivation	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours       rbal and non-verba       2 hours       2 hours       2 hours       2 hours
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co communication ( Module:5 a) Report writin b) Technical Pr Module:6	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communication. Ve (approach is through Ted and YouTube videos).         Technical Writing         g -Basic rules of Report writing through examples         opposal - "How will a voice assistant evolve in 25 years from now?"	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours       rbal and non-verba       2 hours       2 hours       2 hours       2 hours
Module:2 Error Detection, Module:3 Awareness and Tumhara Module:4 Identify the co communication ( Module:5 a) Report writin b) Technical Pr Module:6	English Grammar & Vocabulary         Voice (Active & passive) Text Completion (Closed/ open)         Pluralism in cultural spaces         respect for pluralism in cultural spaces Theory/Discussion using         Global, Glocal and translocational cross-cultural communication. Ve (approach is through Ted and YouTube videos).         Technical Writing         g -Basic rules of Report writing through examples         oposal - "How will a voice assistant evolve in 25 years from now?"         Motivation	2 hours       2 hours       Phir Miley Sur Mera       cation       2 hours       rbal and non-verba       2 hours       2 hours       2 hours       2 hours





Intro	oduction to	Role of science in nation bui	lding- Discussion	through Au	ugmented Reality, I	Role of science
post-	independer	nce				
	ule:8	Contemporary Issues				1 hou
Gue	st lecture by	Industry Experts or R&D o	rganization			
T .1.	<b>F</b>	4-		Total	Lecture hours:	15 hours
	Experimen			OWIOT	1	
1	1 0	Applying SWOT in real life s	. ,	our SWO1		
2	,	Skit -Global/Glocal/Transl	ocational culture			
3	)	Motivational Talk	· / D · 1	1 1		
4	0	mportance of Artificial Intell	0	0	,,,,,,,	
5		Summarizing - activity on id			ivation / Maslow's	Theory
6		Cross Cultural Communicat				
7	-	cussion - the role of scientis				
8	Creative W	riting (Poster Presentation) -	-Gender awareness	1 0		
				To	tal Laboratory ho	urs: 30 hours
Text	Book(s)					
1.	Kumar, Sa	njay and Pushp Lata. English	h Language and C	ommunicat	tion Skills for Engi	neers, Oxford
	University	Press, India, 2018.				
	rence Bool					
1.	-	S., & O'Keefe, S. S. (2009).	-	-		) Planning and
	Writing Te	chnical Content (3rd ed.). Sc	riptorium Publishi	ing Service	s, Inc.	
2.	Alred, G.	J., Brusaw, C. T., &Oliu, W	⁷ . E. (2011). Hand	lbook of T	Technical Writing,	Tenth Edition
	· · · ·	St. Martin's Press.				
3.		S., Valentine, D., &Munter,	. ,			inications (2nd
		Guide to Series in Business C				
4.	Hurn, B.,	& Tomalin, B. (2016). Cross	s-Cultural Commu	nication: T	heory and Practice	e (1st ed. 2013
	ed.). Palgra	ve Macmillan.				
Web	Reference	5:				
1	Examples	of Technical Writing for Stud	dents			
	-	elance-writing.lovetoknow.c	om/kinds-technic	al-writing		
2	11 Skills of	a Good Technical Writer				
	https://cli	ckhelp.com/clickhelp-techni	cal-writing-blog/1	1-skills-of-	a-good-technical-w	riter/
3	13 benefits	and challenges of cultural d	iversity in the worl	kplace		
	https://ww	vw.hult.edu/blog/benefits-cl	hallenges-cultural-	diversity-w	orkplace/	
Onli	ne Resourc	es:				
1	https://yo	utu.be/CsaTslhSDI				
2	https://m.	youtube.com/watch?feature	=youtu.be&v=e80	BbX05D7	Y	
3	https://m.	youtube.com/watch?v=d'T_	D68RJ5T8&featur	e=youtu.b	e	
		0	Quiz / FAT			
		by Board of Studies	29-01-2021			
App	roved by A	cademic Council	No. 61	Date	18-02-2021	





	Course Title	L	Т	Р	J	С
ENG1018	Business Communication and Value Science - IV	1	0	2	0	2
re-requisite	NIL		Sylla	bus	vers	ion
				v. 1.	.0	
Course Objective	s:					
1. To recognize th	e best practices of communicative writing					
2. To understand	the importance of emotional intelligence and diversity in personal a	nd p	rofes	ssion	al liv	ves
3. To acquaint the	learners on corporate etiquettes & corporate social responsibility					
Expected Course	Outcome:					
4. Excel in comm	unicative writing in real life scenarios.					
5. Recognize the i	mportance of corporate social responsibility (CSR)					
6. Assess the impa	ct of conflicts and list the basic guidelines required to manage conf	licts				
7. Relate to Emot	onal Intelligence in personal and professional life.					
8. Identify the bes	t time management practices and apply in diverse situations					
	lvanced level communication skills					
Module:1	Communicative Writing				21	nou
Principles of Cor	nmunicative Writing, Formal and Business letters, Writing SOP	_				
1						
Module:2	Corporate Social Responsibility (CSR)				21	nou
	story to introduce the concept of social responsibility. Attributes		• 1	c	u a mla	and
Ubuntu story – A	story to introduce the concept of social responsibility. Attributes	requ	irea	tor v	VOIK	
		-				
life Qualities of a	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts	-				
life Qualities of a	a good team member: a) Resilience, b) Flexibility, c) Strategic th	-				
life Qualities of a	a good team member: a) Resilience, b) Flexibility, c) Strategic th	-			nnin	
life Qualities of a Decision making, Module:3	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts	inkii	ng &	: pla	nnin 21	g dý
life Qualities of a Decision making, Module:3	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts	inkii	ng &	: pla	nnin 21	g dý
life Qualities of a Decision making, Module:3 Meaning and defi	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts	inkii	ng &	: pla	nnin 21	g dý
life Qualities of a Decision making, Module:3 Meaning and defi	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts	inkii	ng &	: pla	nnin 21 , Tip	g dj nou os to
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa	inkii Let o	ng &	r pla	nnin 21 , Tip 21	g dj nou os to
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication	inkii Let o	ng &	r pla	nnin 21 , Tip 21	g d) nou os to
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication nd corporate terms - handouts of common business idioms and gu	inkii Let o	ng &	r pla	nnin 21 , Tip 21	g dj nou os to
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication nd corporate terms - handouts of common business idioms and gu	inkii Let o	ng &	r pla	nnin 21 , Tip 21 own	g d) nou os to
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a the TCS BizVoca Module:5	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts <b>Understanding conflicts</b> nition of conflict; reasons for conflict; negative and positive impa <b>Business Communication</b> nd corporate terms - handouts of common business idioms and gui o on their smartphones.	inkii ct o	ng &	r pla	nnin 21 , Tip 21 own	g dj
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a the TCS BizVoca Module:5	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication nd corporate terms - handouts of common business idioms and gue o on their smartphones. Time management	inkii ct o	ng &	r pla	nnin 21 , Tip 21 own	g dj
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a the TCS BizVoca Module:5	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts <b>Understanding conflicts</b> nition of conflict; reasons for conflict; negative and positive impa <b>Business Communication</b> nd corporate terms - handouts of common business idioms and guide o on their smartphones. <b>Time management</b> Time Management Importance of Time Management for Better Li	inkii ct o	ng &	r pla	nnin 21 , Tip 21 21	g d) nou os to nou load
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a the TCS BizVoca Module:5 Basic concepts of Module: 6	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication nd corporate terms - handouts of common business idioms and gui o on their smartphones. Time management Time Management Importance of Time Management for Better Li Corporate Etiquette & Communication	inkii .ct o	ng &	: pla	nnin 21 , Tif 21 own 21 21	g dj nou os to nou nou
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a the TCS BizVoca Module:5 Basic concepts of Module: 6 Importance of Et	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication nd corporate terms - handouts of common business idioms and gui o on their smartphones. Time management Time Management Importance of Time Management for Better Li Corporate Etiquette & Communication iquette in business and everyday life, Components of Etiquette –Ne	inkii .ct o	ng &	: pla	nnin 21 , Tif 21 own 21 21	g dj nou os to load
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a the TCS BizVoca Module:5 Basic concepts of Module: 6 Importance of Et	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication nd corporate terms - handouts of common business idioms and gui o on their smartphones. Time management Time Management Importance of Time Management for Better Li Corporate Etiquette & Communication	inkii .ct o	ng &	: pla	nnin 21 , Tif 21 own 21 21	g dj nou os to load
life Qualities of a Decision making, Module:3 Meaning and defi manage conflict Module:4 Business idioms a the TCS BizVoca Module:5 Basic concepts of Module: 6 Importance of Et	a good team member: a) Resilience, b) Flexibility, c) Strategic th e) Resolving conflicts Understanding conflicts nition of conflict; reasons for conflict; negative and positive impa Business Communication nd corporate terms - handouts of common business idioms and gui o on their smartphones. Time management Time Management Importance of Time Management for Better Li Corporate Etiquette & Communication iquette in business and everyday life, Components of Etiquette –Ne	inkii .ct o	ng &	: pla	nnin 21 , Tip 21 own 21 21 stanc	g dj nou os to nou nou





Module 8	Contemporary Issues	1 hour
Guest lecture by I	ndustry Experts or R&D organization	
	Total Lecture hours:	15 hours
Lab Experime		
	- CSR story & CSR activity of Tata Steel, Microsoft, Google, TCS, Star	rbucks Titan Tata
	s and TOMS Shoes	bucks, mail, Tata
	- Public speaking at work place and best practices of public speaking/	Presenting a selected
1 0	an eminent leader.	r resenting a selected
1	Cloze test on corporate etiquettes	
	icative writing- drafting business mails/ Organizing work place events	through mails
	- Case studies of Conflict resolution/ Videos on cultural diversity at wo	-
	es and challenges	JIK place-
0	- Conflict management- Presentation skills / Effective time manageme	nt- extempore/
presentin	8	I ·
7 Reading	& summarizing - Time management activities : Time squared activity /	Circadian Rhythm
	Writing - Who am I? (Image Management, Building a perfect image) /	Exploring Self-
awarenes	s and social awareness through Narrative essay	
	Total Laborat	tory hours:30 hours
Text Book(s)		i
	Meenakshi & Sangeeta Sharma. Technical Communication: Principle Oxford University Press, 2015.	es and Practice, 3rd
Reference Book		
	D. (2017). How to Develop Self-Confidence and Influence People ed.). Gallery Books	by Public Speaking
2. C Murali	xrishna & Sunitha Mishra(2011). Communication Skills for Engineer	s, 2nd edition, NY:
Pearson.		
	Burda(2015). On Transcultural Communication, LAP Lambert Acader	mic Publishing, UK.
Web References		
	ww.tata.com/about-us/tata-group-our-heritage	1.1.1.1
	conomictimes.indiatimes.com/tata-success-story-is-based-on-humanity- icleshow/41766592.cms	-philanthropy-and-
Online Resource		
	outu.be/reu8rzD6ZAE	
1 1	putu.be/Wx9v_J34Fyo	
1 5	outu.be/F2hc2FLOdhI	
1	outu.be/wHGqp8lz36c	
	putu.be/hxS5He3KVEM	
Mode of Evalua	tion: CAT / Assignment / Quiz / FAT	
Recommended	by Board of Studies 29-01-2021	
Approved by A	cademic Council No. 61 Date 18-02-2021	



### VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course Code	Course Title	L	Т	Р	T	С
ENG1901	Technical English - I	0	0	4	0	2
Pre-requisite	Foundation English-II	S	yllał	ous V	Versi	on
				v. 1.(	)	
<b>Course Objective</b>	3:					
real life situation	dents' knowledge of grammar and vocabulary to read and write is. dents' practice the most common areas of written and spoken co				0 0	
	idents' communicative competency through listening and spe					
Expected Course	Outcome:					
2. Acquire wide vo	r understanding of advanced grammar rules and write grammatic cabulary and learn strategies for error-free communication. nguage and improve speaking skills in academic and social contex	-	corre	ct sei	ntenc	es.
4. Improve listenin English accents	ng skills so as to understand complex business communication through proper pronunciation.	in a		-	_	
	diagrams and improve both reading and writing skills which we as professional career.	ould .	help	them	n 111 t	heir
Module:1 Ac	lvanced Grammar			4	l hou	irs
Articles, Tenses, Vo	vice and Prepositions					
Activity: Workshee	s on Impersonal Passive Voice, Exercises from the prescribed te	xt				
Module:2 Vo	ocabulary Building, I				4 ho	urs
	, Homonyms, Homophones and Homographs					
	zles; Vocabulary Activities through Web tools					
Module:3 Li	stening for Specific Purposes				4 ho	1148
	short conversations, announcements, briefings and discussions				1 110	415
Activity: Gap filling						
-	eaking for Expression				6 hou	
Invitations	f and others, Making Requests & responses, Inviting and	Ac	cepti	ng/I	Decli	ning
Activity: Brief intro	ductions; Role-Play; Skit.					
Module:5 Re	eading for Information				4 ho	urs
Reading Short Pass	ages, News Articles, Technical Papers and Short Stories					
Activity: Reading sp	becific news paper articles; blogs					



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

	Writing Strategies	4 hours
Joining the se	ntences, word order, sequencing the ideas, introduction and conclusion	4
Activity: Shor	t Paragraphs; Describing familiar events; story writing	
		1
Module:7	Vocabulary Building II	4 hours
	main specific vocabulary by describing Objects, Charts, Food, Sports and Emplo	yment.
Activity: Des	cribing Objects, Charts, Food, Sports and Employment	
Module:8	Listening for Daily Life	4 hours
	statistical information, short extracts, Radio broadcasts and TV interviews	Thous
8	ng notes and Summarizing	
Module:9	Expressing Ideas and Opinions	6 hours
Telephonic co	onversations, Interpretation of Visuals and describing products and processes.	
Activity: Role	-Play (Telephonic); Describing Products and Processes	
Module: 10	Comprehensive Reading	4 hours
	<b>Comprehensive Reading</b> prehension, making inferences, Reading Graphics, Note-making, and Critical Rea	
8	ence Completion; Cloze Tests	ung.
activity. Sem	the completion, cloze rests	
Module: 11	Narration	4 hours
Writing narra	tive short story, Personal milestones, official letters and E-mails.	
0	live short story, Personal innestones, official fetters and E-mails.	
-	ing an E-mail; Improving vocabulary and writing skills.	
Activity: Writ	ing an E-mail; Improving vocabulary and writing skills.	
Activity: Writ Module: 12	Ing an E-mail; Improving vocabulary and writing skills.  Pronunciation	4 hours
Activity: Writ Module: 12 Speech Sound	Ing an E-mail; Improving vocabulary and writing skills.	4 hours
Activity: Writ Module: 12 Speech Sound	Ing an E-mail; Improving vocabulary and writing skills.  Pronunciation	4 hours
Activity: Writ <b>Module: 12</b> Speech Sound Activity: Prac	Ing an E-mail; Improving vocabulary and writing skills.	
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13	Ing an E-mail; Improving vocabulary and writing skills.         Pronunciation         Is, Word Stress, Intonation, Various accents         ticing Pronunciation through web tools; Listening to various accents of English         Editing	4 hours
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13 Simple, Comp	Ing an E-mail; Improving vocabulary and writing skills.	4 hours
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13 Simple, Comp	Ing an E-mail; Improving vocabulary and writing skills.         Pronunciation         Is, Word Stress, Intonation, Various accents         ticing Pronunciation through web tools; Listening to various accents of English         Editing	4 hours
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13 Simple, Comp Activity: Prac	Ing an E-mail; Improving vocabulary and writing skills.	<b>4 hour</b> s
Activity: Writ <b>Module: 12</b> Speech Sound Activity: Prac <b>Module: 13</b> Simple, Comp Activity: Prac <b>Module: 14</b>	Ing an E-mail; Improving vocabulary and writing skills.	4 hours
Activity: Writ <b>Module: 12</b> Speech Sound Activity: Prac <b>Module: 13</b> Simple, Comp Activity: Prac <b>Module: 14</b> "The Bounda	Ing an E-mail; Improving vocabulary and writing skills.	4 hours 4 hours inctuations. 4 hours
Activity: Writ <b>Module: 12</b> Speech Sound Activity: Prac <b>Module: 13</b> Simple, Comp Activity: Prac <b>Module: 14</b> "The Bounda	Ing an E-mail; Improving vocabulary and writing skills.	4 hours
Activity: Writ <b>Module: 12</b> Speech Sound Activity: Prac <b>Module: 13</b> Simple, Comp Activity: Prac <b>Module: 14</b> "The Bounda	ing an E-mail; Improving vocabulary and writing skills.	4 hours inctuations. 4 hours
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13 Simple, Comp Activity: Prac Module: 14 "The Bounda Activity: Reac Text Book /	ing an E-mail; Improving vocabulary and writing skills.          Pronunciation         ls, Word Stress, Intonation, Various accents         ticing Pronunciation through web tools; Listening to various accents of English         Editing         olex & Compound Sentences, Direct & Indirect Speech, Correction of Errors, Puticing Grammar         Short Story Analysis         ry" by Jhumpa Lahiri         ling and analyzing the theme of the short story.         Total Lecture hours         Workbook	4 hours inctuations. 4 hours 60 hours
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13 Simple, Comp Activity: Prac Module: 14 "The Bounda Activity: Reac Text Book / 1. Wren,	ing an E-mail; Improving vocabulary and writing skills.          Pronunciation         Is, Word Stress, Intonation, Various accents         ticing Pronunciation through web tools; Listening to various accents of English         Editing         olex & Compound Sentences, Direct & Indirect Speech, Correction of Errors, Puticing Grammar         Short Story Analysis         ry" by Jhumpa Lahiri         ing and analyzing the theme of the short story.         Total Lecture hours         Workbook         P.C.; Martin, H.; Prasada Rao, N.D.V. (1973–2010). High School English O	4 hours inctuations. 4 hours 60 hours
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13 Simple, Comp Activity: Prac Module: 14 "The Bounda Activity: Reac Text Book / 1. Wren, Compo	ing an E-mail; Improving vocabulary and writing skills.          Pronunciation         Is, Word Stress, Intonation, Various accents         ticing Pronunciation through web tools; Listening to various accents of English         Editing         blex & Compound Sentences, Direct & Indirect Speech, Correction of Errors, Puticing Grammar         Short Story Analysis         ry" by Jhumpa Lahiri         ling and analyzing the theme of the short story.         Total Lecture hours         Workbook         P.C.; Martin, H.; Prasada Rao, N.D.V. (1973–2010). High School English G         sition. New Delhi: Sultan Chand Publishers.	4 hours anctuations. 4 hours 60 hours Grammar &
Activity: Writ Module: 12 Speech Sound Activity: Prac Module: 13 Simple, Comp Activity: Prac Module: 14 "The Bounda Activity: Reac Text Book / 1. Wren, Compo 2. Kumar,	ing an E-mail; Improving vocabulary and writing skills.          Pronunciation         Is, Word Stress, Intonation, Various accents         ticing Pronunciation through web tools; Listening to various accents of English         Editing         olex & Compound Sentences, Direct & Indirect Speech, Correction of Errors, Puticing Grammar         Short Story Analysis         ry" by Jhumpa Lahiri         ing and analyzing the theme of the short story.         Total Lecture hours         Workbook         P.C.; Martin, H.; Prasada Rao, N.D.V. (1973–2010). High School English O	4 hours anctuations. 4 hours 60 hours Grammar 8



# Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Refe	erence Books					
1.	Guptha S C, (2012) Practical En	glish Gramm	ar & Composition, 1st Editio	on, India: Arihant		
	Publishers					
2.	Steven Brown, (2011) Dorolyn Smith	ith, Active Lis	tening 3, 3rd Edition, UK: Car	mbridge University		
	Press.					
3.	Liz Hamp-Lyons, Ben Heasley, (201	0) Study Writi	ing, 2nd Edition, UK: Cambridg	ge University Press.		
4.	Kenneth Anderson, Joan Maclean, (2013) Tony Lynch, Study Speaking, 2nd Edition, UK					
	Cambridge, University Press.					
5.	Eric H. Glendinning, Beverly Hol	mstrom, (201	2) Study Reading, 2nd Edition	n, UK: Cambridge		
	University Press.					
6.	Michael Swan, (2017) Practical Eng	glish Usage (P	ractical English Usage), 4th ed	ition, UK: Oxford		
	University Press.					
7.	Michael McCarthy, Felicity O'Dell		lish Vocabulary in Use Advar	nced (South Asian		
	Edition), UK: Cambridge University					
8.	Michael Swan, Catherine Walter, (		l English Grammar Course A	dvanced, Feb, 4th		
	Edition, UK: Oxford University Pre					
9.	Watkins, Peter. (2018) Teaching	-	0 0 0	e Handbooks for		
	Language teachers, UK: Cambridge	University Pre	ess.			
10.	(The Boundary by Jhumpa Lahiri) URL:					
	https://www.newyorker.com/maga	lzine/2018/01	/29/the-boundary?intcid=inline	<u>e amp</u>		
Mod	le of evaluation: Quizzes, Presentat	tion, Discussi	ion, Role play, Assignments a	and FAT		
List	of Challenging Experiments (India	cative)				
1.	Self-Introduction			12 hours		
2.	Sequencing Ideas and Writing a Para	0 1		12 hours		
3.	Reading and Analyzing Technical An			8 hours		
4.	Listening for Specificity in Interview	· 1	ecific)	12 hours		
5.	Identifying Errors in a Sentence or F	Paragraph		8 hours		
6.	Writing an E-mail by narrating life ev	vents		8 hours		
			Total Laboratory Hours	60 hours		
M		·				
	le of evaluation: Quizzes, Presentat		ion, Role play, Assignments a	and FAI		
	ommended by Board of Studies	0806-2019	Data: 12.0( 2010			
Арр	roved by Academic Council	No. 55	Date: 13-06-2019			



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Course Code	2	Course Title	L	Т	Р	J	С
ENG1902		Technical English - II	0	0	4	0	2
Pre-requisite	2	71% to 90% EPT score	Syl	labu	s V	ersio	n
					v. 1	.0	
Course Obje	ctives:						
1. To acqui	re proficier	ncy levels in LSRW skills on par with the requirements for	place	men	tint	ervie	ws of
high-end	companies	s / competitive exams.					
		ex arguments and to articulate their own positions on a	rang	e of	tec	hnic	al and
general t	-						
-	8	natical and acceptable English with minimal MTI, as wel	l as c	level	op	a vas	t and
active vo	cabulary.						
<b>T</b>	0						
Expected Co			• 1				
	-	ciently in high-end interviews and exam situations and all so	ocial	situa	tion	S	
1		mic articles and draw inferences					
	-	erspectives on a topic					
	2	nvincingly in academic as well as general contexts					
5. Synthesiz	ze complex	concepts and present them in speech and writing					
Module:1	_	g for Clear Pronunciation				hou	
		on to vowels, consonants, diphthongs. Listening to formal	conv	ersat	ions	in E	British
		BC and CNN) as well as other 'native' accents					
Activity: Facto	ual and inte	erpretive exercises; note-making in a variety of global Englis	h acc	ents			
	<b>T</b> . <b>1</b>						
Module:2		ing Oneself			4	hou	irs
Speaking: Ind							
Activity: Self-	Introductio	ons, Extempore speech					
Module:3	Effective	Writing			6	i hou	1#0
		and Emails, Minutes and Memos			Ľ	1100	
0		ommon business letters and emails: inquiry/ complaint/ pl	acino	on c	rda	r Fo	rmate
of Minutes an	-	ommon business retters and emans. inquiry/ complaint/ pr	acing	anc	nuc	1,10	iniats
		ubusiness letter and Minutes/ Memo					
Therefore, Study		business letter and minutes/ memo					
Module:4	Compreh	ensive Reading			4	hou	urs
Reading: Read	ling Compi	rehension Passages, Sentence Completion (Technical and G	enera	al Int	eres	st),	
Vocabulary ar	nd Word A	nalogy					
2		ogical reasoning, Advanced grammar exercises					
Module:5	Listening	g to Narratives			4	hou	ırs
	c	,					

	Institute of Technology Iniversity under section 3 of UGC Act, 1950	2
Listoning, L	• • • •	Intirational Space
	stening to audio files of short stories, News, TV Clips/ Documentaries, M global English accents.	nouvationalspeech
	e-making and Interpretive exercises	
Module:6		6 hours
	Academic Writing and Editing ting/ Proof reading symbols	0 Hours
Citation Forr		
	an Abstract and Research Paper	
	ing Abstracts and research paper; Work with Editing/ Proof reading exe	rcise
itetivity. wiit		
Module:7	Team Communication	4 hours
	oup Discussions and Debates on complex/ contemporary topics	11000
	valuation parameters, using logic in debates	
	up Discussions on general topics	
Module:8	Career-oriented Writing	4 hour
Writing: Res	umes and Job Application Letters, SOP	
Activity: Wri	ting resumes and SOPs	
Module:9	Reading for Pleasure	4 hours
Reading: Rea	ding short stories	•
Activity: Clas	sroom discussion and note-making, critical appreciation of the short story	y .
		I
Module:10	Creative Writing	4 hours
-	ginative, narrative and descriptive prose	
Activity: Wri	ting about personal experiences, unforgettable incidents, travelogues	
		4 hours
Module:11	Academic Listening	4 hours
<b>Module:11</b> Listening: Li	Academic Listening stening in academic contexts	4 hours
<b>Module:11</b> Listening: Li Activity: List	Academic Listening stening in academic contexts ening to lectures, Academic Discussions, Debates, Review Presentations,	
<b>Module:11</b> Listening: Li Activity: List	Academic Listening stening in academic contexts ening to lectures, Academic Discussions, Debates, Review Presentations,	
<b>Module:11</b> Listening: Li Activity: List Project Revie	Academic Listening stening in academic contexts ening to lectures, Academic Discussions, Debates, Review Presentations,	
Module:11 Listening: Li Activity: List Project Revie Module:12	Academic Listening stening in academic contexts ening to lectures, Academic Discussions, Debates, Review Presentations, Tew Meetings	ResearchTalks,
Module:11 Listening: Li Activity: List Project Revie Module:12 Narratives o	Academic Listening         stening in academic contexts         ening to lectures, Academic Discussions, Debates, Review Presentations, Tew Meetings         Reading Nature-based Narratives	ResearchTalks,
Module:11 Listening: Li Activity: List Project Revie Module:12 Narratives o	Academic Listening         stening in academic contexts         ening to lectures, Academic Discussions, Debates, Review Presentations, 2         ew Meetings         Reading Nature-based Narratives         n Climate Change, Nature and Environment	ResearchTalks,
Module:11 Listening: List Activity: List Project Revie Module:12 Narratives o Activity: Clas Module:13	Academic Listening         stening in academic contexts         ening to lectures, Academic Discussions, Debates, Review Presentations, I         ew Meetings         Reading Nature-based Narratives         n Climate Change, Nature and Environment         sroom discussions, student presentations         Technical Proposals	ResearchTalks,
Module:11 Listening: List Activity: List Project Revie Module:12 Narratives o Activity: Clas Module:13	Academic Listening         stening in academic contexts         ening to lectures, Academic Discussions, Debates, Review Presentations, Exercises         w Meetings         Reading Nature-based Narratives         n Climate Change, Nature and Environment         sroom discussions, student presentations	ResearchTalks,
Module:11 Listening: List Activity: List Project Revie Module:12 Narratives o Activity: Clas Module:13 Writing: Tec	Academic Listening         stening in academic contexts         ening to lectures, Academic Discussions, Debates, Review Presentations, I         ew Meetings         Reading Nature-based Narratives         n Climate Change, Nature and Environment         sroom discussions, student presentations         Technical Proposals         hnical Proposals Activities: Writing a technical proposal	ResearchTalks, 4 hours 4 hours
Module:11 Listening: List Activity: List Project Revie Module:12 Narratives o Activity: Clas Module:13 Writing: Tec Module:14	Academic Listening         stening in academic contexts         ening to lectures, Academic Discussions, Debates, Review Presentations, is         w Meetings         Reading Nature-based Narratives         n Climate Change, Nature and Environment         sroom discussions, student presentations         Technical Proposals         hnical Proposals Activities: Writing a technical proposal         Presentation Skills	ResearchTalks,
Module:11 Listening: List Activity: List Project Revie Module:12 Narratives o Activity: Clas Module:13 Writing: Tec Module:14 Persuasive ar	Academic Listening         stening in academic contexts         ening to lectures, Academic Discussions, Debates, Review Presentations, I         ew Meetings         Reading Nature-based Narratives         n Climate Change, Nature and Environment         sroom discussions, student presentations         Technical Proposals         hnical Proposals Activities: Writing a technical proposal	ResearchTalks, 4 hours 4 hours



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

			Total Lecture hour	s: 60 hours				
Tex	t Book / Workbook							
1.	Oxenden, Clive and Christina Lat	ham-Koenig. New	English File: Advanced Student	s Book.				
	Paperback. Oxford University Pres	-						
2.	Rizvi, Ashraf. Effective Technical	Communication. M	cGraw-Hill India, 2017.					
Refe	erence Books							
	Oxenden, Clive and Christina	Latham-Koenig, N	ew English File: Advanced: '	Feacher's Book				
1.	with Test and Assessment. CD-	ROM: Six-level Ge	neral English Course for Adul	ts. Paperback.				
	Oxford University Press, UK, 2013.							
2.	Balasubramanian, T. English	Phonetics for the	e Indian Students: A Worl	xbook. Laxmi				
2.	Publications, 2016.							
3.	Philip Seargeant and Bill Gr	eenwell, From La	anguage to Creative Writing	. Bloomsbury				
0.	Academic, 2013.							
4.	Krishnaswamy, N. Eco-English. B	Bloomsbury India, 20	015.					
5.	Manto, Saadat Hasan. Selected Sh	nort Stories. Trans.	Aatish Taseer. Random House	India, 2012.				
6.	Ghosh, Amitav. The Hungry Tide.	Harper Collins, 20	16.					
7.	Ghosh, Amitav. The Great D	erangement: Clima	ate Change and the Unthink	able. Penguin				
	Books, 2016.							
8.	The MLA Handbook for Writers of	of Research Papers,	8th Edition. 2016.					
/wv	://www.eco-ction.org/dt/thinking.h ww.esl-lab.com/; www.bbc.co.uk/lea vw.bbc.com/news; rningenglish.voanews.com/a/using-	rningenglish/;		5547 html				
/ ica	iningengiisii.voane ws.com/ a/ using	voa icarining english	to improve insterning <u>skins/ sor</u>	<u>55 (7.111111</u>				
Μο	de of evaluation: Quizzes, Present	ation. Discussion.	Role play, Assignments and	БАТ				
	t of Challenging Experiments (Ind							
1.	Self-Introduction using SWOT	uieutive)		12 hour				
2.	Writing minutes of meetings			10 hour				
3.	Writing an abstract			10 hour				
4.	Listening to motivational speeches	s and interpretation		10 hour				
5.	Cloze Test	I		6 hour				
6.	Writing a proposal			12 hour				
			Total Laboratory Hours	60 hours				
			2					
Mod	de of evaluation: Quizzes, Present	ation Discussion	Role play. Assignments and	FAT				
	ommended by Board of Studies	08-06-2019	tore play, resignments and					
			Data: 12 06 2010					
мрр	proved by Academic Council	No. 55	Date: 13-06-2019					





Course Code	Course title	L	T	Ρ	J C
ENG1903	Advanced Technical English	0	0	2	4 2
Pre-requisite	Greater than 90 % EPT score	S	byllat	ous V	rsion
			1	v.1.0	
Course Objectives:					
1. To review litera	ature in any form or any technical article				
2. To infer conten	nt in social media and respond accordingly				
	ate with people across the globe overcoming trans-cultural	barri	ers a	nd n	egotiate
successfully					
	-				
Expected Cours					
	ly and write good reviews				
	rch papers, project proposals and reports				
	effectively in a trans-cultural environment				
_	ead teams towards success				
5. Present ideas in	an effective manner using web tools				
				_	
	egotiation and Decision-Making Skills through Literary An	alysi	8	5	5 hours
Concepts of Negotia	ation and Decision-Making Skills				
Activity: Analysis of	excerpts from Shakespeare's "The Merchant of Venice" (cour	t scen	e) an	d dis	cussion
on negotiation skills.					
Critical evaluation of	f excerpts from Shakespeare's ''Hamlet'' (Monologue by Hamlet	) and	discu	in	ION
		jana	uiscu	188101	1011
		) and	uiscu	188101	1011
decision making skil	ls		uiscu		
decision making skil Module:2 W	ls riting reviews and abstracts through movie interpretations				hours
decision making skil Module:2 W Review writing and a	ls <b>riting reviews and abstracts through movie interpretations</b> abstract writing with competency				
decision making skillModule:2WReview writing and aActivity: Watching C	ls <b>riting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review	W		5	hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.	ls <b>Triting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review . Nolan's "Logan's Run" and analyzing it in tune with the preser	W		5	hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writed	ls <b>friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie revie Nolan's "Logan's Run" and analyzing it in tune with the preser iting an abstract	W		<b>5</b> 1 of de	hours epletion
decision making skillModule:2WReview writing and aActivity: Watching CWatching William Fof resources and writeModule:3Teleston	Is <b>Friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review . Nolan's "Logan's Run" and analyzing it in tune with the presen- ting an abstract echnical Writing	W		<b>5</b> 1 of de	hours epletion
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3TeStimulate effective lite	Is <b>Friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review . Nolan's "Logan's Run" and analyzing it in tune with the preser ting an abstract <b>echnical Writing</b> nguistics for writing: content and style	W		<b>5</b> 1 of de	hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3ToStimulate effective liActivity: Proofreading	Is <b>Triting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review Nolan's "Logan's Run" and analyzing it in tune with the preserver ting an abstract <b>Echnical Writing</b> nguistics for writing: content and style ng, Statement of Purpose	W		5	hours epletion 4 hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William Fof resources and writhModule:3TeStimulate effective liaActivity: ProofreadingModule:4Timulate	Is <b>Friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review . Nolan's "Logan's Run" and analyzing it in tune with the preser ting an abstract <b>echnical Writing</b> nguistics for writing: content and style	W		5	hours epletior 4 hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writeModule:3TeStimulate effective liActivity: ProofreadingModule:4Trans-cu	Is <b>Friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review . Nolan's "Logan's Run" and analyzing it in tune with the preser ting an abstract <b>echnical Writing</b> nguistics for writing: content and style ng, Statement of Purpose <b>rans-Cultural Communication</b>	w nt scer	nario	5 1 of da	hours epletion 4 hours • hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writeModule:3TeStimulate effective liActivity: ProofreadingModule:4Trans-cu	Is <b>friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie revier Nolan's "Logan's Run" and analyzing it in tune with the preser iting an abstract <b>echnical Writing</b> nguistics for writing: content and style ng, Statement of Purpose <b>rans-Cultural Communication</b> altural communication	w nt scer	nario	5 1 of da	hours epletion 4 hours • hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writModule:3TeStimulate effective liActivity: ProofreadirModule:4TrNuances of Trans-cuActivity: Group discommunication.	Is <b>friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie revier Nolan's "Logan's Run" and analyzing it in tune with the preser iting an abstract <b>echnical Writing</b> nguistics for writing: content and style ng, Statement of Purpose <b>rans-Cultural Communication</b> altural communication	w nt scer	nario	5 1 of do 4 rans-	hours epletion hours cultura
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3TeStimulate effective liActivity: ProofreadingModule:4TeNuances of Trans-cuActivity: Group discommunication.Module:5Re	Is <b>Friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review . Nolan's "Logan's Run" and analyzing it in tune with the preser ting an abstract <b>echnical Writing</b> nguistics for writing: content and style ng, Statement of Purpose <b>rans-Cultural Communication</b> altural communication cussion and case studies on trans-cultural communication. De	w nt scer	nario	5 1 of do 4 rans-	hours epletion 4 hours • hours
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3ToStimulate effective liaActivity: ProofreadingModule:4TrNuances of Trans-cuActivity: Group discommunication.Module:5Re	Is <b>friting reviews and abstracts through movie interpretations</b> abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review Nolan's "Logan's Run" and analyzing it in tune with the preser- ting an abstract <b>echnical Writing</b> nguistics for writing: content and style ng, Statement of Purpose <b>rans-Cultural Communication</b> altural communication cussion and case studies on trans-cultural communication. De- <b>eport Writing and Content Writing</b>	w nt scer ebate	nario on t	5	hours epletior 4 hours - hours - cultura 4 hour
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decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3TeStimulate effective liActivity: ProofreadingModule:4TeNuances of Trans-cuActivity: Group discommunication.Module:5ReEnhancing reportageActivity: Watch a dointerpretModule:6Da	Is riting reviews and abstracts through movie interpretations abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review Nolan's "Logan's Run" and analyzing it in tune with the preser- ting an abstract echnical Writing nguistics for writing: content and style ng, Statement of Purpose rans-Cultural Communication ultural communication cussion and case studies on trans-cultural communication. De- eport Writing and Content Writing the on relevant audio-visuals cumentary on social issues and draft a report, Identify a video or rafting project proposals and article writing	w nt scer ebate	nario on t	5 1 of do 4 rans-	hours epletion 4 hours cultura 4 hour
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3TeStimulate effective liActivity: ProofreadingModule:4ThNuances of Trans-cuActivity: Group discommunication.Module:5ReEnhancing reportageActivity: Watch a dointerpretModule:6D	Is riting reviews and abstracts through movie interpretations abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review Nolan's "Logan's Run" and analyzing it in tune with the preser- ting an abstract echnical Writing nguistics for writing: content and style ng, Statement of Purpose rans-Cultural Communication ultural communication cussion and case studies on trans-cultural communication. De eport Writing and Content Writing e on relevant audio-visuals becumentary on social issues and draft a report, Identify a video or rafting project proposals and article writing g project proposals and research articles	w nt scer ebate	nario on t	5 1 of do 4 rans-	hours epletion thours t
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decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3TeStimulate effective liActivity: ProofreadingModule:4TeNuances of Trans-cuActivity: Group discommunication.Module:5ReEnhancing reportageActivity: Watch a dointerpretModule:6DeDynamics of draftingActivity: Writing a peModule:7Te	Is riting reviews and abstracts through movie interpretations abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review Nolan's "Logan's Run" and analyzing it in tune with the preser ting an abstract echnical Writing nguistics for writing: content and style ng, Statement of Purpose rans-Cultural Communication altural communication cussion and case studies on trans-cultural communication. De eport Writing and Content Writing e on relevant audio-visuals cumentary on social issues and draft a report, Identify a video or rafting project proposals and article writing g project proposals and research articles roject proposal. Writing a research article. echnical Presentations	w nt scer ebate	nario on t	5	hours epletior hours hou
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writhModule:3ToStimulate effective liActivity: ProofreadingModule:4TrNuances of Trans-cuActivity: Group discommunication.Module:5ReEnhancing reportageActivity: Watch a dointerpretModule:6DDynamics of draftingActivity: Writing a pModule:7ToBuild smart presental	Is riting reviews and abstracts through movie interpretations abstract writing with competency Charles Dickens "Great Expectations" and writing a movie revier Nolan's "Logan's Run" and analyzing it in tune with the preser ting an abstract echnical Writing nguistics for writing: content and style ng, Statement of Purpose rans-Cultural Communication altural communication cussion and case studies on trans-cultural communication. De eport Writing and Content Writing e on relevant audio-visuals commentary on social issues and draft a report, Identify a video or rafting project proposals and article writing g project proposals and research articles roject proposal. Writing a research article. echnical Presentations tion skills and strategies	w nt scer ebate	nario on t	5	hours epletion thours t
decision making skillModule:2WReview writing and aActivity: Watching CWatching William F.of resources and writeModule:3TeStimulate effective liActivity: ProofreadingModule:4TrNuances of Trans-cuActivity: Group discommunication.Module:5ReEnhancing reportageActivity: Watch a dointerpretModule:6DDynamics of draftingActivity: Writing a pModule:7Te	Is riting reviews and abstracts through movie interpretations abstract writing with competency Charles Dickens "Great Expectations" and writing a movie review Nolan's "Logan's Run" and analyzing it in tune with the preser ting an abstract echnical Writing nguistics for writing: content and style ng, Statement of Purpose rans-Cultural Communication altural communication cussion and case studies on trans-cultural communication. De eport Writing and Content Writing e on relevant audio-visuals cumentary on social issues and draft a report, Identify a video or rafting project proposals and article writing g project proposals and research articles roject proposal. Writing a research article. echnical Presentations	w nt scer ebate n any	on t	5	hours epletion thours hours hours total thours total thou





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B. Tech Computer Science and Engineering and Business Systems

1.	Raman, Meenakshi & Sangeeta Sharma. Technical Communication: Principles and Pra	ctice,
	3 rd edition, Oxford University Press, 2015.	
Refe	erence Books	
1.	Basu B.N. Technical Writing, 2011 Kindle edition	
2.	Arathoon, Anita. Shakespeare's The Merchant of Venice (Text with Paraphrase). Publishers, 2015.	0
3.	Kumar, Sanjay and Pushp Lata. English Language and Communication Skills for Engine University Press, India, 2018.	eers, Oxford
4.	Frantisek, Burda. On Transcultural Communication, 2015, LAP Lambert AcademicPubl	
5.	Geever, C. Jane. The Foundation Center's Guide to Proposal Writing, 5 th Edition, 2 2012 The Foundation Center, USA.	007, Reprint
6.	Young, Milena. Hacking Your Statement of Purpose: A Concise Guide to Writing Your Kindle Edition.	r SOP, 2014
7.	Ray, Ratri, William Shakespeare's Hamlet, The Atlantic Publishers, 2011.	
8.	C Muralikrishna & Sunitha Mishra, Communication Skills for Engineers, 2 nd edition, N 2011.	Y: Pearson,
	le of Evaluation: Quizzes, Presentation, Discussion, Role Play, Assignments	-
	of Challenging Experiments (Indicative)	
1.	Enacting a court scene – Speaking	6 hours
2.	Watching a movie and writing a review	4 hours
3.	Trans-cultural – case studies	2 hours
4.	Drafting a report on any social issue	6 hours
5.	Technical Presentation using web tools	6 hours
6.	Writing a research paper	6 hours
J- Co	omponent Sample Projects	
1.	Short Films	
2.	Field Visits and Reporting	
3.	Case studies	
4.	Writing blogs	
5.	Vlogging	
	Total Hours (J-Component)	60 hours
	le of evaluation: Quizzes, Presentation, Discussion, Role play, Assignments and FA	Т
	ommended by Board of Studies 08.06.2019	
	roved by Academic Council No. 55 Date: 13-06-2019	

Recommended by Doard of Studies	00.00.2017	
Approved by Academic Council	No. 55	Date: 13-06-2019

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#### VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1936)

#### CURRICULUM (2019 - 2020)

Course Code	Course Title	L	7	[]]	P	J	С
HUM1021	ETHICS AND VALUES	2	0	) (	0 (	0	2
Pre-requisite	NIL	Sy	llal	bus	vers	sio	n
				v. 1	.1		
<b>Course Objectives:</b>							
1. To understand and a	ppreciate the ethical issues faced by an individual in profession,	soci	iety	y and	l po	lity	7
	egative health impacts of certain unhealthy behaviors						
3. To appreciate the ne	ed and importance of physical, emotional health and social heal	th					
•	come: Students will be able to:						
	als and ethical values scrupulously to prove as good citizens						
	social problems and learn to act ethically						
2. Understand the con	cept of addiction and how it will affect the physical and mental	heal	th				
•	ncerns in research and intellectual contexts, including academ			- ·	, us	e a	and
citation of sources,	the objective presentation of data, and the treatment of human	subje	ect	S			
4. Identify the main ty	pologies, characteristics, activities, actors and forms of cybercrin	ne					
	g Good and Responsible						ours
	as truth and non-violence - Comparative analysis on leaders of	-			-		
Society's interests vers	us self-interests - Personal Social Responsibility: Helping th	e ne	eed	у, с	hari	ty	and
serving the society							
	d Issues 1				4	ho	ours
Harassment – Types - I	Prevention of harassment, Violence and Terrorism						
	al Issues 2						ours
-	lues, causes, impact, laws, prevention – Electoral malpractices;	Whi	te	colla	r cri	im	es -
Tax evasions – Unfair t	trade practices						
						_	
	ction and Health			6			ours
-	olism: Ethical values, causes, impact, laws, prevention – Ill o						0
	s; Sexual Health: Prevention and impact of pre-marital pre-	gnan	ncy	anc	1 Se	xu	ally
Transmitted Diseases							
Module: D	Abuss	1			2	<b>L</b> -	
0	g Abuse	1				no	ours
Abuse of different type	es of legal and illegal drugs: Ethical values, causes, impact, laws a	.na p	ore	vent	1011		
	onal and Professional Ethics				4	ho	ours
Dishonesty - Stealing -	Malpractices in Examinations – Plagiarism						
Module:7 Abus	e of Technologies				3	ho	ours





Mo	dule:8	Contemporary issues: G	fuest lectures by Ex	perts		2 hours
		Total	Lecture hours:		30 ho	urs
Ref	ference Boo	bks				
1.	Dhaliwal,	K.K , "Gandhian Philoso	ophy of Ethics:	A Study	of Relationshi	p between hi
	Presuppos	ition and Precepts, 2016, Wr	iters Choice, New I	Delhi, Indi	a.	
2.	Vittal, N, ⁶	"Ending Corruption? - How	to Clean up India?'	", 2012, Pe	nguin Publishers,	, UK. Pagliaro,
3.	L.A. and	Pagliaro, A.M, "Handboo	k of Child and	Adolescen	t Drug and Su	ubstance Abuse
	Pharmaco	logical, Developmental and C	Clinical Consideration	ons", 2012	, Wiley Publisher	s, U.S.A.
		K(2012), "Sexual Harassmer			-	
	1					
Mo	de of Evalu	ation: CAT, Assignment, C	Quiz, FAT and So	eminar		
		d by Board of Studies	26-07-2017			
		cademic Council	No. 46	Date	24-08-2017	





Course code	Course Title	L	Т	Р	J C
MAT 1017	Probability and Statistics	3	0	0	0 3
Pre-requisite	NIL	Syl			rsion
			V	. 1.0	
Course Objectives:		1	. <u>.</u> .		.1 1
1	lents with a framework that will help them choose the appropriate	desc	riptiv	ve m	ethods
	inalysis situations.				
5	ibutions and relationships of real-time data. ation and testing methods to make inference and modeling tec	haia	ion f		
making.	ation and using methods to make interence and modeling tee	uniqu	105 10	ли	ceision
Expected Course C	<b>Dutcome:</b> At the end of this course the students are expected to				
1. Have an unders	tanding of the probability concepts.				
	blems connected with statistics.				
3. Understand how	v to make the transition from a real problem to a probability mode	el for	that	prob	olem.
4. Expose student	s to practical applications.				
	Probability:				hours
	ments, sample space, event. Definition of combinatorial pro	babili	ty. (	Conc	litional
probability, Bayes Th	neorem.				
Module:2	Random Variables:				hours
	robability distributions: Discrete & continuous distributions, Math	omat			
	foments (including variance) and their properties, interpretation,				
function.	ionients (including variance) and then properties, interpretation,	IVIOI	nent	gen	crating
Module:3 1	Distributions:			8	hours
Binomial, Poisson	and Geometric distributions, Uniform, Exponential, Norma	1, C	hi-sq	uare	, t, F
distributions.		-	1		
	Statistics:				hours
	cs, Basic objectives, Applications in various branches of science w	th ex	amp	les.	
	nternal and external data, Primary and secondary data.				
Population and samp	ble, Representative sample.				
					-
	Data Analysis:			5	hours
Classification and tat	pulation of univariate data, graphical representation, Frequency cur	ves.			
					1
	Descriptive Measures:				hours
	es - central tendency and dispersion. Bivariate data. Summariz	ation	n, ma	ırgın	al and
conditional frequenc	y distribution.				
Module:7 0	Calculus:			7	hours
	fferential and integral calculus, application of double and triple int	eoral		1	nours
Dasic concepts of DI	increment and integral calculus, application of double and thpic int	cgrai			
Module:8	Expert Lecture			2	hours
	Total Lecture ho	urs:			hours
				-15	110 410
				12	E



### VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Te	ext Books						
1.	Introduction of Probability Models, S. M. Ross	s, Academic Pre	ss, N.Y.				
2.	Fundamentals of Statistics, vol. I & II, A. Goo	on, M. Gupta and	d B. Dasg	upta, World Press.			
3	Higher Engineering Mathematics, B. S. Grewal, Khanna Publication, Delhi.						
Ref	ference Books						
1.	A first course in Probability, S. M. Ross, Prent	tice Hall.					
2.	Probability and Statistics for Engineers, (Fou	urth Edition), I.	R. Miller	, J.E. Freund and R. Johnson,			
	PHI.						
3	Introduction to the Theory of Statistics, A.	M. Mood, F.A.	Graybill	and D.C. Boes, McGraw Hill			
	Education.						
4	Advanced Engineering Mathematics, (Seventh	Edition), Peter	V. O'Nei	l, Thomson Learning.			
5	Advanced Engineering Mathematics, (Second	Edition) M. D.	Greenberg	g, Pearson Education.			
6	Applied Mathematics, Vol. I & II, P. N. Warti	kar and J. N. W	artikar, Vi	dyarthiPrakashan.			
	1						
	ode of Evaluation: Assignments, Quiz, Continuo		Seminar a	and Final assessment test			
Rec	commended by Board of Studies 16	6-02-2019					
Ap	proved by Academic Council N	No.56	Date	24-09-2019			



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

MGT200 Pre-requisite	)1	Introduction To Innovation, Ip Management &				-	
Pre-requisite		Introduction 10 Innovation, ip Management &	3	0	0	0	3
Pre-requisite		Entrepreneurship					
	è.	NIL	9	Sylla	bus	versi	ion
					v. 1	.0	
Course Obje	ctives:						
1. Appreciate	innovat	ion as core business process, and ability to apply it to the grow	vth c	of an	orga	anizat	tion.
2. Recognize t	the role	of entrepreneurship in giving the organization a sustainable co-	mp	etitiv	re ad	vanta	ıge.
3. Awareness	of the c	oncept and types of Intellectual Property Rights and their prote	ecti	on			
Expected Co							
		ncept and need for innovation in an organization.					
2. Appreciate	how en	ntrepreneurs can add value to an organization, and give it a	sust	taina	ble o	comp	etitiv
advantage.							
3. Know the c	concept	of IPR, their different types, and how to protect them.					
<b>r</b>	_						<u> </u>
Module:1		luction on Innovation					hour
Innovation as	a core	business process, Sources of innovation, Knowledge push vs. n	need	l pull	inn	ovatio	ons.
Module:2	Buildi					9	hour
		ng an Innovative Organization					
Creating new		its and services, exploiting open innovation and collaboration	1, US	e of	inne	ovatio	on fo
-	produc	ts and services, exploiting open innovation and collaboration	n, us	e of	inne	ovatio	on fo
starting a new	produc ventur	e e e e e e e e e e e e e e e e e e e		se of	inne	ovatio	on fo
starting a new	produc ventur	ts and services, exploiting open innovation and collaboration		se of	inne	ovatio	on fo
starting a new Class Discussi	produc ventur ion- Inr	e and services, exploiting open innovation and collaboration e anovation: Co-operating across networks vs. 'go-it-alone' approa		e of	inno		
starting a new Class Discussi Module:3	produc ventur ion- Inr <b>Entre</b>	tts and services, exploiting open innovation and collaboration e novation: Co-operating across networks vs. 'go-it-alone' approa preneurship	ıch			5	hour
starting a new Class Discussi <b>Module:3</b> Opportunity	produce venture ion- Inr Entre recogni	e and services, exploiting open innovation and collaboration e anovation: Co-operating across networks vs. 'go-it-alone' approa preneurship tion and entry strategies-Entrepreneurship as a Style of M	ıch			5	hour
starting a new Class Discussi <b>Module:3</b> Opportunity	produce venture ion- Inr Entre recogni	tts and services, exploiting open innovation and collaboration e novation: Co-operating across networks vs. 'go-it-alone' approa preneurship	ıch			5	hour
starting a new Class Discussi <b>Module:3</b> Opportunity Competitive A	produc ventur ion- Inr <b>Entre</b> recogni Advanta	e and services, exploiting open innovation and collaboration e anovation: Co-operating across networks vs. 'go-it-alone' approa preneurship tion and entry strategies-Entrepreneurship as a Style of M	ıch			5 Maint	hour
starting a new Class Discussi Module:3 Opportunity Competitive A Module:4	produce venture ion- Inr Entre recogni Advanta Entre	tts and services, exploiting open innovation and collaboration e novation: Co-operating across networks vs. 'go-it-alone' approa preneurship tion and entry strategies-Entrepreneurship as a Style of M ge- Use of IPR to protect Innovation	Ich Iana	gem	ent-N	5 Maint 5	hour ainin hour
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starting a new Class Discussi Module:3 Opportunity Competitive A Module:4 Financial Pro Financing Module:5 Introduction Genesis and I Module:6 Patent- Proce	product venture ion- Inr Entrep recogni Advanta Entrep ojections Essen and the Develop Type edure, L	tts and services, exploiting open innovation and collaboration e novation: Co-operating across networks vs. 'go-it-alone' approa preneurship tion and entry strategies-Entrepreneurship as a Style of M ge- Use of IPR to protect Innovation preneurship- Financial Planning and Valuation-Stages of financing - Debt, Venture Capita tials of Intellectual Property Rights (IPR) e economics behind development of IPR: Business Perspect ment - International Context - Concept of IP Management, Us s of Intellectual Property	Iana Iana al a ctivo se in	gema nd a 1 mar	ent-N other IPR rketin e in	5 Maint 5 r for 4 in Ir ng. 4 marl	hour ms o hour ndia -
starting a new Class Discussi Module:3 Opportunity Competitive A Module:4 Financial Pro Financing Module:5 Introduction Genesis and I Module:6 Patent- Proce example of tr	product venture ion- Inr Entrep recogni Advanta Entrep ojections Essen and the Develop Type edure, L	tts and services, exploiting open innovation and collaboration e novation: Co-operating across networks vs. 'go-it-alone' approa preneurship tion and entry strategies-Entrepreneurship as a Style of M ge- Use of IPR to protect Innovation preneurship- Financial Planning and Valuation-Stages of financing - Debt, Venture Capita tials of Intellectual Property Rights (IPR) e economics behind development of IPR: Business Perspect ment - International Context - Concept of IP Management, Us s of Intellectual Property icensing and Assignment, Infringement and Penalty- Tradem	Iana Iana al a ctivo se in	gema nd a 1 mar	ent-N other IPR rketin e in	5 Maint 5 r for 4 in Ir ng. 4 marl	hour ms c hour ndia hour keting
starting a new Class Discussi Module:3 Opportunity Competitive A Module:4 Financial Pro Financing Module:5 Introduction Genesis and I Module:6 Patent- Proce	produce venture ion- Inr Entrep recognit Advanta Entrep jections Essen and the Develop Type edure, L rademan	tts and services, exploiting open innovation and collaboration e novation: Co-operating across networks vs. 'go-it-alone' approa preneurship tion and entry strategies-Entrepreneurship as a Style of M ge- Use of IPR to protect Innovation preneurship- Financial Planning and Valuation-Stages of financing - Debt, Venture Capita tials of Intellectual Property Rights (IPR) e economics behind development of IPR: Business Perspect ment - International Context - Concept of IP Management, Us s of Intellectual Property icensing and Assignment, Infringement and Penalty- Tradem	Iana Iana al a ctivo se in	gema nd a 1 mar	ent-N other IPR rketin e in	5 Vlaint 5 r for: 4 in Ir ng. 4 marl prot	hour ms o hour ndia -



#### VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

#### CURRICULUM (2019 - 2020)

Mo	dule:8	Contemporary Issues	2 hours
Gue	est lecture	by Industry Experts or R&D organization	
		Total Lecture hours:	45 hours
Tex	t Book(s)		
1.	Business	s Transformations in the Era of Digitalization (2019), Aloulou, W, IGI Globa	1.
2.	Innovat	ve science teaching (2019), Mohan, R. (2019). PHI Learning Pvt. Ltd.	
Ref	erence Bo	ooks	
1.	Research	n on Entrepreneurship, Innovation, and Internationalization, Pereira, E. T. 10	GI Global.
2.	Creative	marginality: Innovation at the intersections of social sciences (2019), Dogan,	M Routledge.
3.	Internat	ional intellectual property in an integrated world economy (2019), Abbott, F.	M., Cottier, T.,
		y, F. (2019), Aspen Publishers.	

Recommended by Board of Studies	29-01-2021			
Approved by Academic Council	No. 61	Date	18-02-2021	





PHY100 Pre requisi	ode	COURSE TI		L	Τ	Р	(
Pre requisi		Modern Phy	vsics	3	0	2	4
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0 011					<b>v.</b> 1	1.0	
Course Obj		1 1 1	· · · · · ·				
		hematics and physics in engi	0 11				
	-	erstanding of the physics rela	-	1	ry 1ssu	ies	
3. To incul	cate realistic s	skills of creating unique insig	tht from what is being obse	rved.			
Course Out							
		the student will be able to					
	0	thermodynamics to realistic	-				
-		ing of the oscillatory motion		ems			
1		ature of light and its applicat					
4. Learn co	oncepts of ele	ectromagnetic waves and the	ir propagation				
5. Apply q	luantum mech	hanical ideas to subatomic do	omain.				
6. Appreci	ate the funda	mental principles of a laser a	and its types and their appli	cation	in fib	er op	tic
Module:1	Thermodyn	namics				7 h	ou
Thermodyna	mics Termin	nology- system & surroun	idings, types of systems,	Diffe	erent	types	
processes in	TD, Concep	ot of Heat Capacity and wor	k (analytic treatment), Zer	oth an	d Firs	st law	S
thermodynar	nics Work	done in Isothermal and	adiabatic expansion. Co	oncept	of	Entr	эp
spontaneous	and driven	processes, Carnot's cycle, S	Second Law of thermodyn	namics	- Clai	asius	aı
Kelvin's stat	ements, Conc	cept of Heat and work Engin	nes, Derivation of Entropy	from	Carno	ot's c	ycl
Entropy Cha	inge in revers	ible and Irreversible process	es. Third law of Thermody	namics	5.		
Module:2	0					7 h	11
D ' 1'	Oscillations	5				/ 11	Ju
Periodic mo		<b>s</b> harmonic motion, character	istics of simple harmonic	motio	n, vib		
	tion, simple					oratio	1
simple spring	tion, simple i g mass system	harmonic motion, character	lator – heavy, critical and l	ight da	ampin	oratio g, en	n er
simple spring decay in a d	tion, simple i g mass system	harmonic motion, character n. Damped harmonic oscill	lator – heavy, critical and l	ight da	ampin	oratio g, en	n er
simple spring decay in a d Resonance.	tion, simple i g mass system lamped harm	harmonic motion, character n. Damped harmonic oscill	lator – heavy, critical and l	ight da	ampin	oratio g, en	n erg
simple spring decay in a d Resonance. <b>Module:3</b>	tion, simple i g mass system lamped harm <b>Elements o</b>	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality facto	lator – heavy, critical and l or, forced mechanical and	ight da electr	ampin ical o	oratio g, en scilla 6 ho	
simple spring decay in a d Resonance. <b>Module:3</b> Interference-	tion, simple i g mass system lamped harm <b>Elements o</b> -Superposition	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor <b>f wave optics</b>	lator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th	ight da electr	ampin ical o of Int	oratio g, en scilla <b>6 h</b> o erfer	n erg tor
simple spring decay in a d Resonance. <b>Module:3</b> Interference- fringes, Type	tion, simple i g mass system lamped harm Elements o -Superposition es of interfer	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor <b>f wave optics</b> n principle and Young's do rence- division of wave from	lator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplitud	ight da electr eory c le, Fre	ampin ical o of Int	oratio g, en scilla <b>6 h</b> o erfer Bipr	n erg to: <b>Du</b> en
simple spring decay in a d Resonance. <b>Module:3</b> Interference- fringes, Type Newton's rir	tion, simple i g mass system lamped harm Elements o -Superpositiones of interfer ngs, Diffraction	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor <b>f wave optics</b> n principle and Young's de rence- division of wave from on, Difference between inter	ator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplitue rference and diffraction, D	ight da electr eory c le, Fre	ampin ical o of Int snel's on fro	oratio g, en scilla <b>6 h</b> o erfer Bipr	n erg tor <b>Du</b> en
simple spring decay in a d Resonance. <b>Module:3</b> Interference- fringes, Type Newton's rir slit, Diffracti	tion, simple i g mass system lamped harm Elements o -Superposition es of interfer ngs, Diffraction on from grati	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor <b>f wave optics</b> n principle and Young's de rence- division of wave from on, Difference between inter ing or multiple slits, Resolvin	ator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplitue rference and diffraction, D	ight da electr eory c le, Fre	ampin ical o of Int snel's on fro	oratio g, en scilla <b>6 h</b> d erfer Bipr om si	n erg tor <b>Du</b> en isr
simple spring decay in a d Resonance. Module:3 Interference- fringes, Type Newton's rir slit, Diffracti Module:4	tion, simple i g mass system lamped harm Elements o -Superpositiones of interfer ngs, Diffractiones, Diffractiones on from gratices Electromag	harmonic motion, character m. Damped harmonic oscill nonic oscillator, quality factor <b>f wave optics</b> n principle and Young's de rence- division of wave from on, Difference between inter ing or multiple slits, Resolvin <b>gnetism</b>	ator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplituc rference and diffraction, D ang and dispersive powers of	ight da electr eory c le, Fre iffracti f gratin	ampin ical o of Int snel's on fro	oratio g, en scilla 6 ho erfer Bipr om si 6 ho	n erg
simple spring decay in a d Resonance. Module:3 Interference- fringes, Type Newton's rir slit, Diffracti Module:4 Scalar and V	tion, simple i g mass system lamped harm Elements o -Superposition es of interfer ngs, Diffraction ion from grati Electromag	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor of wave optics n principle and Young's de rence- division of wave from on, Difference between inter ing or multiple slits, Resolvin gnetism Del operator- concept of gra	adient divergence & curl. N	ight da electr eory o le, Fre iffracti f gratin faxwel	ampin ical o of Int snel's on fro g. l's equ	6 ho ation	n erg
simple spring decay in a d Resonance. Module:3 Interference- fringes, Type Newton's rir slit, Diffracti Module:4 Scalar and V differential a	tion, simple i g mass system lamped harm Elements o -Superpositiones of interferings, Diffraction on from grati Electromage ector Fields, i and integral for	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor of wave optics n principle and Young's de rence- division of wave from on, Difference between inter ing or multiple slits, Resolvin gnetism Del operator- concept of gra porms for different media. Ec	ator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplitud rference and diffraction, D and dispersive powers of adient divergence & curl. M quation of continuity, Max	ight da electr eory c le, Fre iffracti f gratin faxwel well's t	ampin ical o of Int snel's on fro ig. l's equ modif	oratio g, en scilla 6 ho erfer Bipr om si 6 ho uation icatio	n erg to: <b>Du</b> en isn ng <b>Du</b> isn ng
simple spring decay in a d Resonance. Module:3 Interference- fringes, Type Newton's rir slit, Diffracti Module:4 Scalar and V differential a Ampere's lay	tion, simple i g mass system lamped harm Elements o -Superpositiones of interfer ngs, Diffractiones, Diffractiones ion from grati Electromag fector Fields, i and integral for w, concept of	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor <b>f wave optics</b> n principle and Young's de- rence- division of wave from on, Difference between inter ing or multiple slits, Resolvin gnetism Del operator- concept of gra- forms for different media. Eco displacement current. Conce	ator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplitud rference and diffraction, D and dispersive powers of adient divergence & curl. M quation of continuity, Max	ight da electr eory c le, Fre iffracti f gratin faxwel well's t	ampin ical o of Int snel's on fro ig. l's equ modif	oratio g, en scilla 6 ho erfer Bipr om si 6 ho uation icatio	n erg to: Du en isn ng Du ng
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simple spring decay in a d Resonance. Module:3 Interference- fringes, Type Newton's rir slit, Diffracti Module:4 Scalar and V differential a Ampere's law wave equation Module:5	tion, simple i g mass system lamped harm Elements o -Superpositiones of interfer ngs, Diffractiones on from grati Electromag fector Fields, and integral for w, concept of on, speed of lin Quantum M	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor <b>f wave optics</b> n principle and Young's de rence- division of wave from on, Difference between inter ing or multiple slits, Resolvin gnetism Del operator- concept of gra orms for different media. Ec displacement current. Conce ight. Mechanics	ator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplitud reference and diffraction, D and dispersive powers of adient divergence & curl. M quation of continuity, Max- ept of electromagnetic wav	ight da electr eory o le, Fre iffracti f gratin faxwel well's 1 es and	ampin ical o of Int snel's on fro g. l's equ nodif light	6 ho ation bration cerfere Bipr om si 6 ho ation ication - clas 6 ho	erg tor isr ng ng ng ng ng ng ng ng ng ng ng ng ng
simple spring decay in a d Resonance. Module:3 Interference- fringes, Type Newton's rir slit, Diffracti Module:4 Scalar and V differential a Ampere's law wave equation Module:5 Introduction	tion, simple i g mass system lamped harm Elements o -Superpositioners on from gratic Electromag fector Fields, i and integral for w, concept of on, speed of li Quantum M - Planck's	harmonic motion, character n. Damped harmonic oscill nonic oscillator, quality factor of wave optics n principle and Young's de rence- division of wave from on, Difference between inter ing or multiple slits, Resolvin gnetism Del operator- concept of gra orms for different media. Ec displacement current. Conce ight.	ator – heavy, critical and l or, forced mechanical and ouble slit experiment- Th at and division of amplitue rference and diffraction, D ag and dispersive powers of adient divergence & curl. M quation of continuity, Max ept of electromagnetic wav	ight da electr eory c le, Fre iffracti f gratin faxwel well's t es and length,	ampin ical o of Int on fro ig. l's equ nodif light	6 ho ation scilla 6 ho erfer Bipr om si 6 ho ication - clas 6 ho senbo	erg





Module:6	Crystallo	graphy			5 hours		
Conductor,	nductor, semiconductor and Insulator; Basic concept of Band theory. Basic terms, types of crystal						
systems, Bra	avais lattice	s, miller indices, d	spacing.				
Module: 7		Laser and Fiber	Optics		6 hours		
Properties of	roperties of laser beams: mono-chromaticity, coherence, directionality and brightness, Eir				and brightness, Einstein's		
					cation of light by population		
inversion, d	ifferent typ	es of lasers: Ruby I	Laser, CO2 and No	d:YAG lase	rs; applications of lasers in		
engineering.	Light prop	pagation through fi	bers, Acceptance a	ingle, Num	erical Aperture, Types of fibers		
- step index	- step index, graded index, single mode & multimode fibers. Detector- PIN photodiode .						
Module: 8		Contemporary i			2 hours		
Guest Lectu	ires by Ind	ustry and R&D Or	ganizations.	L.			
			Total Lecture ho	ours:	45 hours		
Textbook(s	5)						
	/	damentals of Physic	cs: Mechanics, Rela	ativity, and	Thermodynamics, (2014), Yale		
univer	rsity Press,	USA.		·			
	on, USA.	V I		1	a sociale Manda wa Dharaina 2010		
	R. A. Serway, J. W. Jewett Jr., Physics for Scientists and Engineers with Modern Physics, 2019, 10th Edition, Cengage Learning, USA.						
	Edition, Pearson, USA						
		r Fundamentals, 20	12, 2nd Edition, C	Cambridge U	University Press, India.		
Reference							
5	1. H. J. Pain, The Physics of vibrations and waves, 2013, 6th Edition, Wiley Publications, India.						
2		rn Physics, 2020, 4					
Lasers		s and Applications,					
Mode of E	valuation:	CAT / Assignme	ent / Quiz / FAT	/ Project	/ Seminar		
		xperiments (India	cative)				
1. Clean	Energy- Sc	olar Cell					
2. Integr	Integrated Optics- Angle of Prism						
3. Qualit	Quality Check for soft drinks- Refractive Index of liquid						
4. Advan	Advanced Material Analysis through Quantum Physics- Photoelectric Effect						
5. Engin	Engineering Application of Nanomaterials						
6. Electro	Electron Diffraction						
7. Monoc	Monochromators in Sophisticated Instrument – Laser Grating						
8. Integra	Integrated Optics- Angle of Minimum Deviation						
Acceptance Angle and Numerical Aperture – Optical Fiber							
Total Laboratory Hours 30 hours							
Mode of Assessment: Assessments/ Mid Term Lab/ FAT / Project							
	ecommended by Board of Studies 07.06.2019						
Approved by	y Academ:	ic Council	55	Date	13.6.2019		



# UNIVERSITY CORE

B. Tech. Computer Science and Engineering and Business Systems (in collaboration with TCS)

# FLC4097 - Foreign Language Course Basket

Sl. No.	Course Code	Course Title	Page No.
1.	ESP1001	ESPANOL FUNDAMENTAL	152
2.	ESP2001	ESPANOL INTERMEDIO	154
3.	FRE2001	Francais progressif	156
4.	GER1001	Grundstufe Deutsch	158
5.	GER2001	Mittelstufe Deutsch	160
6.	GRE1001	Modern Greek	162
7.	JAP1001	Japanese for Beginners	164
8.	RUS1001	Russian for Beginners	166





B. Tech Computer Science and Engineering and Business Systems

Course Code	Course Title	L	Т	Р	J	С
ESP1001	ESPAÑOL FUNDAMENTAL	2	0	0	0	2
Dro requisite	NIL	9	Sylla	bus y	versio	n
Pre-requisite	INIL		r	v. 1.(	)	

## Course Objectives:

The course gives students the necessary background to:

- 1. Demonstrate Proficiency in reading, writing, and speaking in basic Spanish. Learning vocabulary related to profession, education centres, day today activities, food, culture, sports and hobby, family set up, workplace, market and classroom activities is essential.
- 2. Demonstrate the ability to describe things and will be able to translate into English and vice versa.
- 3. Describe in simple terms (both in written and oral form) aspects of their background, immediate environment and matters in areas of immediate need.

## Expected Course Outcome:

The students will be able to

- 1. Remember greetings, giving personal details and Identify genders by using correct articles
- 2. Apply the correct use of SER, ESTAR and TENER verb for describing people, place and things
- 3. Create opinion about time and weather conditions by knowing months, days and seasons in Spanish
- 4. Create opinion about people and places by using regular verbs
- 5. Apply reflexive verbs for writing about daily routine and create small paragraphs about hometown, best friend and family

# Module: 1 Abecedario, Saludos y Datos personales: Origen, Nacionalidad, Profesión 3 hours

Competencia Gramática: Vocales y Consonantes. Artículos definidos e indefinidos (Numero y Genero).

Competencia Escrita: Saludos y Datos personales

### Module: 2 Edad y posesión. Números (1-20)

Competencia Gramática: Pronombres personales. Adjetivos. Los verbos SER y TENER. Competencia Escrita: Escribe sobre mismo/a y los compañeros de la clase

Module: 3 Vocabulario de Mi habitación. Colores. Descripción de lugares y cosas 5 hours

Competencia Gramática: Adjetivos posesivos. El uso del verbo ESTAR. Diferencia entre SER y ESTAR. Competencia Escrita: Mi habitación

Module: 4	Mi familia. Números (21-100). Direcciones. Expresar la hora. Los meses	5 hours
Module: 4	del año.	5 nours

Competencia Gramática: Frases preposicionales. Uso del HAY. La diferencia entre MUY y MUCHO. Uso del verbo GUSTAR

Competencia Escrita: Mi familia. Dar opiniones sobre tiempo

 Module: 5
 Expresar fechas y el tiempo. Dar opiniones sobre personas y lugares.
 5 hours

Competencia Gramática: Los verbos regulares (-AR, -ER, -IR) en el presente. Adjetivosdemostrativos. Competencia Escrita: Mi mejor amigo/a. Expresar fechas. Traducción ingles a español y Español a Ingles.

3 hours





M	odule: 6	Describir el diario. Las activi	dades cotidianas.		3 hours
Со	mpetenc	ia Gramática: Los Verbos y pron	ombres reflexivos.	Los verbos pronominales co	n e/ie,o/ue,
e/i	i, u/ue.				
Со	mpetenc	ia Escrita: El horario. Traducción	ingles a español y l	Español a Ingles.	
Moo	dule: 7	Dar opiniones sobre comidas y Describir mi ciudad y Ubicar l			4 hours
Со	mpetenc	ia Gramática: Los verbos irregu	lares. Estar + geru	undio. Poder + Infinitivo. (	Competencia
Es	crita: Con	nversación en un restaurante. Tra	ducción ingles a es	pañol y Español a Ingles.Mi	ciudad natal.
Mi	Universi	dad. La clase.Mi fiesta favorita.			
Moo	dule: 8	Guest Lectures / Native Spe	eakers		2 hours
		Total Le	cture hours		30 hours
Tex	t Book(s	, ,			
1.		ook: "Aula Internacional 1", J		a Garcia, Agustin Garmen	dia, Carmen
		Goyal Publication; reprinted Edit	ition, (2010)		
Refe	erence B				
1.	"¡Acció	on Gramática!" Phil Turk and M	ike Zollo, Hodder	Murray, London 2006. "Pra	actice makes
	perfect	Spanish Vocabulary", Dorothy F	Richmond, McGrav	v Hill Contemporary, USA, 2	012.
2.	"Practi	ce makes perfect: Basic Spanish	", Dorothy Richm	ond, McGraw Hill Contem	porary, USA
	2009.		-		
3.	"Pasap	orte A1 Foundation", Matilde	Cerrolaza Aragón,	, Óscar Cerrolaza Gili, Beg	goña Llovet
	Barque	ro, Edelsa Grupo, España, 2010.		·	-
Rec	ommend	led by Board of Studies	22.02.2016		
Ann	proved by	Academic Council	No. 41	Date 17.06.2016	



# VIT[®] Vellore Institute of Technology

### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Course Code	Course Title	L	Т	Р	J	С
ESP2001	ESPAÑOL INTERMEDIO	2	0	2	0	3
Pre-requisite		Sy	llabus	s vers	ion	
			v.	1.0		
Course Objectives:		•				

The course gives students the necessary background to:

- 1. Enable students to read, listen and communicate in Spanish in their day-to-day life.
- 2. Enable students to describe situations by using present, past and future tenses in Spanish.
- 3. Enable to develop the comprehension skill in Spanish language.

# **Expected Course Outcome:**

The students will be able to

- 1. Create sentences in near future and future tenses and correctly using the prepositions like POR and PARA
- 2. Create sentences in preterito perfecto and correctly use the direct and indirect object pronouns
- 3. create sentences related to likes and dislikes and also give commands in formal and informal way
- 4. Create sentences in past tense by using imperfecto and idefinido forms and describe past events
- 5. Create conversations in Spanish at places like restaurants, hotels, Shops and Railway stations
- 6. Understand about different Spanish speaking countries and its culture and traditions.

Module:1	Números (101 – 1 millón). Expresar los planes <b>ftrs</b> Los números	7 hours
	ordinales.	
Competencia	Gramática: Futuros cercanos (Ir+a+Infinitivo). Futuros (Verbos regulares ei	rregulares).
Uso del POR	y PARA.	
Competencia	Escrita: Traducción ingles a español y español a Ingles.	
Comprensión	n - Los textos y Videos	
		T
Module:2	Las ropas, colores y tamaños. Costar, valer, descuentos y rebajas	8 hours
Competencia	Gramática: Pronombres objetivos directos e indirectos. El verbo Gustar y Disgu	ıstar.
Competencia	Escrita: Traducción ingles a español y español a Ingles. Comprensión - Los text	tos y Videos
Module:3	Escribir un Correo electrónico formal einformal.	7 hours
Competencia	Gramática: Imperativos formales e informales. Pretérito perfecto. Competen-	cia Escrita:
Traducción i	ngles a español y español a Ingles.	
Comprensión	n - Los textos y Videos	
Module:4	Currículo Vitae. Presentarse en unaentrevista informal.	6 hours
	<b>Currículo Vitae. Presentarse en unaentrevista informal.</b> Gramática: Pretérito imperfecto. Pretérito indefinido.	6 hours
Competencia		6 hours
Competencia Competencia	Gramática: Pretérito imperfecto. Pretérito indefinido.	6 hours
Competencia Competencia	Gramática: Pretérito imperfecto. Pretérito indefinido. Escrita: Traducción ingles a español y español a Ingles.	6 hours





B. Tech Computer Science and Engineering and Business Systems

Comprensión oral: Introducción personal, Expresar los planes futuros. ¿Qué vas a hacer en laspróximas vacaciones?

Comprensión auditiva: Las preguntas sobre un cuento auditivo. Relacionar el audio con lasimágenes. Las preguntas basadas en canciones.

Medio de transporte: Comprar y Reservar billetes.

# Module:6 Diálogos entre dos

5 hours

Comprensión oral: Diálogos entre dos (cliente y tendero de ropas, pasajero y empleado, en unrestaurante, Reservación de habitación en un hotel). Presentación en una entrevista.

Comprensión auditiva: Las preguntas basadas en canciones. Las preguntas basadas en diálogos.

# Module:7 Presentación de los países hispánicos.

5 hours

Comprensión oral: Dialogo entre un médico y paciente. Presentación de los países hispánicos. Describir su infancia. Describir vacaciones últimas o las actividades de último fin de semana.

Comprensión auditiva: Rellenar los blancos del cuento en pasado. Las preguntas basadas en elcuento. Las preguntas basadas en un anuncio

Module:8	Guest Lectures/ Native Speakers		2 hours
	Total Lecture hours:	45 hour	s

# Text Book(s)

 "Aula Internacional 1", Jaime Corpas, Eva Garcia, Agustin Garmendia, Carmen Soriano Goyal Publication; reprinted Edition, Delhi (2010).

## **Reference Books**

1.	"¡AcciónGramática!", Phil Turk and Mike Zo	ollo, Hodder Murra	ay, London	n 2006.
2.	"Practice makes perfect: Spanish Vocabular	y", Dorothy Rich	mond, Mc	Graw Hill Contemporary,
	USA, 2012.			
3.	"Pasaporte A1 Foundation", Matilde Cerro	olaza Aragón, Ós	scar Cerro	laza Gili, Begoña Llovet
	Barquero, Edelsa Grupo, España, 2010.			
4.	"Practice makes perfect: Basic Spanish", De	orothy Richmond	, McGraw	Hill Contemporary, USA
	2009.			
Rec	ommended by Board of Studies			
App	roved by Academic Council	No.41	Date	17.06.2016





B. Tech Computer Science and Engineering and Business Systems

Course Code	Course Title	L	Τ	Р	J	С
FRE2001	Français Progressif	2	0	1	0	3
Pre-requisite	Français quotidien	Sy	llab	us ve	ersio	n
			1	v. 1.0		

# **Course Objectives:**

The course gives students the necessary background to:

- 1. Understand isolated sentences and frequently used expressions in relation to immediate priority areas (personal or family information, shopping, close environment, work).
- 2. Communicate in simple and routine tasks requiring only a simple and direct exchange of information on familiar and habitual topics.
- 3. Enable students to describe with simply means his training, his immediate environment and evoke familiar and habitual subjects, evoke subjects that correspond to immediate needs.

### **Expected Course Outcome:**

The students will be able to :

- 1. Understand expressions in French.
- 2. Create senteces by using frequent lexicon related to himself, his family, his close environment (family, shopping, work, school, etc).
- 3. Understand simple, clear messages on internet, authentic documents.
- 4. Analyse predictable information in common documents, such as advertisements, flyers, menus, schedules, simple personal letters.
- Create simple and routine tasks. 5.
- Create simple and direct exchange of information on familiar activities and topics.

#### Module:1 Expressions simples

8 hours La vie quotidiennes - Le verbe pronominal - Le passé composé avec l'auxiliaire - avoir et être- le passérécent : venir de + infinitif - Le comparatif - Le superlatif - Les mots interrogatifs (les trois formes) Savoir-faire pour: Faire des achats, faire des commandes dans un restaurant, poser des questions.

#### Module:2 Les activitiés quotidiennes

La vie privée et publique (Les achats, Les voyages, les transports-La nourriture, etc.) - Les lieux de la ville - Les mots du savoir-vivre - Les pronoms indéfinis - Les pronoms démonstratifs - Les pronoms complémentsobjets directs/ indirects - La formation du future simple et future proche Savoir-faire pour: Réserver les billets pour le voyage, réserver les chambres dans un hôtel, S'informer surles lieux de la ville, indiquer la direction à un étranger.

#### Module:3 Les activités de loisirs

Les loisirs (sports/spectacles/activités) - Les moments de la journée, de l'année- La fête indienne et française - Les goûts - L'impératif - La négation de l'impératif-La place du pronom à l'impératif avec un verbe pronominal.

Savoir-faire pour: Parler de ses goûts, raconter les vacances, formuler des phrases plus compliquées, Raconter les souvenirs de l'enfance, parler sur la tradition de son pays natal.

6 hours

7 hours



# Villore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

# CURRICULUM (2019 - 2020)

Module:4	1	7 hours
-	ancophone - Première approche de la société française – La d	
	un objet – décrire une tenue - Le pronom relatif (qui/que/dont	
	pour : Articles de la presse-Portrait d'une personne-Carte	es et messages d'invitation,
d'acceptatio	on ou de refus -Article de presse - rédaction d'un événement.	
Module:5	3	5 hours
	es activités quotidiennes - les fêtes en France – Parler de sa	a tamille – réserver un billet
à l'agence -	la gastronomie française	
M - 1 1 (	T. J	<b>F</b> 1
Module:6	La description	5 hours
	vsiquement une personne – les vacances – les achats – réserver	une chambre dans un hotel
– les plus g	rands français - raconter des évènements passés	
Module:7	S'exprimer	5 hours
	-	
	limat - parcours francophone – placer une commande au resta	
Parler du c son projet c	limat - parcours francophone – placer une commande au resta	
son projet c	limat - parcours francophone – placer une commande au resta l'avenir.	urant la mode - parler de
	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers	urant la mode - parler de 2 hours
son projet c	limat - parcours francophone – placer une commande au resta l'avenir.	urant la mode - parler de 2 hours
son projet o Module:8	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b>	urant la mode - parler de 2 hours
son projet o Module:8 Text Book	limat - parcours francophone – placer une commande au resta l'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b>	aurant la mode - parler de 2 hours 45 hours
son projet of Module:8 Text Book 1. Alter F	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> <b>(s)</b> Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010	aurant la mode - parler de 2 hours 45 hour
son projet of <b>Module:8 Module:8 Text Book</b> 1.       Alter H         2.       Alter H	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> (s) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010.	aurant la mode - parler de 2 hours 45 hour
son projet of Module:8 Text Book 1. Alter H 2. Alter H Reference	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> (s) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010. Books	2 hours 45 hour
son projet of Module:8 Text Book 1. Alter F 2. Alter F Reference 1. CONN	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> (s) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010. Books NEXIONS 1, Méthode de français, Régine Mérieux, Yves Loisea	au, Les Éditions Didier, 2010
son projet of Module:8 Text Book 1. Alter H 2. Alter H Reference 1. CONN 2. CONN	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> G(s) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010. <b>Books</b> NEXIONS 1, Méthode de français, Régine Mérieux, Yves Loisea NEXIONS 1, Le cahier d'exercices, Régine Mérieux, Yves Loisea	au, Les Éditions Didier, 2010 au, Les Éditions Didier, 2010
son projet of Module:8 Text Book 1. Alter H 2. Alter H Reference 1. CONN 2. CONN	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> (s) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010. Books NEXIONS 1, Méthode de français, Régine Mérieux, Yves Loisea	au, Les Éditions Didier, 2010 au, Les Éditions Didier, 2010
son projet of Module:8 Text Book 1. Alter F 2. Alter F Reference 1. CONN 2 CONN 3 Fréque	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> (6) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010. Books NEXIONS 1, Méthode de français, Régine Mérieux, Yves Loisea NEXIONS 1, Le cahier d'exercices, Régine Mérieux, Yves Loisea ence jeunes-1, Méthode de français, G. Capelle et N.Gidon, Hac	au, Les Éditions Didier, 2010 au, Les Éditions Didier, 2010 hette, Paris, 2010.
son projet of Molule:8 Text Book 1. Alter H 2. Alter H Reference 1. CONN 2 CONN 3 Fréque	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> (s) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010. Books NEXIONS 1, Méthode de français, Régine Mérieux, Yves Loise NEXIONS 1, Le cahier d'exercices, Régine Mérieux, Yves Loise ence jeunes-1, Méthode de français, G. Capelle et N.Gidon, Hac	au, Les Éditions Didier, 2010 au, Les Éditions Didier, 2010 hette, Paris, 2010.
son projet of Molule:8 Text Book 1. Alter H 2. Alter H Reference 1. CONN 2 CONN 3 Fréque	limat - parcours francophone – placer une commande au resta d'avenir. Guest lecures : Guest lecures/ Native speakers <b>Total Lecture hours:</b> (6) Ego 1, Méthode de français, Annie Berthet, Hachette, Paris 2010 Ego 1, Cahier d'exercices, Annie Berthet, Hachette, Paris 2010. Books NEXIONS 1, Méthode de français, Régine Mérieux, Yves Loisea NEXIONS 1, Le cahier d'exercices, Régine Mérieux, Yves Loisea ence jeunes-1, Méthode de français, G. Capelle et N.Gidon, Hac	au, Les Éditions Didier, 2010. hette, Paris, 2010.





Course Code	Course Title	L	Т	P	J	С
GER1001	GRUNDSTUFE DEUTSCH	2	0	0	0	2
Pre-requisite	NIL		Sylla	abus	versi	on
				v. 1.	0	
Course Objectives	s:					
The course gives st	udents the necessary background to:					
1. Demonstrate P	Proficiency in reading, writing, and speaking in basic G	erman.	Learn	ing v	ocabi	ılary
related to profe	ssion, education centres, day-to-day activities, food, cult	ure, spor	rtsand	l hob	by, fa	mily
set up, workpla	ce, market and classroom activities are essential.					
2. Make the studer	nts industry oriented and make them adapt in the Germa	ın cultur	e.			
Expected Course	Outcome:					
The students will b	e able to					
1. Remember gree	eting people, introducing oneself and understanding ba	sic expre	ession	s inC	Germa	n.
2. Understand bas	sic grammar skills to use these in a meaning way.					
3. Remember begi	inner's level vocabulary					
4. Create sentence	es in German on a variety of topics with significant preci	sion and	in de	tail.		
5. Apply good con	nprehension of written discourse in areas of special inter	ests.				
		0000				
1170	1 1					
Module: 1					3 h	nou
	* * 		nen, v	wohn		
Begrüssung, Lande	eskunde, Alphabet, Personalpronomen, Verben- heisse	n, komn			en, le	rne
Begrüssung, Lande Zahlen (1-100), W	eskunde, Alphabet, Personalpronomen, Verben- heisse V-Fragen, Aussagesätze, Nomen- Singular und Plura	n, komn			en, le	rne
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti	eskunde, Alphabet, Personalpronomen, Verben- heisse V-Fragen, Aussagesätze, Nomen- Singular und Plura	n, komn 11, der	Artike	el -B	en, le	rne
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura kel)	n, komn 11, der	Artike	el -B	en, le	rne
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura kel)	n, komn 11, der	Artike	el -B	en, le estim	erne mte
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti Lernziel : Sich vor Module: 2	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura kel)	n, komn ıl, der schland i	Artike n Eur	el -B	en, le estim	mte
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti Lernziel : Sich vor Module: 2 Konjugation der V	eskunde, Alphabet, Personalpronomen, Verben- heisse V-Fragen, Aussagesätze, Nomen- Singular und Plura kel) stellen, Grundlegendes Verständnis von Deutsch, Deuts	n, komn ıl, der schland i Jahresze	Artike n Eur	el -B copa	en, le estim	mte mte
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti <b>Lernziel :</b> Sich vor <b>Module: 2</b> Konjugation der V Hobbys, Berufe, <i>A</i>	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura kel) rstellen, Grundlegendes Verständnis von Deutsch, Deuts Verben (regelmässig /unregelmässig),das Jahr- Monate,	n, komn ıl, der schland i Jahresze	Artike n Eur	el -B copa	en, le estim	mte mte
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti <b>Lernziel :</b> Sich vor <b>Module: 2</b> Konjugation der V Hobbys, Berufe, <i>A</i>	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura ikel) estellen, Grundlegendes Verständnis von Deutsch, Deuts Verben (regelmässig /unregelmässig),das Jahr- Monate, Artikel, Zahlen (Hundert bis eine Million), Ja-/Nein-	n, komn ıl, der schland i Jahresze	Artike n Eur	el -B copa	en, le estim	erne mte nou och "Sio
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti Lernziel : Sich vor Module: 2 Konjugation der V Hobbys, Berufe, A Lernziel: Sätze sch Module: 3	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura ikel) estellen, Grundlegendes Verständnis von Deutsch, Deuts Verben (regelmässig /unregelmässig),das Jahr- Monate, Artikel, Zahlen (Hundert bis eine Million), Ja-/Nein-	n, komn ıl, der schland i Jahresze Frage,	Artike n Eur iten u Impe	el -B copa und c erativ	en, le estim 3 h lie W mit 5 h	erne mte nou och "Sie
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti Lernziel : Sich vor Module: 2 Konjugation der V Hobbys, Berufe, <i>A</i> Lernziel: Sätze sch Module: 3 Possessivpronomer	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura ikel) estellen, Grundlegendes Verständnis von Deutsch, Deuts Verben (regelmässig /unregelmässig),das Jahr- Monate, Artikel, Zahlen (Hundert bis eine Million), Ja-/Nein- nreiben, über Hobbys, Berufe erzählen, usw	n, komn Il, der Ichland i Jahresze Frage, Artike	Artike n Eur iten u Impo I) Tre	el -B copa und c erativ	en, le estim 3 h lie W mit 5 h	erne mte nou och "Sie
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti Lernziel : Sich vor Module: 2 Konjugation der V Hobbys, Berufe, A Lernziel: Sätze sch Module: 3 Possessivpronomen Modalverben, Uhrz	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura kel) rstellen, Grundlegendes Verständnis von Deutsch, Deuts Verben (regelmässig /unregelmässig),das Jahr- Monate, Artikel, Zahlen (Hundert bis eine Million), Ja-/Nein- nreiben, über Hobbys, Berufe erzählen, usw	n, komn ıl, der schland i Jahresze Frage, Artike arben, T	Artike n Eur iten u Impo I) Tre	el -B copa und c erativ	en, le estim 3 h lie W mit 5 h	erne mte nou och "Sie
Begrüssung, Lande Zahlen (1-100), W Unbestimmter Arti Lernziel : Sich vor Module: 2 Konjugation der V Hobbys, Berufe, A Lernziel: Sätze sch Module: 3 Possessivpronomen Modalverben, Uhrz	eskunde, Alphabet, Personalpronomen, Verben- heisse W-Fragen, Aussagesätze, Nomen- Singular und Plura ikel) estellen, Grundlegendes Verständnis von Deutsch, Deuts Verben (regelmässig /unregelmässig),das Jahr- Monate, Artikel, Zahlen (Hundert bis eine Million), Ja-/Nein- nreiben, über Hobbys, Berufe erzählen, usw n, Negation, Kasus (Bestimmter- Unbestimmter zeit, Präpositionen, Lebensmittel, Getränkeund Essen, F	n, komn ıl, der schland i Jahresze Frage, Artike arben, T	Artike n Eur iten u Impo I) Tre	el -B copa und c erativ	en, le estim 3 h lie W mit 5 h	erne mte nou och "Sie
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# Villore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

# CURRICULUM (2019 - 2020)

Module: 6					3 hours
Aufsätze :Di	e Familie, Bundesländer in l	Deutschland, Ein I	Fest in Det	ıtschland,	
Lernziel : Al	xtiver, selbständiger Gebrau	ch der Sprache			
Module: 7					4 hours
Dialoge:					
a) Gespa	räche mit einem/einer Freu	nd /Freundin.			
b) Gesp	räche beim Einkaufen ; in ei	inem Supermarkt ;	in einer B	uchhandlung ;	
c) in ein	em Hotel - an der Rezeption	n ; ein Termin beir	n Arzt.		
d) Ein T	'elefongespräch ; Einladung	–Abendessen			
Module: 8					2 hours
Guest Lectur	es / Native Speakers Einleit	tung in die deustch	e Kultur u	nd Politik	
		Total Lecture ho	ours		30 hours
					_1
Text Book(s					
1. Netzwei	rk Deutsch als Fremdsprach	e A1, Stefanie Der	ngler, Paul	Rusch, Helen Schm	tiz, Tanja
^{1.} Sieber, F	Klett-Langenscheidt Verlag,	München : 2013			
Reference B	ooks				
1. Lagune,	Hartmut Aufderstrasse, Jut	ta Müller, Thomas	Storz, 201	2.	
	e Sprachlehre für Ausländer				
	A1, Hermann Funk, Christ		0.		
0	n Aktuell-I, Maria-Rosa, Sch	ioenherrTil, Max H	Iueber Ver	lag, Muenchen: 2012	2
5. <u>www.go</u>					
	ftsdeutsch.dehueber.de				
klett-spr	achen.de <u>www.deutschtrani</u>	<u>ng.or</u> g			
	uluation: CAT / Assignment	, ,	/ FAT		
	led by Board of Studies	04-03-2016	-		
Approved by	Academic Council	No. 41	Date	17-06-2016	





Course Code	Course Title	L	Τ	Р	J	С
GER2001	Mittelstufe Deutsch	2	0	1	0	3
Pre-requisite	Grundstufe Deutsch	S	yllab	ous vo	ersio	on
			v	. 1.0		
Course Objectives:						
The course gives stud	ents the necessary background to:					
1. Improve the co	mmunication skills in German language					
2. Improve the list	stening and understanding capability of German FM Rad	io, and	TV I	Prog	amr	nes,
Films						
3. Build the confid	lence of the usage of German language and better understa	nding o	f the	cultu	ıre	
Expected Course O	utcome:					
The students will be a	ble to					
1. Create proficience	y in advanced grammar and rules					
2. Understand the t	exts including scientific subjects.					
3. Create the ability	of listening and speaking in real time situations.					
-	ulary in different context-based situations.					
	mmunication in profession life, like replying or sending E-	mails an	nd lett	ers in	na	
company.						
	nication related to simple and routine tasks.					
	1					
Module:1 Profi	ciency in Advanced Grammar				9 h	ours
	ciency in Advanced Grammar 15- Perfekt Präteritum Plusquamperfekt Eutur-I Eutur-II	Wieder	holur	no de		ours
Grammatik : Tempu	us- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II,	Wieder	holur	ng de		ours
Grammatik : Tempu Grundstufen gramm	us- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, natik	Wieder	holur	ng de		iours
Grammatik : Tempu Grundstufen gramm	us- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II,	Wieder	holur	ng de		iours
Grammatik : Tempu Grundstufen gramm Lernziel: Sätzeschrei	ns- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, natik iben in verschiedenen Zeiten.	Wieder	holur	ng de	r	
Grammatik : Tempu Grundstufen gramm Lernziel: Sätzeschree Module:2 Under	ns- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, natik iben in verschiedenen Zeiten. erstanding of Technical Texts	Wieder	holur	ng de	r	
Grammatik : Tempu Grundstufen gramm Lernziel: Sätzeschrei <b>Module:2</b> Unde Grammatik : Passiv,	ns- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, natik liben in verschiedenen Zeiten. erstanding of Technical Texts Personalpronomen (Nominativ, Akkusativ, Dativ)	Wieder	holur	ng de:	r	
Grammatik : Tempu Grundstufen gramm Lernziel: Sätzeschrei <b>Module:2</b> Unde Grammatik : Passiv,	ns- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, natik iben in verschiedenen Zeiten. erstanding of Technical Texts	Wieder	holur	ng de	r	
Grammatik : Tempu Grundstufen gramm Lernziel: Sätzeschrei Module:2 Und Grammatik : Passiv, Lernziel: Passiv, For	ns- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, natik liben in verschiedenen Zeiten. erstanding of Technical Texts Personalpronomen (Nominativ, Akkusativ, Dativ) emen des Personalpronomens	Wieder	holur	ng de	r 9 h	ours
Grammatik : Tempu Grundstufen gramm Lernziel: Sätzeschrei Module:2 Unde Grammatik : Passiv, Lernziel: Passiv, For Module:3 Unde	ns- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, natik iben in verschiedenen Zeiten. erstanding of Technical Texts Personalpronomen (Nominativ, Akkusativ, Dativ) ermen des Personalpronomens			ng de	r 9 h	ours
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Grammatik : Tempu         Grundstufen gramm         Lernziel: Sätzeschree         Module:2       Under         Grammatik : Passiv,         Lernziel: Passiv, For         Module:3       Under         Module:4       Com         Übersetzung : Technic         Englische und umge         Lernziel : Üburg vo	is- Perfekt, Präteritum, Plusquamperfekt, Futur-I, Futur-II, hatik iben in verschiedenen Zeiten. erstanding of Technical Texts Personalpronomen (Nominativ, Akkusativ, Dativ) rmen des Personalpronomens erstanding of Scientific texts Nebensatz, Präpositionen mit Akkusativ und Dativ,Infinit g zwischen Adjektiv beim Nomen municating in Real Time Situations ische Terminologie, wissenschaftliche, literarische Texte au ekehrt, n Grammatik und Wortschatz isition of the Vocabulary of the advanced Level	iv Sätze s dem I			r 9 h 9 h 8 h ins	iours
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Mo	dule:6	Ability to Communicate	in Professional L	ife		9 hours
Höt	rverständr	nis durch Audioübung: Über			Seste in Deutschland,	
Vid	eos :Wett	er, An der Universität,ein Zi	mmer buchen, Stud	lentenlebe	n,Städteund Landeski	unde
Ler	nziel : Hö	rverständnis, Landeskunde				
Mo	dule:7	Ability to Communicate	in Task-based Si	tuations		7 hours
Höt	rverständr	nis durch Audioübung: FM R	adio aus Deutschla	anddVideos	s: Fernseher aus Deu	tschland
Ler	nziel : LSI	RW Fähigkeiten				
		Total Lecture hours:		60	hours	
Tex	xt Book(s	)				
1.	Tangram	Aktuell II, Rosa Maria Dal	llapizza, Beate Bli	iggel, Max	Hueber Verlag ,Mür	nchen : 2010
Ref	ference B	ooks				
1.	Themen	Aktuell, Heiko Bock, Mueller	Jutta, MaxHuebe	r Verla, Mi	uenchen : 2010	
2.	Deutsch	Sprachlehre fuer Auslaender	, Schulz Griesbach	, Max Hue	eber Verlag, Muench	en : 2012
3.	Lagune,	Deutsch als Fremdsprache, J	utta Müller, Storz	Thomas, H	lueber Verlag, Ismani	ng : 2013
4.	Studio d	A1, Hermann Funk, Christir	na Kuhn, Max Hue	rberVerlag	, München : 2011	
Mod	e of Eval	uation: CAT / Assignmen	t / Quiz / FAT			
Reco	ommende	ed by Board of Studies				
Appr	roved by	Academic Council	No.41	Date	17.06.2016	



# VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

# CURRICULUM (2019 - 2020)

GRE1001       Modern Greek       2       0       0       0         Pre-requisite       NIL       Syllabus version       v. 1.0         Course Objectives:       1.       To master the Greek terminology widely used in their subjects of specialization       2.       0       0       0         2.       To master the Greek terminology widely used in their subjects of specialization       2.       0       0       0         2.       To communicate in Modern Greek in their day to day life       3.       To provide general information about Greece (e.g. geography, weather, food etc.)       0         Expected Course Outcomes:       4.       Students will be able:       5.       To correctly pronounce Greek symbols and words, being more conscious and confident in the rof their English vocabulary derived from Greek.       6.       To make use of Modern Greek language in simple everyday conversation.	2 on
v. 1.0         Course Objectives:         1. To master the Greek terminology widely used in their subjects of specialization         2. To communicate in Modern Greek in their day to day life         3. To provide general information about Greece (e.g. geography, weather, food etc.)         Expected Course Outcomes:         4. Students will be able:         5. To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.	on 
<ul> <li>Course Objectives: <ol> <li>To master the Greek terminology widely used in their subjects of specialization</li> <li>To communicate in Modern Greek in their day to day life</li> <li>To provide general information about Greece (e.g. geography, weather, food etc.)</li> </ol> </li> <li>Expected Course Outcomes: <ol> <li>Students will be able:</li> <li>To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.</li> </ol> </li> </ul>	
<ol> <li>To master the Greek terminology widely used in their subjects of specialization</li> <li>To communicate in Modern Greek in their day to day life</li> <li>To provide general information about Greece (e.g. geography, weather, food etc.)</li> </ol> Expected Course Outcomes: <ol> <li>Students will be able:</li> <li>To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.</li> </ol>	
<ol> <li>To communicate in Modern Greek in their day to day life</li> <li>To provide general information about Greece (e.g. geography, weather, food etc.)</li> </ol> Expected Course Outcomes: <ol> <li>Students will be able:</li> <li>To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.</li> </ol>	
<ol> <li>To provide general information about Greece (e.g. geography, weather, food etc.)</li> <li>Expected Course Outcomes:         <ol> <li>Students will be able:</li> <li>To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.</li> </ol> </li> </ol>	
<ul> <li>Expected Course Outcomes:</li> <li>4. Students will be able:</li> <li>5. To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.</li> </ul>	
<ul> <li>4. Students will be able:</li> <li>5. To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.</li> </ul>	
<ul> <li>4. Students will be able:</li> <li>5. To correctly pronounce Greek symbols and words, being more conscious and confident in the of their English vocabulary derived from Greek.</li> </ul>	
of their English vocabulary derived from Greek.	
of their English vocabulary derived from Greek.	usage
6. To make use of Modern Greek language in simple everyday conversation.	0
7. To understand contents from scientific texts that make use of Greek symbols and words, become	ning
familiar with fundamental linguistic aspects of the International Scientific Vocabulary as well as	
becoming able to formulate hypotheses about unknown compound words derived from Greek.	
8. To be more aware about the evolution of Modern European languages, understanding the impo	ortant
connections between English and Greek/Neo-Latin languages.	
9. To understand important socio-economic issues in contemporary Europe, developing their apti	tude
for critical thinking.	
Module:1Greek Alphabet: Correct usage and Pronunciation of Greek symbols4	hours
Vowels and phonetic rules of diphthongs: alpha-iota / epsilon-iota / omicron-iota / and ups	silon /
epsilon-upsilon; consonants and their correct pronunciation; double consonants and digraphs. Gr	ammar
skills: correct pronunciation of the 24 Greek letters; correct pronunciation of diphthongs digraphs.	
Module:2Greetings, introducing oneself; Proper Nouns and Proper3Greek Names	hours
Communicative functions: using formal and informal greetings; introducing oneself using affirm	native
form.	
Grammar skills: nominative case and vocative case (singular), personal pronouns, verbs είμαι (to be	e) and
μελένε (to be called).	/
Written communication skills: introducing oneself using Greek letters and words.	
Module:3 Nationality and Provenance 5	hours
Communicative functions: providing personal details such as nationality, address and telep	hone
number; Being able to name a few relevant landmarks in a city.	
Grammar skills: Common nouns (masculine in $-0\zeta/-\eta\zeta/-\alpha\zeta$ ; feminine in $-\alpha/-\eta$ ; neuter in $-0/-t$ ); $\alpha\pi$	τ <b>ό</b> / σε
+ accusative case; cardinal numerals from 1 to 10; verb $\mu \dot{\epsilon} \nu \omega$ (simple present).	
Written communication skills: introducing oneself providing specific details about country and cit	yof
white communication skins. Introducing onesch providing specific details about country and ch	



# VIT® Vellore Institute of Technology

CURRICULUM (2019 - 2020)

Module:4	Family		5 hours
Communica	tive functions: describing one's family and de	escribing elementary	physical traits
(μικρός/μεγ	άλος – μελαχρινός/ξανθός – ψηλός/κοντός).		
Grammar sk	ills: possessive pronouns (singular/plural); word acc	cent	
Written com	munication skills: describing family and family mem	bers.	
Module:5	In the classroom: introducing others, nationality adjectives	languages and	4 hours
Ccommunic	ative functions: introducing others by providing	information on their	r nationality and
spoken langu	uage(s); naming the objects in a classroom.		
Grammar sk	ills: verb μιλώ (simple present); nationality adjective	s.	
Written com	munication skills: introducing friends and relatives	providing specific in	formation about
the language	they speak.		
Module:6	Months and seasons of the year; days of and weather	the week; time	4 hours
<u> </u>			
Communicat	tive functions: defining time and date: talking about	weather conditions	
	tive functions: defining time and date; talking about kills: cardinal numerals from 11 to 100; int		
Grammar sl	kills: cardinal numerals from 11 to 100; int	terrogative pronou	
Grammar sl ποιο/τι); ti	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο,	terrogative pronou φέτος πέρσι, του	αχρόνου, πότε);
Grammar sl ποιο/τι); ti syntax: υπ	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, τοκείμενο/άμεσο αντικείμενοWritten commu	terrogative pronou φέτος πέρσι, του	αχοόνου, πότε);
Grammar sl ποιο/τι); ti syntax: υπ	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο,	terrogative pronou φέτος πέρσι, του	αχοόνου, πότε);
Grammar sl ποιο/τι); ti syntax: υπ	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, τοκείμενο/άμεσο αντικείμενοWritten commu	terrogative pronou φέτος πέρσι, του	χϱόνου, πότε); cribing weather
Grammar sl ποιο/τι); ti syntax: υπ conditions, c Module:7	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, κοκείμενο/άμεσο αντικείμενοWritten commun defining time and date.	terrogative pronou φέτος πέρσι, του nication skills: des	αχοόνου, πότε); cribing weather <b>3 hours</b>
Grammar sl ποιο/τι); ti syntax: υπ conditions, c Module:7 Module cont	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, κοκείμενο/άμεσο αντικείμενοWritten commun defining time and date. Daily routine tent: communicative functions: describing one's daily	terrogative pronou φέτος πέρσι, του nication skills: des y routine and activitie	αχοόνου, πότε); cribing weather 3 hours es/hobbies.
Grammar sl ποιο/τι); ti syntax: υπ conditions, c Module:7 Module cont Grammar sk	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, κοκείμενο/άμεσο αντικείμενοWritten commun defining time and date. <b>Daily routine</b>	terrogative pronou φέτος πέρσι, του nication skills: des y routine and activitie le present); plural no	αχοόνου, πότε); cribing weather 3 hours es/hobbies.
Grammar sl ποιο/τι); ti syntax: υπ conditions, c Module:7 Module cont Grammar sk	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, σοκείμενο/άμεσο αντικείμενοWritten commun defining time and date. <b>Daily routine</b> tent: communicative functions: describing one's daily sills: verbs πάω, ακούω, λέω, τρώω, μπορώ (simpl	terrogative pronou φέτος πέρσι, του nication skills: des y routine and activitie le present); plural no	αχοόνου, πότε); cribing weather 3 hours es/hobbies.
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Grammar sl ποιο/τι); ti syntax: υπ conditions, c Module:7 Module cont Grammar sk case). Writte Module:8	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, σοκείμενο/άμεσο αντικείμενοWritten commun defining time and date. <b>Daily routine</b> tent: communicative functions: describing one's daily sills: verbs πάω, ακούω, λέω, τρώω, μπορώ (simple n communication skills: writing a simple letter descr	terrogative pronou φέτος πέρσι, του nication skills: des y routine and activitie le present); plural no cibing a daily routine.	αχοόνου, πότε); cribing weather <b>3 hours</b> es/hobbies. buns (nominative <b>2 hours</b>
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Grammar sl ποιο/τι); ti syntax: υπ conditions, c Module:7 Module cont Grammar sl case). Writte Module:8 Social and E	kills: cardinal numerals from 11 to 100; int me adverbials (τώρα, σήμερα, χθες, αύριο, κοκείμενο/άμεσο αντικείμενοWritten commun- defining time and date. <b>Daily routine</b> tent: communicative functions: describing one's daily sills: verbs πάω, ακούω, λέω, τρώω, μπορώ (simple n communication skills: writing a simple letter description <b>Contemporary issues:</b> conomic aspects of the 2009-2017 Greek governme efugee Crisis.	terrogative pronou φέτος πέρσι, του nication skills: des y routine and activitie le present); plural no cibing a daily routine.	αχοόνου, πότε); cribing weather <b>3 hours</b> es/hobbies. ouns (nominative <b>2 hours</b> the 2015-2018
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Course Code	Course Title	L	T	Р	J	C
JAP1001	JAPANESE FOR BEGINNERS	2	0	0	0	2
Pre-requisite	NIL		Sylla	abus	vers	ior
			V	. 1.0		
Course Objective	s:					
he course gives st	tudents the necessary background to:					
1. Develop fou	r basic skills related to reading, listening, speaking and writing Jap	anes	e lang	guage	2.	
2. Instill in lear	ners an interest in Japanese language by teaching them culture an	nd ge	enera	letiqu	iette	s.
3. Recognize, r	ead and write Hiragana and Katakana.					
Expected Course	Outcomes:					
tudents will be ab	le to:					
1. Remember Jap	panese alphabets and greet in Japanese.					
2. Understand pr	conouns, verbs form, adjectives and conjunctions in Japanese.					
3. Remember tin	ne and dates related vocabularies and express them in Japanese.					
	questions and its answers in Japanese.					
-	le Japanese culture and etiquettes.					
Module: 1	Introduction to Japanese syllables and Greetings			41	hour	c
	Japanese language, alphabets; Hiragana, katakana, and Kanji			ation	, vo	
	Japanese language, alphabets; Hiragana, katakana, and Kanji Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro			ation	, vo	
and consonants.	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro			ation	, vo ngs.	we
and consonants. D	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro Demonstrative Pronouns	onou	ns, G	ation Freeti	, voʻ ngs. hour	wel
and consonants. Module: 2 Grammar: N1 wa	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro <b>Demonstrative Pronouns</b> a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S	ore,	ns, G Are a	ation Freeti 4 1 nd E	, vo ngs. hour Dore	we
and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro <b>Demonstrative Pronouns</b> a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over	ore,	ns, G Are a c, wh	ation Freeti 41 nd D ich)	, vo ngs. hour Dore	we
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and consonants. 1 Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira a Module: 3	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro <b>Demonstrative Pronouns</b> a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There <b>Verbs and Sentence formation</b>	ore, there	ns, G Are a c, wh locat	4 I ation Freeti and D ich) ion)	, voʻ ngs. hour Oore Kocl	we
and consonants. 1 Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira and Module: 3 Classification of	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro <b>Demonstrative Pronouns</b> a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over the nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There	ore, there	ns, G Are a c, wh locat	4 I ation Freeti and D ich) ion)	, voʻ ngs. hour Oore Kocl	wei s hir:
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and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira at Module: 3 Classification of - Object + Verb) K Module: 4	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro <b>Demonstrative Pronouns</b> a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over a nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There <b>Verbs and Sentence formation</b> verbs Be verb desu Present and Present negative Basic structure Katakana-reading and writing	ore, there e	ns, G Are a c, wh locat enter	ation       areeti       areation       areation	, vo ngs. hour Dore Kocl hour Subje	s hir: s s
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and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira ar Module: 3 Classification of P Object + Verb) K Module: 4 Conjunction-Ya. Sumimasen, waka	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro Demonstrative Pronouns a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over a nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There Verbs and Sentence formation verbs Be verb desu Present and Present negative Basic structure Katakana-reading and writing Conjunction and Adjectives nado Classification of Adjectives 'T' and 'na'-ending Set phrase	ore, . there of s	ns, G Are a e, wh locat enter negai	ation Freeti and I ich) ion) 4 1 nce (1 shim	, vo ngs. hour Oore Kocl hour Subje	weils
and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira ar Module: 3 Classification of P Object + Verb) K Module: 4 Conjunction-Ya. Sumimasen, waka	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro Demonstrative Pronouns a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There Verbs and Sentence formation verbs Be verb desu Present and Present negative Basic structure Katakana-reading and writing Conjunction and Adjectives nado Classification of Adjectives 'T' and 'na'-ending Set phrase arimasen Particle –Wa, Particle-Ni 'Ga imasu' and 'Ga arimasu' for	ore, . there of s	ns, G Are a e, wh locat enter negai	ation         Freeting         41         nd D         ich)         ion)         41         nce (3         shim         ce of	, vo ngs. hour Oore Kocl hour Subje	s hirr s s ct ⁻
and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira a: Module: 3 Classification of · Object + Verb) F Module: 4 Conjunction-Ya. Sumimasen, waka things and non-lir Module: 5	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro Demonstrative Pronouns a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over a nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There Verbs and Sentence formation verbs Be verb desu Present and Present negative Basic structure Katakana-reading and writing Conjunction and Adjectives nado Classification of Adjectives T' and 'na'-ending Set phrase arimasen Particle –Wa, Particle-Ni 'Ga imasu' and 'Ga arimasu' fo ving things Particle- Ka, Ni, Ga	ore, . there e of s – O r Ex	ns, G Are a c, wh locat enter negai	ation         areeti         areeti         ation         areeti         ation         ation         areeti         ation	, vo ngs. hour Dore Kocl hour Subje hour lasu - livin	s hir: s s c s s s s
and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira ar Module: 3 Classification of Object + Verb) K Module: 4 Conjunction-Ya. Sumimasen, waka things and non-lir Module: 5 Days/ Months	<ul> <li>Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro</li> <li>Demonstrative Pronouns <ul> <li>N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S</li> <li>er there, which) Kono, sono, Ano and Dono (this, that, over the nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There</li> </ul> </li> <li>Verbs and Sentence formation <ul> <li>verbs Be verb desu Present and Present negative Basic structure</li> <li>Katakana-reading and writing</li> </ul> </li> <li>Conjunction and Adjectives <ul> <li>nado Classification of Adjectives 'T' and 'na'-ending Set phrase</li> <li>arimasen Particle –Wa, Particle-Ni 'Ga imasu' and 'Ga arimasu' for</li> <li>ving things Particle- Ka, Ni, Ga</li> </ul> </li> </ul>	ore, . there e of s – O r Ex	ns, G Are a c, wh locat enter negai	ation         areeti         areeti         ation         areeti         ation         ation         areeti         ation	, vo ngs. hour Dore Kocl hour Subje hour lasu - livin	s hir: s s s s s s
and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira ar Module: 3 Classification of Object + Verb) K Module: 4 Conjunction-Ya. Sumimasen, waka things and non-lir Module: 5 Days/ Months	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro Demonstrative Pronouns a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over the nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There Verbs and Sentence formation verbs Be verb desu Present and Present negative Basic structure Katakana-reading and writing Conjunction and Adjectives nado Classification of Adjectives 'I' and 'na'-ending Set phrase arimasen Particle –Wa, Particle-Ni 'Ga imasu' and 'Ga arimasu' for ving things Particle- Ka, Ni, Ga Vocabulary and its Meaning /Year/Week (Current, Previous, Next, Next to Next) ;	ore, . there e of s – O r Ex	ns, G Are a c, wh locat enter negai	ation         areeti         areeti         ation         areeti         ation         ation         areeti         ation	, vo ngs. hour Dore Kocl hour Subje hour lasu - livin	s hir: s s s s s s
and consonants. I Module: 2 Grammar: N1 wa (This, That, Ove Sochira, Achira ar Module: 3 Classification of Object + Verb) K Module: 4 Conjunction-Ya. Sumimasen, waka things and non-lir Module: 5 Days/ Months	Hiragana – writing and reading; Vocabulary: 50 Nouns and 20 pro Demonstrative Pronouns a N2 desu, Japanese Numerals, Demonstrative pronoun - Kore, S er there, which) Kono, sono, Ano and Dono (this, that, over the nd Dochira. this way) Koko, Soko, Asoko and Doko (Here, There Verbs and Sentence formation verbs Be verb desu Present and Present negative Basic structure Katakana-reading and writing Conjunction and Adjectives nado Classification of Adjectives 'I' and 'na'-ending Set phrase arimasen Particle –Wa, Particle-Ni 'Ga imasu' and 'Ga arimasu' for ving things Particle- Ka, Ni, Ga Vocabulary and its Meaning /Year/Week (Current, Previous, Next, Next to Next) ;	ore, . there e of s – O r Ex	ns, G Are a c, wh locat enter negai	ation         areeti         areeti<	, vo ngs. hour Dore Kocl hour Subje hour lasu - livin	s hir: s s s an



VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

# CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Te forms, Polite form of verbs

Μ	Iodule: 7	Expressing time, p	osition and di	rections		4 hours			
Clas	sification of	question words (Do	ko, Dore, Don	o, Dochira); Time o	expressions (Jikan),	Number of			
hou	rs, Number	of months, calendar of	of a month; Vis	it the departmental	store, railway static	ons, Hospital			
(Byo	oki), office a	nd University		1					
N	Aodule: 8	Guest Lecture by H	Experts			2 hours			
		Total Lectu	ire hours			30 hours			
Text	Book(s):				·				
1.	The Japan	Foundation (2017), M	arugoto Japanes	se Language and Cu	lture Starter A1 Cou	ırsebook			
	For Comm	nunicative Language C	ompetences, Ne	ew Delhi: Goyal Pub	olishers (978818307	8047)			
2.	Banno, Er	Banno, Eri et al (2011), Genki: An Integrated Course in Elementary Japanese I [Second Edition],							
2.	Japan: The	Japan: The Japan Times.							
Refe	rence Book	(s):							
1.	Japanese f	for Busy people (2011)	video CD, AJA	LT, Japan.					
2.	Carol and	Nobuo Akiyama (201	0), The Fast and	l Fun Way, New De	elhi: Barron's Public	ation			
	1	·							
Mod	e of Evaluat	tion: CAT, Quiz and	Digital Assign	iments					
Reco	mmended l	by Board of Studies	24-10-2018						
1	oved by Ac	ademic Council	No. 53	Date	13-12-2018				



# VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

# CURRICULUM (2019 - 2020)

Course Code	Course Title	L	Τ	Р	J	С
RUS1001	Russian for Beginners	2	0	0	0	2
Pre- requisites	NIL		Sylla	abus	vers	ion
				<b>v.</b> 2	l.0	
Course Objecti						
	the students to read and communicate in Russian in their da	ıy-to	-day	lite	to be	ecome
industry-re	ady					
Expected Outc	ome:					
-	will be able to read and communicate the basics of Russian lang	uage	in tł	neir c	lay-to	o-day
life.		U			5	5
Module 1	Topics		3 ho			
8	troductions in Russian; Russian alphabet, writing and reading the	•		-		
	rn to: Greet each other in Russian (formal vs. informal; dependir	ng of	the	time	of tł	ne day
Introduce some	one in Russian. Read and write Cyrillic alphabet					
Module 2	Topics		3 ho	11#0		
	————————————————————					C .1
	es/no, gratitude, apologies, saying hello/goodbye, etc.); Numbe					
	the year; Seasons. Gender of nouns, hard and soft stems, and e	-			e stu	uents
learn to: Have a	simple conversation. Know numbers, days of the week, months a	and s	seasc	5115.		
Module 3	Topics		6 ho	urs		
Family (family m	nembers and pets). Learn Russian names: last name, first name,	and	patr	onyn	nic. I	Iouse
• • •	Parts of the body and health. Personal pronouns; ты vs. вы. As		-	•		
The Possessive	pronouns. Asking What and Who in Russian? Nominative	e cas	se. I	\skin	g W	here
Prepositional ca	se. The Country and Nationality. Prepositions (in/at/on/wit	h et	c.).	The	adje	ctives
(colors, age, app	bearance, etc.). The Students learn to: Ask questions and demo	onstr	rate	basic	abil :	ity to
communicate in	Russian.					
Module 4	Topics		4 ho			
11 0	. Clothes. Demonstrative pronouns этот and тот. Dative case	-			-	
-	structions. Simple translation (Russian-English-Russian). The	Stuc	lents	lean	n to	: Do
shopping. Under	stand a short text in Russian.					
Module 5	Topics		5 ho	11#0		
	e airport. Public transportation. Directions. Weather. Form a s				the	given
-	sentences into plural form. Formulate questions. The Students					-
	juestions in Russian. Express sentences given in Male or Femal					
destination.	account in reasonant Empress sentences given in trate of Felha	-, -1	, is at			
Module 6	Topics		3 ho	urs		
I		1			15	6



Studying and	d Teaching. Profession. Ab	out myself. The Stud	ents learn	to: Be able to	tell about themselves
(family, univ	versity, house, leisure, etc.)				
Module 7		Topics			4 hours
Dialogues: a	) At the airport. b) In a caf	eteria, grocery store,	farmer's m	arket, etc.	
About famil	y - Between friends.				
Module 8	Guest Lectures / native	e speakers			2 hours
			Total Lec	ture Hours	30
Mode of Ev	valuation: CAT , Quiz an	d Digital Assignme	nts		
Approved b	y Academic Council:	No.:41	Date:	17-06-2016	
			•		



# **Specialization Elective**

# (AY 2019 - 2020)

B. Tech. Computer Science and Engineering and Business Systems

(in collaboration with TCS)

Sl.No.	Course Code	Course Title	Page No.
1.	HUM1046	Behavioral Economics	159
2.	HUM1047	Engineering Economics	161
3.	HUM1048	Industrial Psychology	163
4.	MGT3001	Business Strategy	165
5.	MGT3002	Advanced Finance	167
6.	MGT4004	Human Resource Management	169
7.	MGT4005	Computational Finance and Modelling	171





Course code	Course Title	L	T	P	J	C
HUM1046	Behavioral Economics	3	0	0	0	3
Pre-requisite	NIL	2	bylla		version	<u>n</u>
Course Objectives:				v.1.	0	
	vledge on current ideas and concepts regarding decision	n mal	rino	in I	Econor	mics
-	a behavioral science perspective.	i iiiui			1001101	inco
•	explore key departures and the consequences of behavior	of fir	ms	hous	eholds	and
other economics		01 111	, interest of the second se	10000	ciioitao	und
	erview of how behavioral principles have been applied to eco	onomi	c pro	blen	ns	
. To provide all ov		5110111	• pro	,0101		
Expected Course C	Outcome:					
	uate evidence for systematic departures of economic behavi	or fro	m th	e Pre	diction	ns of
the neoclassical r	nodel, and psychological explanations for these anomalies.					
2. Incorporate psy	chologically motivated assumptions into economic m	odels	and	int	erpret	the
	nese assumptions.					
3. Explain how the	ese models change the predictions for equilibrium behavior	and	welf	are a	nalysis	and
assess the implication	ations for optimal policy.					
4. Compare the pr	edictions of neoclassical and behavioral models and evaluate	late t	he b	est r	nethod	l for
approaching a gi	ven topic.					
5. Apply Behaviora	l principles in economic problems.					
	duction					ours
	ndard model and behavioral economics in contrast; historic		<u> </u>			
economics and oth	er social sciences; theory and evidence in the social sc	iences	and	l in	behav	vioral
economics; application	ons – gains and losses, money illusion, charitable donation.					
	s of Choice Theory					ours
-	assical model; utility in economics and psychology; models			-		
	iology and cognitive neuroscience; policy analysis - con	-				
environmental prote	ction, retail therapy; applications – pricing, valuation, public	goods	, cho	ice a	nomali	ies.
	fs, Heuristics and Biases					ours
- ·	; causal aspects of irrationality; different kinds of biases and					
	nsistent and biased beliefs; probability estimation; tradin	g app	licati	ons	– trac	le in
counterfeit goods, fi	nancial trading behavior, trade in memorabilia.					
	ce under Uncertainty		•			ours
	ected utility theory; prospect theory and other theories; refer	-	-			
-	ision and probability weighting; applications - ownership	p and	trac	ie, 11	ncome	and
consumption, perfor	mance in sports.					
Module:5 Inter	emporal Choice				(1	
woomers Inter				1	<b>b</b> b	ours
	ting; preferences over time; anomalies of inter-tempo	".1 .1				



# VIT® Vellore Institute of Technology

#### CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

discounting; instantaneous utility; alternative concepts – future projection, mental accounts, heterogeneous selves, procedural choice; policy analysis – mobile calls, credit cards, organization of government; applications – consumption and savings, clubs and membership, consumption planning.

# Module:6 Game and Strategy Behavior

Review of game theory and Nash equilibrium – strategies, information, equilibrium in pure and mixed strategies, iterated games, bargaining, signaling, learning; applications – competitive sports, bargaining and negotiation, monopoly and market entry.

# Module:7 Social Preference

Individual preferences; choice anomalies and inconsistencies; social preferences; altruism; fairness; reciprocity; trust; learning; communication; intention; demographic and cultural aspects; social norms; compliance and punishment; inequity aversion; policy analysis – norms and markets, labor markets, market clearing, public goods; applications – logic and knowledge, voluntary contribution, compensation design.

Module:8	Contemporary Issues	2 hours
Guest lecture	es by Industrial Experts.	

Total

45 hours

# Text Book(s)

1. N. Wilkinson and M. Klaes, "An Introduction to Behavioral Economics", 2017, 3rd Edition, Red Globe Press.

# **Reference Books**

- Bazerman, Max and Don Moore. Judgment in Managerial Decision Making, 2012. 8th Edition, John Wiley & Sons.
- 2. Kahneman, Daniel. Thinking, Fast and Slow, 2011, New York: Farrar, Straus and Giroux.

# Mode of Evaluation: CAT / Written assignment / Quiz / FATRecommended by Board of Studies22-05-2021

Recommended by Dourd of Studies			
Approved by Academic Council	No. 62	Date	15-07-2021

6 hours

7 hours

Total Lecture hours:





HUM1047 Pre-requisite Course Objectiv		L	Т	P J	C
	Engineering Economics	3	0	0 0	3
Course Objectiv	NIL	Sylla	abus	s versi	on
<b>Course Objectiv</b>			v	.1.0	
	es:				
1. To enable stu	dents to identify and explain economic concepts and theories related	l to th	e be	havio	ar o
0	nts, markets, industry and firm structures.				
	dents to identify the determinants of various macroeconomic aggreg	-			-
	nt, inflation, productivity and the major challenges associated with t	the m	leasu	iremei	nt o
these aggregat		_		,	
•	st/revenue data and carry out economic analyses to justify or reject a	altern	ative	es/pro	ject
on an econom					
Expected Cours					
	e general principles of how the market economy functions				
-	consumers and producers make decisions and learn about different ma				
	d the general principles of consumption function and how an econ	nomy	tun	ctions	ın
global environ					
	the ways in which the government and central bank can influence the	he eco	onor	ny and	1 th
	gh fiscal and monetary policies.	<b>C</b> 1	a		
	nethods of cost estimation and to estimate present and future values of	of cash	n flo	WS.	
6. Evaluate proje	ects using project appraisal techniques.				
Module:1	Introduction to Microeconomics			6 h	011
	oply- Consumers' Behavior – Indifference Curve Analysis- Applyin	no the	De		
	ixes and Subsidies- Effects of changes in income and price.	ing the		inana	un
<u></u>					
Module:2	Theory of Production and Cost			6 h	our
	ion and Iso-quants-Cost Minimization; Cost Curves -Total, Average a	and M	[argi		
			0		
Long Run and Sh					
Long Run and Sh					our
	Market Structure			6 h	
Long Run and Sh Module:3 Equilibrium of a 1	<b>Market Structure</b> Firm Under Perfect Competition; Monopoly and Monopolistic Comp	etitior	1.	6 h	
Module:3		etitior	1.	6 h	
<b>Module:3</b> Equilibrium of a 1		etitior	1.		our
Module:3 Equilibrium of a 1 Module:4	Firm Under Perfect Competition; Monopoly and Monopolistic Comp			6 h	our
Module:3 Equilibrium of a 1 Module:4 National Income	Firm Under Perfect Competition; Monopoly and Monopolistic Competition Introduction to Macroeconomics and its Components- GNP, NNP, GDP, NDP; Consumption Fu	unctio	n; Iı	6 h nvestn	our
Module:3 Equilibrium of a 1 Module:4 National Income Simple Keynesiar	Firm Under Perfect Competition; Monopoly and Monopolistic Competition Introduction to Macroeconomics	unctio	n; Iı	6 h nvestn	our
Module:3 Equilibrium of a 1 Module:4 National Income Simple Keynesiar	Firm Under Perfect Competition; Monopoly and Monopolistic Compe Introduction to Macroeconomics and its Components- GNP, NNP, GDP, NDP; Consumption Fu Model of Income Determination and the Keynesian Multiplier; G	unctio	n; Iı	6 h nvestn	our nen
Module:3 Equilibrium of a 1 Module:4 National Income Simple Keynesiar Taxes and Subsid	Firm Under Perfect Competition; Monopoly and Monopolistic Compe Introduction to Macroeconomics and its Components- GNP, NNP, GDP, NDP; Consumption Fu Model of Income Determination and the Keynesian Multiplier; G	unctio	n; Iı	6 h nvestn nt Sec	our nen tor
Module:3 Equilibrium of a 1 Module:4 National Income Simple Keynesiar Taxes and Subsid Module:5	Firm Under Perfect Competition; Monopoly and Monopolistic Competition Introduction to Macroeconomics and its Components- GNP, NNP, GDP, NDP; Consumption Fu Model of Income Determination and the Keynesian Multiplier; G ies; External Sector -Exports and Imports;	unctio Govern	n; In Imen	6 h nvestn nt Sec 7 h	our nen tor
Module:3 Equilibrium of a 1 Module:4 National Income Simple Keynesiar Taxes and Subsid Module:5 Money - Definiti	Firm Under Perfect Competition; Monopoly and Monopolistic Compe Introduction to Macroeconomics and its Components- GNP, NNP, GDP, NDP; Consumption Fu Model of Income Determination and the Keynesian Multiplier; G ies; External Sector -Exports and Imports; IS-LM Model and Business Cycles	unctio Govern	n; In 1mer	6 h nvestn nt Sec 7 h ier; IS	our nen tor our





TAT(	odule:6	<b>Engineering Economics</b>	and Cost Estima	tion		6 hours
En	gineering Eco	nomics and Decision Maki	ng- Cost Concept	s- Life Cy	cle Costing -	Cost Estimation
Te	chniques - Par	ametric and Non-Parametric	techniques.			
Mo	odule:7	Foreign Exchange Rates	i			6 hours
De	etermination –	effects- exchange rate regim	e: fixed, flexible, fl	oating rate	s– methods of	foreign payments
— is	ssues in Foreig	gn exchange reserves. Interna	tional Competitive	Bidding- I	ssues.	
Ma	odule:8	Contemporary issues				2 hours
Gu	est lectures by	Industrial Experts.				
				Total Le	cture hours:	45 hours
Te	xt Book(s)			Total Le	cture hours:	45 hours
<b>Te</b> 1.	<b>xt Book(s)</b> Samuelson, 1	Paul.A and William Nordhau	us, "Economics", 2			
		Paul.A and William Nordhau	us, "Economics", 2			
1.	Samuelson, I New Delhi.		ıs, "Economics", 2			
1. <b>Re</b>	Samuelson, I New Delhi. ference Book	55		019, 20 th E	dition, McGra	w Hill Publishers,
1.	Samuelson, I New Delhi. ference Book	t <b>s</b> William, Elin M Wicks and		019, 20 th E	dition, McGra	w Hill Publishers,
1. <b>Re</b> 1.	Samuelson, I New Delhi. ference Book Sullivan G Edition, Pea	t <b>s</b> William, Elin M Wicks and rson Education.	l C. Patrick Koell	019, 20 th E ing, "Engi	dition, McGra	w Hill Publishers,
1. <b>Re</b>	Samuelson, I New Delhi. ference Book Sullivan G Edition, Pea	t <b>s</b> William, Elin M Wicks and	l C. Patrick Koell	019, 20 th E ing, "Engi	dition, McGra	w Hill Publishers,
1. <b>Re</b> 1. 2.	Samuelson, I New Delhi. ference Book Sullivan G Edition, Pea Perloff, Jeffr	t <b>s</b> William, Elin M Wicks and rson Education. rey M, "Microeconomics", 20	l C. Patrick Koell 019, 7 th Edition, Pea	019, 20 th E ing, "Engi arson Educ	dition, McGra neering Econo cation.	w Hill Publishers,
1. <b>Re</b> 1. 2.	Samuelson, I New Delhi. ference Book Sullivan G Edition, Pea Perloff, Jeffr	t <b>s</b> William, Elin M Wicks and rson Education.	l C. Patrick Koell 019, 7 th Edition, Pea	019, 20 th E ing, "Engi arson Educ	dition, McGra neering Econo cation.	w Hill Publishers,
<ol> <li>Re</li> <li>1.</li> <li>2.</li> <li>Mo</li> </ol>	Samuelson, I New Delhi. ference Book Sullivan G Edition, Pea Perloff, Jeffr	t <b>s</b> William, Elin M Wicks and rson Education. rey M, "Microeconomics", 20	l C. Patrick Koell 019, 7 th Edition, Pea	019, 20 th E ing, "Engi arson Educ	dition, McGra neering Econo cation.	w Hill Publishers,



# Villore Institute of Technology

# CURRICULUM (2019 - 2020)

	Course Title	L	T	P J	C
HUM1048	Industrial Psychology	3	0	0 0	-
Pre-requisite	NIL		Syllal	ous ve	rsion
				v.1.0	
Course Objectives:		1	C		
	to the content areas of industrial psychology and the app				
	to organizational issues. Acquiring knowledge topics in		-		
	and selection, training, performance appraisal and discip	pline, e	mploy	yee mo	otivati
and workplace safety					
3. Using an applied ap	pproach, this course will help prepare students for the	eir role	es as	emplo	yees a
managers.					
Expected Course Outc	nomes:				
<b>.</b>	about the major content areas of Industrial Psyc	holog	(ie	ioh	analy
	on, employment law, training, performance management	0.		· /	-
issues in the workpla		ciii, ai	iu nea	aiui/ w	CII-DC
1	,	م امعم		na to a	noinfo
	t with statistical concepts in the context of making perso		lecisio		centre
	SY203 or an equivalent introductory statistics course.		1	. 1	1 4
	ience by completing a series of hands-on projects invo	lving jo	od ana	alysis,	select
01	ograms, and employee well-being.	11			
1 1	standing of tests and measurements so that you can c	ollect a	iccura	te into	ormat
and make sound data		1 5			
-	focused seminar courses in Industrial/Organization	al Psy	cholog	gy or	Hun
Resource Managemen	ent de la constance de la const				
Module:1 Introdu					8 ho
	action	l Pract	ice, I	ntrodu	8 ho
/O Psychology-definition	on. Research Methods, Statistics, and Evidence-based				iction
/O Psychology-definition Legal Context of Industry	action on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod				iction
/O Psychology-definition Legal Context of Industry	on. Research Methods, Statistics, and Evidence-based				iction
O Psychology-definition Legal Context of Indus Compensation, Job Design Module:2 Evaluat	action on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. ting the Quality of Performance Measures	delling,	Job	Evalu	iction
O Psychology-definition Legal Context of Indus Compensation, Job Design Module:2 Evaluat	action on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment.	delling,	Job	Evalu	action
O Psychology-definition Legal Context of Indus Compensation, Job Design Module:2 Evaluat Identifying Criteria & Va	action on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. ting the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens	delling,	Job	Evalu	action ation 7 ho
/O Psychology-definitionLegal Context of IndustCompensation, Job DesignModule:2Evaluatdentifying Criteria & VaModule:3Employ	Iction on. Research Methods, Statistics, and Evidence-based Istrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. Ing the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens yees Performance and Evaluation	delling,	Job thods:	Evalu	7 ho
/O Psychology-definition         Legal Context of Indust         Compensation, Job Design         Module:2       Evaluat         dentifying Criteria & Va         Module:3       Employ         Performance Goals an	action on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. ting the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens	delling,	Job thods:	Evalu	7 ho
/O Psychology-definition         Legal Context of Indust         Compensation, Job Design         Module:2       Evaluat         dentifying Criteria & Va         Module:3       Employ         Performance Goals an	Iction on. Research Methods, Statistics, and Evidence-based Istrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. Ing the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens yees Performance and Evaluation	delling,	Job thods:	Evalu	7 ho
/O Psychology-definition         Legal Context of Indust         Compensation, Job Design         Module:2       Evaluat         dentifying Criteria & Va         Module:3       Employ         Performance Goals an         Performance.	Iction on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod Ign & Employee Well-Being, Recruitment. Iting the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens and Feedback, Performance Coaching and Evaluation	delling,	Job thods:	Evalu	7 ho 5 ho mplo
/O Psychology-definition         Legal Context of Industry         Compensation, Job Design         Module:2       Evaluat         dentifying Criteria & Va         Module:3       Employ         Performance       Goals an         Performance.       Module:4	Inction on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. Ing the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens and Feedback, Performance Coaching and Evaluation and Feedback, Performance Coaching and Evaluation sational Fairness and Diversity Management	delling,	Job thods:	Evalu	7 ho
/O Psychology-definition         Legal Context of Industry         Compensation, Job Design         Module:2       Evaluat         Identifying Criteria & Va         Module:3       Employ         Performance       Goals an         Performance.       Module:4	Iction on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod Ign & Employee Well-Being, Recruitment. Iting the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens and Feedback, Performance Coaching and Evaluation	delling,	Job thods:	Evalu	7 ho 5 ho mplo
/O Psychology-definition         Legal Context of Indust         Compensation, Job Design         Module:2       Evaluat         dentifying Criteria & Va         Module:3       Employ         Performance Goals an         Performance.         Module:4       Organis         Employee Motivation, Sa	Inction on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. Ing the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens and Feedback, Performance Coaching and Evaluation and Feedback, Performance Coaching and Evaluation sational Fairness and Diversity Management	delling,	Job thods:	Evalu	7 ho 5 ho mplo
/O Psychology-definition         Legal Context of Indust         Compensation, Job Design         Module:2       Evaluat         dentifying Criteria & Va         Module:3       Employ         Performance       Goals an         Performance.       Organis         Module:4       Organis         Employee Motivation, Sa         Module:5       Leaders	Inction on. Research Methods, Statistics, and Evidence-based astrial Psychology, Job Analysis & Competency Mod gn & Employee Well-Being, Recruitment. Ing the Quality of Performance Measures alidating Tests and Measures, Screening Methods, Intens ad Feedback, Performance Coaching and Evaluation and Feedback, Performance Coaching and Evaluation sational Fairness and Diversity Management atisfaction and Commitment, Fairness and Diversity.	delling,	Job thods:	Evalu	7 ho 5 ho mplo
/O       Psychology-definition         Legal       Context       of         Compensation, Job       Design         Module:2       Evaluat         Identifying       Criteria & Va         Module:3       Employ         Performance       Goals         Module:4       Organis         Employee       Motivation, Sa         Module:5       Leaders	action         on. Research Methods, Statistics, and Evidence-based         astrial Psychology, Job Analysis & Competency Mod         gn & Employee Well-Being, Recruitment.         ting the Quality of Performance Measures         alidating Tests and Measures, Screening Methods, Intens         yees Performance and Evaluation         ad Feedback, Performance Coaching and Evaluation         sational Fairness and Diversity Management         atisfaction and Commitment, Fairness and Diversity.	delling,	Job thods:	Evalu	7 ho 5 ho mplo





Mo	dule:7	Stress Management				5 hours
Stre	ss Manage	ment: Demands of Life and W	Work		·	
Mo	dule:8	Contemporary issues				2 hours
		by Industry experts				
		1				
			То	tal Lecture	hours:	45 hours
Tex	t Book(s)	1				
1	Londy	F. J. and Conte, J. M. Wo	rk in the 21st Ce	entury 2013	4 th Edition C	yford: Blackwell
1.	L'andy,	- · j· ·····	In III the 21st O			JAIOIU. DIACKWCII
1.	Publishi	5 7 5	in in the 21st G			JAIOIU. Diackweii
1. 2.	Publishi	5 7 5				
	Publishi Aamodt	ng.				
2.	Publishi Aamodt	ng. , M. Industrial/Organizatio orth Publishing Co.				
2. Ref	Publishi Aamodt Wadswo	ng. , M. Industrial/Organizatio orth Publishing Co.	onal Psychology:	An Applied	l Approach,20	
2.	Publishi Aamodt Wadswo erence Bo Miner.B	ng. , M. Industrial/Organizatio orth Publishing Co. ooks	nal Psychology: Psychology. 1992, I	An Applied McGraw Hil	l Approach,20 l Inc., US.	115, 8 th Edition,
2. <b>Ref</b> 1.	Publishi Aamodt Wadswo erence Bo Miner.B	ng. , M. Industrial/Organizatio orth Publishing Co. ooks , J. Industrial-Organizational 1 nappa, K. Human Resource	nal Psychology: Psychology. 1992, I	An Applied McGraw Hil	l Approach,20 l Inc., US.	115, 8 th Edition,
2. <b>Ref</b> 1. 2.	Publishi Aamodt Wadswo erence Bo Miner.B Ashwath Educatio	ng. , M. Industrial/Organizatio orth Publishing Co. ooks , J. Industrial-Organizational I nappa, K. Human Resource on.	onal Psychology: Psychology. 1992, I Management: Te	An Applied McGraw Hil xt & Cases	l Approach,20 l Inc., US. 2017,8 th Editio	115, 8 th Edition,
2. <b>Ref</b> 1. 2. <b>Mo</b>	Publishi Aamodt Wadswo erence Bo Miner.B Ashwath Educatio de of Eva	ng. , M. Industrial/Organizatio orth Publishing Co. ooks , J. Industrial-Organizational 1 nappa, K. Human Resource	onal Psychology: Psychology. 1992, I Management: Te	An Applied McGraw Hil xt & Cases	l Approach,20 l Inc., US. 2017,8 th Editio	115, 8 th Edition,





Course code	Course title	L	Τ	Р	J	С
MGT3001	Business Strategy	3	0	0	0	3
Pre-requisite	NIL	5	Syllab		ersio	n
				v. 1.0		
Course Objectives:	concepts of strategic management and understand its nat	11 <b>r</b> e	in co	mnet	tive	and
institutional landsc		luit	III CO	mper	uve	anu
	istic approach to see business issues comprehensively and	1 115	ing of	the <b>r</b>	ore	and
	knowledge for decision-making.	u u3	ing o	uner v	.010	and
,	terpret the critical challenges and opportunities before an orga	aniza	ation.			
	terpret the endew endersee and opportunated persite an org					
Expected Course O	utcome:					
	ental concepts of strategic management to analyze business si	tuati	ions a	nd ap	ply t	these
concepts to solve l	ousiness problems.					
2. Understand the fu	indamental principles of and interrelationships among busi	ness	func	tions	such	h as:
· 1	marketing, finance, HR and information technology					
3. Understand the in	nter-relationships of business to individuals, other organization	ation	ns, gov	vernn	nent	and
society.						
	s of strategic analysis thoroughly, how they are used, and	1 wł	here t	hey f	it in	the
managerial process	s to frame and implement strategies.					
Module:1 Intro	Anation to Stantonia Managament				0 1.	
	oduction to Strategic Management gic Management, Vision and Objectives, Schools of thought in	n Str	ateoic	Man		ours
	process, and Practice, Fit Concept and Configuration F					
Management	Toess, and Theoree, The Soncept and Sonnigaration T	Crop	,eeuve		ouu	
0						
Module:2 Inter	rnal Environment of Firm- Recognizing a Firm's Intellec	tual	Asse	ts	7 h	ours
-	the Root of Competitive Advantage, Sources of Sustained	Con	npetiti	ve Ac	lvan	tage,
Business Processes an	nd Capabilities-based Approach to Strategy					
					(1	
	rnal Environments of Firm- Competitive Strategy ry Attractiveness that Shape Strategy, The concept of Strateg	ic C	*01100	and		ours
Life Cycle	Ty Attractiveness that shape strategy, The concept of strateg	jic G	noups	, and	ma	ustry
Module:4 Gene	eric strategies				5 h	ours
	eneric Strategies and the Value Chain			1		
	oorate Strategy, and Growth Strategies				6 h	ours
The Motive for Diver	rsification, Related and Unrelated Diversification, Business Po	ortfo	lio An	alysis		
	testing with competitors in overseas markets	140-	ل س	<u>۱</u>		ours
	on and Diversification, Strategic Alliances, Joint Ventu	iies,	and	wief	gers	α
Acquisitions						
Module:7 Strat	egy Implementation: Structure and Systems				5 h	ours
Ulat	by implementation, offacture and bystems				5 11	5413





The	e 7S Framev	vork, Strategic Control and C	Corporate Governa	nce		
Mo	odule:8	Contemporary issues				2 hours
Gu	est lecture b	y Industry Experts or R&D	organization			
				Tot	tal Lecture hours:	45 hours
Te	xt Book(s)					
1.	Strategic n	nanagement of technological	innovation (2019)	, Schilling,	M. A., & Shankar, R,N	McGraw-Hill
	Education					
2.	The busin	ess of platforms: Strategy in	the age of digital	competitio	on, innovation, and p	ower (2019)
	Cusumanc	, M. A., Gawer, A., & Yoffie	, D. B.,New York:	Harper Bu	siness.	
Ret	ference Bo	oks				
1.	Dislodging	g multinationals: India's strat	egy in comparative	e perspectiv	ve (2019), Encarnation	n, D.Cornell
	University	Press.				
2.	Dynamics	of knowledge intensive entre	preneurship: Busin	ness strateg	y and public policy (20	018),
	Malerba, F	., Caloghirou, Y., McKelvey,	M., & Radoševic,	S. (Eds.), R	outledge.	
Mo	de of Eval	uation: CAT / Assignment	z / Quiz / FAT /	Lab	-	
Re	commende	d by Board of Studies	29-01-2021			
Ap	proved by A	Academic Council	No. 61	Date	18-02-2021	





Course Code	Course Title	L	Т	Р	J	С		
MGT3002	Advanced Finance	3	0	0	0	3		
Pre-requisite	NIL	9	Syllab	us ver	sion			
			1	v. 1.0				
Course Objectives:				<u> </u>				
0	about the decisions and decision variables involved w	ith fina	incial	activiti	es of	the		
firm.								
2. Develop skills for interpretation business information and application of financial theory in corporate								
investment decisio	investment decisions, with special emphasis on working capital management.							
3. Familiarizing the students with the corporate and financial restructuring.								
Expected Course Out	come:							
1. Informing the stud	ents about the various financial instruments and make t	hem u	nderst	and ab	out t	he		
Corporate Dividen	d decisions, is the main objective.							
2. The Leasing and d	ecisions involving Leasing shall make the students achie	ve the	Organ	nizatio	nal go	oals,		
with optimum inve	estment.		0		0			
3. Familiarizing the st	udents with the corporate and financial restructuring.							
0	interpretation of business information and applica	tion of	f fina	ncial t	heory	v in		
_	ent decisions, with special emphasis on working capital i				,	/		
-	nowledge about the Derivatives.	0						
Module:1 Intro	duction				4 hc	ours		
	luding regulatory framework)-Types of securities-Issu	ing th	e cap	ital in				
Pricing of issue-Valuation		U	1					
Module:2 Divid	lend Decisions:				6 ho	ours		
Traditional Approach,	Dividend Relevance Model, Miller and Modigliani Mo	odel, St	ability	of D	ivide	nds,		
Forms of Dividends, Is	sue of bonus shares, Stock Split		-					
Module:3 Leas	ing Contracts				6 ho	ours		
Evaluation of Lease Co								
	orate Restructuring				6 ho			
e .	ns- Types of Mergers, Evaluation of Merger Proposa	l-Take	-over-	Amalg	amat	ion-		
Leverage buy-out-Mana	gement buy-out-Corporate Failure and Liquidation							
Module:5 Fina	ncial Restructuring				4 ho	ours		
Share Split-Consolidation	on-Cancellation of Paid-up Capital-Other Mechanisms							
					11 1			
	king Capital Management:	7 antria			11 ho			
0 1	ning-Monitoring and Control of Working Capital-W	-	-			0		
	nents of Working Capital-Cash Management-Receiva	DIE M	anagei	ment-l	nven	tory		
Management								





Module 7	Introduction to derivativ	es			6 hours
Basics of Fu	tures, Forwards, Options, Swap	s-Interest rate Pay	off Diagra	ums, Pricing of	Futures, Put Call
Parity, Optio	n Pricing using Binomial Model	and Black Scholes	Model-U	se of Derivative	es for Risk-Return
Management	- Credit Default Swaps				
Module 8	Recent Trends				2 hours
Contempora	ry Issues in Finance				
*			Total Le	ecture Hours	45 Hours
Text Books					
1. Brealey,	Myers and Allen, Principles of C	Corporate Finance,	McGraw I	Hill Education	(2018)
2. I.M. Par	idey, Corporate Finance, Vikas I	Publishing House (2	2015)		· · ·
Mode of Ev	aluation: CAT / Assignment	/ Quiz / FAT			
Recommen	ded by Board of Studies	29-01-2021			
Approved by	y Academic Council	No. 61	Date	18-02-2021	





MGT4004	Course Title		L	Τ	P J	С
	Human Resource Management		3	0	0 0	
Pre-requisite	NIL		9	Sylla	abus ve	ersion
					<b>v.1.</b> 0	
Course Objective						
	asic concepts functional areas and activities of Human Resou	irce M	[ana	igen	nent	
	apply HRM concepts in organisational context					
3. Understand hov	HRM activities lead to performance and sustainability of the	e organ	nisa	tion	•	
Expected Course	Outcome:					
-	basic concepts of HRM					
	HR functions and activities in organisations					
	vities with real time organisational environment.					
	oss-cultural work dynamics and HR activities.					
	impact of HR activities on different career outcomes					
	1					
Module:1 Hu	nan Resource Management					8 hou
Human Resource	Management: Concept and Challenges, HR Philosophy	, Pol	icie	s, I	Procedu	ires ar
Practices.						
Module:2 Hui	nan Resource System Design					6 hou
HR Profession, an	d HR Department, Line Management Responsibility in HI	RM, N	Aea	surir	ng HR,	Huma
resources accounti	ng and audit; Human resource information system					
Module:3 Fun	ctional Areas of HRM					6 hou
Recruitment and	staffing, benefits, compensation, employee relations, HR	com	plia	.nce,	organ	ization
design, training an	d development, human resource information systems (H.R.I.S	S.) and	l pa	yroll	l.	
Module:4 Hu	nan Resource Planning					6 hou
	ng, Action Plans– Retention, Training, Redeployment & Staff	fing, S	ucc	essio	on Plan	ning
Demand Forecast						
Module:5 Stra	tegic Management of Human Resources					
Module:5 Stra SHRM, relationsh	egic Management of Human Resources	as a	Fac	ctor	of Cor	
Module:5 Stra		as a	Fac	ctor	of Cor	
<b>Module:5</b> Stra SHRM, relationsh Advantage	p between HR strategy and overall corporate strategy, HR	as a	Fac	ctor	of Cor	npetitiv
Module:5 Stra SHRM, relationsh Advantage Module:6 Man	between HR strategy and overall corporate strategy, HR					6 hou
Module:5StraSHRM, relationshAdvantageModule:6Manage	ip between HR strategy and overall corporate strategy, HR aging Diverse and inclusive workforce Cultural Diversity, Global Context for Diversity Manage					npetitiv 6 hou
Module:5 Stra SHRM, relationsh Advantage Module:6 Man	ip between HR strategy and overall corporate strategy, HR aging Diverse and inclusive workforce Cultural Diversity, Global Context for Diversity Manage					npetitiv 6 hou
Module:5 Stra SHRM, relationsh Advantage Module:6 Man Demographic and Perspectives of We	between HR strategy and overall corporate strategy, HR aging Diverse and inclusive workforce Cultural Diversity, Global Context for Diversity Manage orkforce Diversity					npetitiv 6 hou ologicz
Module:5StraSHRM, relationshAdvantageModule:6ManDemographic andPerspectives of WeModule:7Hun	ip between HR strategy and overall corporate strategy, HR         aging Diverse and inclusive workforce         Cultural Diversity, Global Context for Diversity Manage         orkforce Diversity         nan Resource Management in Service Sector	ement,	, So	ocial	Psych	npetitiv 6 hou ologica 5 hou
Module:5StraSHRM, relationshAdvantageModule:6MarDemographic andPerspectives of WeModule:7HurManaging the Cu	between HR strategy and overall corporate strategy, HR aging Diverse and inclusive workforce Cultural Diversity, Global Context for Diversity Manage orkforce Diversity	ement,	, So	ocial	Psych	npetitir 6 hou ologicz 5 hou isfactio





HR I	Practices	Stressing Mainly on Performan	nce, Flexible W	orking Pr	actices – I	Implications for HR
Mod	lule:8	Contemporary issues				2 hours
Expe	ert lectur	e on Recent trends				
			Tota	l Lecture	hours:	45 hours
Text	t Book(s	8)				
1.	Dessle	er G, Varrkey B. Human Resou	irce Manageme	ent, 2020, 1	16 th editio	n. Pearson Education India
Refe	rence B	ooks				
1.	Josepl	n J. Martocchio, Human Re	source Manag	ement, 20	019, 15th	edition, Pearson Education
	Cham	paign.				
2.	Mathi	s RL, Jackson JH. Human reso	urce managem	ent, 2021,1	15th editio	on, Jakarta: SalembaEmpat.
Mod	le of Ev	aluation: CAT / Assignment	/ Quiz / FA	Г / Lab		
Reco	ommene	ded by Board of Studies	22-05-2021			
App	roved by	y Academic Council	No. 62	Date	15-07-2	021





Course Cod	le	Course Title	L	Τ	Р	J	C
MGT4005		<b>Computational Finance &amp; Modeling</b>	3	0	2	0	4
Pre-requisite		NIL		Syll	abus	s vers	sion
					v.	1.0	
Course Object	ives:						
1. To study fina	incial o	data analysis and modelling					
2. To acquire qu	uantita	ative finance skills, application of tools and techniques					
3. To advance k	knowle	edge in designing, developing and testing of computational fi	inano	ce mo	odels		
Expected Cou	rse O	utcome:					
1. Ability to ana	alyse fi	inancial data					
2. Understand t	he ma	thematical foundations of finance					
3. Knowledge o	of fina	ncial markets and instruments					
4. Understand o	option	pricing models and its applications					
5. Measuring an	nd mar	naging various types of financial risks					
6. Design and to	est con	mputational finance models					
Module:1	Fina	ncial Markets and Instruments					7 hour
Financial Produ	icts ar	nd Markets: Introduction to the financial markets and the pr	rodu	cts w	hich	are ti	aded i
them: Equities,	indice	es, foreign exchange, and commodities. Options contracts an	nd str	rategi	es fo	r spe	culatio
and hedging-an	intro	duction.					
Statistical Analy		Financial Returns: Fat-tailed and skewed distributions, outlie	ers, s	tylize	d fac	cts.	
	vsis of		ers, s	tylize	ed fac		7 hour
Module:2	vsis of Matl	Financial Returns: Fat-tailed and skewed distributions, outlied				1	
Module:2 Numerical met	vsis of <b>Math</b> hods 1	Financial Returns: Fat-tailed and skewed distributions, outlie nematical Finance	ial di	ffere	ntial	equa	tions c
Module:2 Numerical met mathematical fi	vsis of Math hods n nance	Financial Returns: Fat-tailed and skewed distributions, outlie nematical Finance relevant to integration, differentiation and solving the parti	ial di s rel	iffere	ntial 5, fini	equa ite di	tions of fference
Module:2 Numerical met mathematical fi methods includ	vsis of Math hods n nance ing alg	Financial Returns: Fat-tailed and skewed distributions, outlie nematical Finance relevant to integration, differentiation and solving the parti : examples of exact solutions including Black Scholes and it	ial di s rel nt of	ffere atives near	ntial s, fini and	equa ite dif far bo	tions o fferenc oundar
Module:2 Numerical methods includ conditions, the	vsis of Math hods n nance ing alg conne	Financial Returns: Fat-tailed and skewed distributions, outlie mematical Finance relevant to integration, differentiation and solving the parti : examples of exact solutions including Black Scholes and it gorithms and question of stability and convergence, treatment	ial di ts rel nt of cise,	ffere atives near and t	ntial s, fini and he co	equa ite dif far bo orresp	tions c fferenc oundar oondin
Module:2 Numerical methods includ conditions, the	Math Math hods n nance ing alg conne	Financial Returns: Fat-tailed and skewed distributions, outlie mematical Finance relevant to integration, differentiation and solving the parti- : examples of exact solutions including Black Scholes and it gorithms and question of stability and convergence, treatment ection with binomial models, interest rate models, early exercise	ial di ts rel nt of cise,	ffere atives near and t	ntial s, fini and he co	equa ite dif far bo prresp mod	tions c fferenc oundar oondin els
Module:2 Numerical methods includ conditions, the free boundary p Module:3	Math Math hods n nance ing ala conne problee Fina	Financial Returns: Fat-tailed and skewed distributions, outlie mematical Finance relevant to integration, differentiation and solving the parti- : examples of exact solutions including Black Scholes and it gorithms and question of stability and convergence, treatment ection with binomial models, interest rate models, early exercises ms, and a brief introduction to numerical methods for solvin	ial di s rel nt of cise, ng m	ffere atives near and t ulti-fa	ntial s, fini and he co actor	equa ite dif far bo prresp mod	tions of fference oundar pondin els 7 hour
Module:2 Numerical met mathematical fi methods includ conditions, the free boundary p Module:3 Black-Scholes fi	Math Math hods n nance ing alg conne problem Fina ramew	Financial Returns: Fat-tailed and skewed distributions, outlie mematical Finance relevant to integration, differentiation and solving the parti- : examples of exact solutions including Black Scholes and it gorithms and question of stability and convergence, treatmen- ection with binomial models, interest rate models, early exerc ms, and a brief introduction to numerical methods for solvin ncial derivatives	ial di s rel nt of cise, ng m out-ca	afferer atives near and t ulti-fa	ntial s, fini and he co actor	equa ite dif far bo prresp mod	tions of fference oundar pondin els 7 hour PDE fc
Module:2 Numerical meti mathematical fi methods includ conditions, the free boundary p Module:3 Black-Scholes fi pricing commo	vsis of Math hods n nance ing alş conne orobler <b>Fina</b> ramew dity an	Financial Returns: Fat-tailed and skewed distributions, outline         nematical Finance         relevant to integration, differentiation and solving the partial         : examples of exact solutions including Black Scholes and it         gorithms and question of stability and convergence, treatment         ection with binomial models, interest rate models, early exercises         ms, and a brief introduction to numerical methods for solving         ncial derivatives         vork: Black-Scholes PDE: simple European calls and puts; particular options. Discontinuous payoffs - Binary and D	ial di rs rel nt of cise, ng mu ut-ca vigita	afferer atives near and t ulti-fa ulti par	ntial s, fini and he co actor city. 7	equa ite dif far bo prresp mod The F The	tions of fference oundar oondin els <b>7 hour</b> PDE fo Greeks
Module:2 Numerical met mathematical fi methods includ conditions, the free boundary p Module:3 Black-Scholes fi pricing common theta, delta, gar	vsis of Math hods n nance ing alg conne proble ramew dity an mma,	Financial Returns: Fat-tailed and skewed distributions, outline         nematical Finance         relevant to integration, differentiation and solving the parties:         : examples of exact solutions including Black Scholes and it         gorithms and question of stability and convergence, treatment         ection with binomial models, interest rate models, early exercised         ms, and a brief introduction to numerical methods for solving         ncial derivatives         vork: Black-Scholes PDE: simple European calls and puts; period currency options. Discontinuous payoffs - Binary and D         vega& rho and their role in hedging. The mathematics of	ial di s rel nt of cise, ng m ut-ca Digita	afferer atives near and t ulti-fa ulti par all par l opti	ntial s, fini and he co actor rity. 7 ons.	equa ite dif far bo prresp mod The P The The 2 - A	tions of fference oundar oondin els <b>7 hour</b> PDE fo Greeks merica
Module:2 Numerical meti mathematical fi methods includ conditions, the free boundary p Module:3 Black-Scholes fi pricing commo theta, delta, gar options: perpet	vsis of Math hods n nance ing alg conne orobles <b>Fina</b> ramew dity ar nma, nual ca	Financial Returns: Fat-tailed and skewed distributions, outline         nematical Finance         relevant to integration, differentiation and solving the partial         : examples of exact solutions including Black Scholes and it         gorithms and question of stability and convergence, treatment         ection with binomial models, interest rate models, early exercises         ms, and a brief introduction to numerical methods for solving         ncial derivatives         vork: Black-Scholes PDE: simple European calls and puts; particular options. Discontinuous payoffs - Binary and D	ial di s rel nt of cise, ng m ut-ca Digita	afferer atives near and t ulti-fa ulti par all par l opti	ntial s, fini and he co actor rity. 7 ons.	equa ite dif far bo prresp mod The P The The 2 - A	tions of fference oundar oondin els <b>7 hour</b> PDE fo Greeks merica
Module:2 Numerical methods includ conditions, the free boundary p Module:3 Black-Scholes fr pricing commo- theta, delta, gar options: perpet considerations -	vsis of Math hods in nance ing alg conne probles Fina ramew dity an mma, ual ca actua	Financial Returns: Fat-tailed and skewed distributions, outline         nematical Finance         relevant to integration, differentiation and solving the particle         : examples of exact solutions including Black Scholes and it         gorithms and question of stability and convergence, treatment         ection with binomial models, interest rate models, early exercises         ms, and a brief introduction to numerical methods for solving         ncial derivatives         work: Black-Scholes PDE: simple European calls and puts; p         nd currency options. Discontinuous payoffs - Binary and D         vega& rho and their role in hedging. The mathematics of         ulls and puts; optimal exercise strategy and the smooth p	ial di s rel nt of cise, ng m ut-ca Digita	afferer atives near and t ulti-fa ulti par all par l opti	ntial s, fini and he co actor rity. 7 ons.	equa ite dif far bo orresp mod The F The F The e - Atom. V	tions of fference oundar oondin els <b>7 hour</b> PDE fo Greek merica Volatilit
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Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

	lule:6 Options and applications			4 hours
Appl	lication areas include the pricing of American	options, pricing i	nterest rate depender	nt claims, and credit
	The use of importance sampling for Monte (		-	
Mod	lule:7 Options and alternative model	s		5 hours
Сорт	las, Hedging in incomplete markets, Americ	an Options, Exoti	c options, Electronic	trading, Jump
Diffu	ision Processes, High-dimensional covarianc	e matrices, Extren	ne value theory, Stati	stical Arbitrage.
Mod	lule:8 Contemporary Issues			2 hours
Indu	stry expert Lecture on recent trends			
		Total Lectur	e Hours	45 hour
Text	t Book(s)			
1.	Paul Wilmott, Paul Wilmott on Quantitativ	ve Finance, 3 Volu	ime Set, 2013, 2 nd ed	ition, wiley
2.	JoergKienitz and Daniel Wetterau, Finance	al Modelling: The	ory, Implementation	and Practice with
	MATLAB, 2012, 1 st edition, Wiley Finance	e Series.		
Refe	rence Books			
1.	Dan Stefanica., A Primer for the Mathema	tics Of Financial	Engineering, 2011, 2 ⁴	nd Edition FE Press,
	New York.			
2.	John C. Hull and Sankarshan Basu, Option	ns, futures & othe	r derivatives, 2018, 1	0 th edition, Pearson
	India.			
3.	Tsay, Ruey S. Analysis of Financial Time S	beries, 2011, 3 rd edi	tion, John Wiley & S	ons.
4.	R. Seydel: Tools for Computational Finance	ce, 2017, 6 th editio	n, Springer.	
5.	David Ruppert, Statistics and Data Analys	is for Financial Er	ngineering, 2011, Spr	inger.
Mod	le of Evaluation: CAT / Assignment / Quiz	z / FAT / Project	/ Seminar	
	le of Evaluation: CAT / Assignment / Quiz of Experiments	z / FAT / Project	/ Seminar	
List				suite.
<b>List</b> The f	of Experiments	on MATLAB-Cor	nputational Finance	suite. 2 hour
<b>List</b> The f	of Experiments following lab experiments could be planned of	on MATLAB-Cor mport, charting a	nputational Finance	2 hour
List The f 1.	of Experiments following lab experiments could be planned of Working with financial market data: data i	on MATLAB-Cor mport, charting a	nputational Finance	2 hour 2 hour
List The f 1. 2.	of Experiments following lab experiments could be planned of Working with financial market data: data i Financial data: statistical analysis and simu	on MATLAB-Cor mport, charting a	nputational Finance	
List The f 1. 2. 3.	of Experiments following lab experiments could be planned of Working with financial market data: data i Financial data: statistical analysis and simu Time series analysis	on MATLAB-Cor mport, charting a	nputational Finance	2 hour 2 hour 4 hour
List ( The f 1. 2. 3. 4.	of Experiments         following lab experiments could be planned of         Working with financial market data: data if         Financial data: statistical analysis and simulation         Time series analysis         Volatility estimation	on MATLAB-Cor mport, charting a lation	nputational Finance	2 hour 2 hour 4 hour 4 hour 3 hour
List ( The f 1. 2. 3. 4. 5.	of Experiments         following lab experiments could be planned of         Working with financial market data: data if         Financial data: statistical analysis and simulation         Time series analysis         Volatility estimation         Option pricing models and analysis	on MATLAB-Cor mport, charting a lation	nputational Finance	2 hour 2 hour 4 hour 4 hour 3 hour 3 hour
List The f 1. 2. 3. 4. 5. 6.	of Experiments         following lab experiments could be planned of         Working with financial market data: data if         Financial data: statistical analysis and simulation         Time series analysis         Volatility estimation         Option pricing models and analysis         Interest rate modelling and sensitivity analysis	on MATLAB-Cor mport, charting a lation	nputational Finance	2 hour 2 hour 4 hour 4 hour
List The f 1. 2. 3. 4. 5. 6. 7.	of Experimentsfollowing lab experiments could be planned ofWorking with financial market data: data ifFinancial data: statistical analysis and simulationTime series analysisVolatility estimationOption pricing models and analysisInterest rate modelling and sensitivity analPortfolio analysis and optimization	on MATLAB-Cor mport, charting a lation	nputational Finance	2 hour 2 hour 4 hour 3 hour 3 hour 3 hour
List ( The f 1. 2. 3. 4. 5. 6. 7. 8.	of Experimentsfollowing lab experiments could be planned ofWorking with financial market data: data ifFinancial data: statistical analysis and simulationTime series analysisVolatility estimationOption pricing models and analysisInterest rate modelling and sensitivity anaPortfolio analysis and optimizationRisk estimation and hedging	on MATLAB-Cor mport, charting a lation	nputational Finance	2 hour 2 hour 4 hour 3 hour 3 hour 3 hour 3 hour 3 hour
List The f 1. 2. 3. 4. 5. 6. 7. 8. 9.	of Experimentsfollowing lab experiments could be planned ofWorking with financial market data: data ifFinancial data: statistical analysis and simulationTime series analysisVolatility estimationOption pricing models and analysisInterest rate modelling and sensitivity analPortfolio analysis and optimizationRisk estimation and hedgingValue at Risk (VaR) models	on MATLAB-Cor mport, charting a lation	nputational Finance	2 hour 2 hour 4 hour 4 hour 3 hour 3 hour 3 hour 3 hour 3 hour 3 hour 3 hour 3 hour
List The f 1. 2. 3. 4. 5. 6. 7. 8. 9.	of Experimentsfollowing lab experiments could be planned ofWorking with financial market data: data ifFinancial data: statistical analysis and simulationTime series analysisVolatility estimationOption pricing models and analysisInterest rate modelling and sensitivity analPortfolio analysis and optimizationRisk estimation and hedgingValue at Risk (VaR) models	on MATLAB-Cor mport, charting a lation	nputational Finance s nd basic analysis	2 hour 2 hour 4 hour 4 hour 3 hour 3 hour 3 hour 3 hour 3 hour 3 hour 3 hour 3 hour
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CURRICULUM (2019 - 2020) B. Tech Computer Science and Engineering and Business Systems

# NON-CREDIT COURSES

# (AY 2019 - 2020)

# B. Tech. Computer Science and Engineering and Business Systems

(in collaboration with TCS)

Sl. No	Course Code	Course Title	Page No.
1.	CHY1002	Environmental Sciences	174
2.	ENG1000	Foundation English - I	176
3.	ENG2000	Foundation English - II	179
4.	EXC4097	Co-Extra Curricular Basket	



methods.

# VIT®

# CURRICULUM (2019 - 2020)

Course Cod	e Course Title	L	Т	Р	J	(
CHY1002	Environmental Sciences	3	0	0	0	
Pre-requisite	Chemistry of 12 th standard or equivalent		Syllab	us v	ersio	n
			,	v. 1.1		
Course Objec	tives:					
1. To make	students understand and appreciate the unity of life in all	its form	s, their	mplic	ation	is c
life style o	n the environment.					
2. To unders	stand the various causes for environmental degradation.					
3. To unders	stand in dividuals contribution in the environmental polluti	on.				
4. To unders	stand the impact of pollution at the global level and also in	the local	enviro	onme	nt.	
Expected Cou	arse Outcome:					
Students will	be able to					
1. Students	will recognize the environmental issues in a problem	m orien	ted in	terdi	scipli	nai
perspectiv					1	
2. Students	will understand the key environmental issues, the science	e behind	those	prol	olems	san
potential s	-			1		
3. Students v	vill demonstrate the significance of biodiversity and its pres	servation				
4. Students v	vill identify various environmental hazards					
	vill design various methods for the conservation of resource	ces				
	will formulate action plans for sustainable alternative and social aspects	es that i	ncorp	orate	scie	enco
7. Students	vill have foundational knowledge enabling them to make s	sound lif	e decis	ions	aswe	ell a
enter a ca	eer in an environmental profession or higher education.					
	Environment and Ecosystem				7 he	out
Module:1	ental problems, their basic causes and sustainable solutions	. IPAT e	quatio	n. Ee		
	-	food w	eb, Er	nergy	flov	v i
Key environm	pport system and ecosystem components; Food chain,			on, I	Hydra	arcl
Key environm earth – life su		ndary su	1000351		-	
Key environm earth – life su ecosystem; Ec	pport system and ecosystem components; Food chain, ological succession- stages involved, Primary and seco ch; Nutrient, water, carbon, nitrogen, cycles; Effect of hum	-		thes	e cyc	
Key environm earth – life su ecosystem; Ec	ological succession- stages involved, Primary and seco	-		thes	e cyc	
Key environm earth – life su ecosystem; Ec	ological succession- stages involved, Primary and seco	-		thes	e cyc 6 hc	our

Module:3	Sustaining Natural Resources and Environmental Quality	7 hours
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B. Tech Computer Science and Engineering and Business Systems

Environmental hazards - causes and solutions. Biological hazards - AIDS, Malaria, Chemical hazards-BPA, PCB, Phthalates, Mercury, Nuclear hazards- Risk and evaluation of hazards. Water footprint; virtual water, blue revolution. Water quality management and its conservation. Solid and hazardous waste - types and waste management methods.

Module:4 **Energy Resources**  6 hours

6 hours

6 hours

2 hours

Renewable - Non renewable energy resources- Advantages and disadvantages - oil, Natural gas, Coal, Nuclear energy. Energy efficiency and renewable energy. Solar energy, Hydroelectric power, Ocean thermal energy, Wind and geothermal energy. Energy from biomass, solar- Hydrogen revolution.

Module:5 **Environmental Impact Assessment** 

Introduction to environmental impact analysis. EIA guidelines, Notification of Government ofIndia (Environmental Protection Act - Air, water, forest and wild life). Impact assessment methodologies. Public awareness. Environmental priorities in India.

Module:6 Human Population Change and Environment Urban environmental problems; Consumerism and waste products; Promotion of economic

development - Impact of population age structure - Women and child welfare, Women empowerment. Sustaining human societies: Economics, environment, policies and education.

Module:7	Global Climatic Change and Mitigation	5 hours
Climate disrup	otion, Green house effect, Ozone layer depletion and Acid rain. Kyoto protoco	ol,Carbon
credits, Carbo	n sequestration methods and Montreal Protocol. Role of Information tech	nology in

environment-Case Studies.

Module:8	Contemporary issues:
Mount.0	Contemporary issues.

Guest lecture by Industry Experts or R&D organization

	Total Lecture hours:	45 hours
Tex	at Books	
1.	G. Tyler Miller and Scott E. Spoolman (2016), Environmen	ntal Science, 15 th Edition, Cengage
	learning.	
2.	George Tyler Miller, Jr. and Scott Spoolman (2012), Living	in the Environment - Principles,
	Connections and Solutions, 17th Edition, Brooks/Cole, USA.	
Ref	erence Books	
1.	David M.Hassenzahl, Mary Catherine Hager, Lin-	da R.Berg (2011), Visualizing
	Environmental Science, 4thEdition, John Wiley & Sons, USA	۸.

Mode of evaluation: Internal Assessme	nt (CAT, Quizzes	s, Digital A	Assignments) & FAT
Recommended by Board of Studies	12-08-2017		
Approved by Academic Council	No. 46	Date	24-08-2017



# VIIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

CURRICULUM (2019 - 2020)

Course code	Course title	L	Τ	P	J	C
ENG1000	Foundation English - I	0	0	4	0	2
Pre-requisite	Less than 50% EPT score		Sylla	bus V	<b>Versi</b>	on
				v. 1.	0	
Course Object						
1 1	arners with English grammar and its application.					
	earners to comprehend simple text and train them to sp	eak and v	vrite f	lawles	sly.	
3. To familiari	ze learners with MTI and ways to overcome them.					
Expected Cou	rse Outcome:					
1. Develop the	e skills to communicate clearly through effective gramm	ar, pronu	inciati	on an	d wri	ting.
2. Understand	everyday conversations in English	-				_
	te and respond to simple questions about oneself.					
-	cabulary and expressions.					
5. Prevent MT	I (Mother Tongue Influence) during usual conversation	1.				
Module:1	Essentials of grammar				3	Hours
	ic grammar-Parts of Speech				_	
	nar worksheets on parts of speech					
y	1 1					
Module:2	Vocabulary Building				3	Hours
Vocabulary dev	elopment; One word substitution					
Activity: Eleme	ntary vocabulary exercises					
Module:3	Applied grammar and usage				4 ]	Hours
Types of senter	ices; Tenses					
Activity: Gram	nar worksheets on types of sentences; tenses					
Module:4	Rectifying common errors in everyday conversat	tion			4 ]	Hours
Detect and rect	ify common mistakes in everyday conversation					
Activity: Comm	on errors in prepositions, tenses, punctuation, spelling	and other	r parts	of sp	eech	,
Colloquialism						
Module :5	Jumbled sentences					Hours
Sentence struct story	ure; Jumbled words to form sentences; Jumbled sentences	ces to for	m par	agrapl	h/ sh	ort
2	amble a paragraph / short story					
Module:6	Text-based Analysis				4	Hours
	atobiography of APJ Abdul Kalam (Excerpts)					
	vocabulary by reading and analyzing the text					
ACHVIIV: Enrice						





Module:7	Correspondence	3 Hours
Letter, Email	, Application Writing	
Activity: Con	npose letters; Emails, Leave applications	
Module:8	Listening for Understanding	4 Hours
0	simple conversations & gap fill exercises	
Activity: Sim	ble conversations in Received Pronunciation using audio-visual materials.	
Module:9	Speaking to Convey	6 Hours
	tion; role-plays; Everyday conversations	011001
	ntify and communicate characteristic attitudes, values, and talents;	Working and
interacting wi	•	working and
interacting wi	Stoupo	
Module:10	Reading for developing pronunciation	6 Hours
Loud reading	with focus on pronunciation by watching relevant video materials	
0	tice pronunciation by reading aloud simple texts; Detecting syllables; Vis	ually connecting
	shown in relevant videos	. 0
Module:11	Reading to Contemplate	4 Hour
Reading shor	t stories and passages	
Activity: Read	ling and analyzing the author's point of view; Identifying the central idea	
	Writing to Communicate	
Paragraph W	Writing to Communicate riting; Essay Writing; Short Story Writing	
Paragraph W	Writing to Communicate	
Paragraph Wr Activity: Writ <b>Module:13</b>	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data	6 Hours
Paragraph Wr Activity: Writ <b>Module:13</b>	Writing to Communicate riting; Essay Writing; Short Story Writing ing paragraphs, essays and short- stories	6 Hours 6 Hours
Paragraph Wr Activity: Writ <b>Module:13</b> Describing gr	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data	6 Hours 6 Hours
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inte	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         caphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the formation	6 Hours 6 Hours rm of PPTs
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inte: <b>Module:14</b>	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation	6 Hours 6 Hours rm of PPTs
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inte <b>Module:14</b> Practicing cor	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation	6 Hours 6 Hours
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inte <b>Module:14</b> Practicing cor	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         caphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         trifying and overcoming mother tongue influence.	6 Hours 6 Hours rm of PPTs 5 Hours
Activity: Writ Module:13 Describing gr Activity: Inte Module:14 Practicing con Activity: Iden	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         tifying and overcoming mother tongue influence.         Total Laboratory Hours	6 Hours 6 Hours rm of PPTs
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inter <b>Module:14</b> Practicing con Activity: Iden <b>Text Book /</b>	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         tifying and overcoming mother tongue influence.         Total Laboratory Hours         Yworkbook	6 Hours 6 Hours rm of PPTs 5 Hours 60 Hours
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inter <b>Module:14</b> Practicing con Activity: Iden <b>Text Book /</b> 1. Wren, F	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         atifying and overcoming mother tongue influence.         Total Laboratory Hours         Workbook         P.C., & Martin, H. (2018). High School English Grammar & Com	6 Hours 6 Hours rm of PPTs 5 Hours 60 Hours
Paragraph Wi Activity: Writ Module:13 Describing gr Activity: Inte: Module:14 Practicing con Activity: Iden Text Book / 1. Wren, F PrasadaF	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         tifying and overcoming mother tongue influence.         Total Laboratory Hours         Workbook         P.C., & Martin, H. (2018). High School English Grammar & Com         Rao (Ed.). NewDelhi: S. Chand & Company Ltd.	6 Hours 6 Hours rm of PPTs 5 Hours 60 Hours position N.D.V
Paragraph Wi Activity: Writ Module:13 Describing gr Activity: Inter Module:14 Practicing con Activity: Iden Text Book / 1. Wren, P PrasadaF 2 McCarth	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         caphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         atifying and overcoming mother tongue influence.         Total Laboratory Hours         Workbook         P.C., & Martin, H. (2018). High School English Grammar & Com         aco (Ed.). NewDelhi: S. Chand & Company Ltd.         y, M. O'Dell, F., & Bunting, J.D. (2010).Vocabulary in Use( High Inter	6 Hour 6 Hour rm of PPTs 5 Hour 60 Hour position N.D.V
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inter <b>Module:14</b> Practicing con Activity: Iden <b>Text Book /</b> 1. Wren, P PrasadaF 2. McCarth book wit	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         tifying and overcoming mother tongue influence.         Total Laboratory Hours         Yorkbook         P.C., & Martin, H. (2018). High School English Grammar & Com         Rao (Ed.). NewDelhi: S. Chand & Company Ltd.         y, M. O'Dell, F., & Bunting, J.D. (2010).Vocabulary in Use( High Inter         h answers). Cambridge University Press	6 Hour 6 Hour rm of PPTs 5 Hour 60 Hour position N.D.V
Paragraph Wi Activity: Writ Module:13 Describing gr Activity: Inter Module:14 Practicing con Activity: Iden Text Book / 1. Wren, P PrasadaF 2. McCarth book wit Reference B	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         tifying and overcoming mother tongue influence.         Yorkbook         C., & Martin, H. (2018). High School English Grammar & Com         Rao (Ed.). NewDelhi: S. Chand & Company Ltd.         y, M. O'Dell, F., & Bunting, J.D. (2010).Vocabulary in Use( High Inter         h answers). Cambridge University Press         ooks	6 Hour 6 Hour rm of PPTs 5 Hour 60 Hour position N.D.V mediate student
Paragraph Wi Activity: Writ <b>Module:13</b> Describing gr Activity: Inter <b>Module:14</b> Practicing con Activity: Iden <b>Text Book /</b> 1. Wren, P PrasadaF 2. McCarth book wit <b>Reference B</b>	Writing to Communicate         riting; Essay Writing; Short Story Writing         ing paragraphs, essays and short- stories         Interpreting Graphical Data         raphical illustrations; interpreting basic charts, tables, and formats         rpreting and presenting simple graphical representations/charts in the for         Overcoming Mother Tongue Influence (MTI) in Pronunciation         mmon variants in pronunciation         tifying and overcoming mother tongue influence.         Total Laboratory Hours         Yorkbook         P.C., & Martin, H. (2018). High School English Grammar & Com         Rao (Ed.). NewDelhi: S. Chand & Company Ltd.         y, M. O'Dell, F., & Bunting, J.D. (2010).Vocabulary in Use( High Inter         h answers). Cambridge University Press	6 Hour 6 Hour rm of PPTs 5 Hour 60 Hour position N.D.V mediate student





3	Lewi	s, N. (2011).Word Power Made Eas	sy. Goyal Pub	lisher		
4	https	:/americanliterature.com/short-sho	ort-stories			
5		ri, A., &Kalam, A. (1999).Wings of s (India) Private Limited.	Fire - An Au	tobiograp	hy of Abdu	l Kalam. Universities
Mo	de of	Evaluation: Quizzes, Presentation	, Discussion,	Role Play	, Assignme	nts
Lis	t of C	hallenging Experiments (Indica	tive)			
	1.	Rearranging scrambled sentence	es			8 hours
	2.	Identifying errors in oral and wr	itten commur	nication		12 hours
	3.	Critically analyzing the text				8 hours
	4.	Developing passages from hint	words			8 hours
	5.	Role-plays				12 hours
	6.	Listening to a short story and an	alyzing it			12 hours
			Total I	Laborato	ry Hours	60 hours
Mo	ode of	Evaluation: Quizzes, Presentation	on, Discussio	on, Role	Play, Assig	gnments
Re	comm	ended by Board of Studies	08-06-2019			
Ap	prove	d by Academic Council	No. 55	Date	13-06-201	9



# VIIT[®] Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1956)

# CURRICULUM (2019 - 2020)

Course code	Course title	L	Т	Р	J	С
ENG2000	Foundation English - II	0	0	4	0	2
Pre-requisite	51% - 70% EPT Score / Foundation English I		Syl	llabu	is ve	ersion
				V	r.1.0	
Course Objectiv	ves:					
1. To practice gr	rammar and vocabulary effectively					
2. To acquire pr	oficiency levels in LSRW skills in diverse social situations.					
3. To analyze in	formation and converse effectively in technical communication	ation.				
Expected Cours	e Autcome					
<u> </u>	deliberate reading and writing process with proper gramm	ar and y	iocal	Jular	v	
-	sentence structures while Listening and Reading.	ai and	, ocar	Julai	y.	
1	e effectively and share ideas in formal and informal situatio	ns				
	pecialized articles and technical instructions and write clear		al co	rrest	າດກ	lence
	k and analyze with verbal ability.	teenine		/ites	Join	ience.
5. Citicany tini	k and analyze with verbar ability.					
Module:1	Grammatical Aspects					4 hours
Sentence Pattern,	Modal Verbs, Concord (SVA), Conditionals, Connectives					
Activity : Worksh	leets, Exercises					
-						
Module:2	Vocabulary Enrichment					4 hours
	•					4 hours
Active & Passive	Vocabulary, Prefix and Suffix, High Frequency Words					4 hours
	Vocabulary, Prefix and Suffix, High Frequency Words					4 hours
Active & Passive Activity : Worksh	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises					
Active & Passive Activity : Worksh Module:3	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English	histers-	Past	Ten	use N	4 Hours
Active & Passive Activity : Worksh <b>Module:3</b> Speech Sounds –	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises	lusters-	Past	Ten	ise N	4 Hours
Active & Passive Activity : Worksh <b>Module:3</b> Speech Sounds – Plural Marker	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English Vowels and Consonants – Minimal Pairs- Consonant C	lusters-	Past	Ten	use N	4 Hours
Active & Passive Activity : Worksh <b>Module:3</b> Speech Sounds – Plural Marker	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English Vowels and Consonants – Minimal Pairs- Consonant C	lusters-	Past	Ten	ise N	4 Hours
Active & Passive Activity : Worksh <b>Module:3</b> Speech Sounds –	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English Vowels and Consonants – Minimal Pairs- Consonant C	lusters-	Past	Ten	use N	4 Hours
Active & Passive Activity : Worksh <b>Module:3</b> Speech Sounds – Plural Marker Activity : Worksh <b>Module:4</b>	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English Vowels and Consonants – Minimal Pairs- Consonant C neets, Exercises Syntactic and Semantic Errors		Past	Ten	use N	<b>4 Hours</b> Marker and
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/At	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English Vowels and Consonants – Minimal Pairs- Consonant C neets, Exercises Syntactic and Semantic Errors rticles/ Prepositions/ Punctuation & Right Choice of Voca		Past	Ten	se N	<b>4 Hours</b> Marker and
Active & Passive Activity : Worksh <b>Module:3</b> Speech Sounds – Plural Marker Activity : Worksh <b>Module:4</b>	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English Vowels and Consonants – Minimal Pairs- Consonant C neets, Exercises Syntactic and Semantic Errors rticles/ Prepositions/ Punctuation & Right Choice of Voca		Past	Ten	use N	<b>4 Hours</b> Marker and
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/At	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises Phonics in English Vowels and Consonants – Minimal Pairs- Consonant C neets, Exercises Syntactic and Semantic Errors rticles/ Prepositions/ Punctuation & Right Choice of Voca		Past	Ten	ise M	<b>4 Hours</b> Marker and
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises           Phonics in English           • Vowels and Consonants – Minimal Pairs- Consonant C           neets, Exercises           Syntactic and Semantic Errors           rticles/ Prepositions/ Punctuation & Right Choice of Voca           neets, Exercises           Stylistic errors	bulary		Ten	use N	4 Hours Marker and 2 Hours
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh Module:5 Dangling Modifi	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises           Phonics in English           • Vowels and Consonants – Minimal Pairs- Consonant C           neets, Exercises           Syntactic and Semantic Errors           rticles/ Prepositions/ Punctuation & Right Choice of Voca           neets, Exercises           Stylistic errors           ers, Parallelism, Standard English, Ambiguity, Redundancy	bulary		Ten	ise N	4 Hours Marker and 2 Hours
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises           Phonics in English           • Vowels and Consonants – Minimal Pairs- Consonant C           neets, Exercises           Syntactic and Semantic Errors           rticles/ Prepositions/ Punctuation & Right Choice of Voca           neets, Exercises           Stylistic errors           ers, Parallelism, Standard English, Ambiguity, Redundancy	bulary		Ten	use N	4 Hours Marker and 2 Hours
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh Module:5 Dangling Modifi Activity : Worksh	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises           Phonics in English           • Vowels and Consonants – Minimal Pairs- Consonant C           neets, Exercises           Syntactic and Semantic Errors           rticles/ Prepositions/ Punctuation & Right Choice of Voca           neets, Exercises           Stylistic errors           ers, Parallelism, Standard English, Ambiguity, Redundancy           heets, Exercises	bulary		Ten		4 Hours Marker and 2 Hours 2 Hours
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh Module:5 Dangling Modifi Activity : Worksh	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises           Phonics in English           - Vowels and Consonants – Minimal Pairs- Consonant C           neets, Exercises           Syntactic and Semantic Errors           rticles/ Prepositions/ Punctuation & Right Choice of Voca           neets, Exercises           Stylistic errors           ers, Parallelism, Standard English, Ambiguity, Redundancy           heets, Exercises           Listening and Note making	bulary	y			4 Hours Marker and 2 Hours 2 Hours 6 Hours
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh Module:5 Dangling Modifi Activity : Worksh Module:6 Intensive and Ex	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises           Phonics in English           - Vowels and Consonants – Minimal Pairs- Consonant C           neets, Exercises           Syntactic and Semantic Errors           rticles/ Prepositions/ Punctuation & Right Choice of Voca           neets, Exercises           Stylistic errors           ers, Parallelism, Standard English, Ambiguity, Redundancy           heets, Exercises           Listening and Note making           ttensive Listening - Scenes from plays of Shakespeare (Eg	bulary , Brevit	y scen	e in	The	4 Hour Marker and 2 Hour 2 Hour 6 Hour
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh Module:5 Dangling Modifi Activity : Worksh Module:6 Intensive and Ex <i>Venice</i> , Disguise S	Vocabulary, Prefix and Suffix, High Frequency Words         ieets, Exercises         Phonics in English         - Vowels and Consonants – Minimal Pairs- Consonant C         ieets, Exercises         Syntactic and Semantic Errors         rticles/ Prepositions/ Punctuation & Right Choice of Voca         ieets, Exercises         Stylistic errors         ers, Parallelism, Standard English, Ambiguity, Redundancy         heets, Exercises         Listening and Note making         tensive Listening - Scenes from plays of Shakespeare (Eg         Scene in The Twelfth Night, Death of Desdemona in Othello,	bulary , Brevit	y scen	e in	The	4 Hour Marker and 2 Hour 2 Hour 6 Hour
Active & Passive Activity : Worksh Module:3 Speech Sounds – Plural Marker Activity : Worksh Module:4 Tenses /SVA/An Activity : Worksh Module:5 Dangling Modifi Activity : Worksh Module:6 Intensive and Ex <i>Venice</i> , Disguise S Balcony scene fro	Vocabulary, Prefix and Suffix, High Frequency Words neets, Exercises           Phonics in English           - Vowels and Consonants – Minimal Pairs- Consonant C           neets, Exercises           Syntactic and Semantic Errors           rticles/ Prepositions/ Punctuation & Right Choice of Voca           neets, Exercises           Stylistic errors           ers, Parallelism, Standard English, Ambiguity, Redundancy           heets, Exercises           Listening and Note making           ttensive Listening - Scenes from plays of Shakespeare (Eg	bulary , Brevit : Court Death s	y scen	e in	The	4 Hour Marker and 2 Hour 2 Hour 6 Hour



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# CURRICULUM (2019 - 2020)

B. Tech Computer Science and Engineering and Business Systems

Module:7	Art of Public Speaking	6 Hours
Impromptu, Imp	portance of Non-verbal Communication, Technical Talks, Dynamics of	Professional
	Individual & Group	
Activity : Ice Bre	eaking; Extempore speech; Structured technical talk and Group presen	tation
Module:8	Reading Comprehension Skills	4 Hours
Skimming, scar	nning, comprehensive reading, guessing words from context,	understanding text
organization, rec	cognizing argument and counter-argument; distinguishing between ma	ain information and
supporting detail	il, fact and opinion, hypothesis versus evidence; summarizing and	note-taking, Critical
0 4	tions – Reading and Discussion	
Activity: Reading	g of Newspapers Articles and Worksheets on Critical Reasoning from w	veb resources
Module: 9	Creative Writing	4 Hours
	ssay, Developing ideas on analytical/ abstract topics	
Activity: Movie I	Review, Essay Writing on suggested Topics, Picture Descriptions	
Module: 10	Verbal Aptitude	6 hours
	Sentence Completion using Appropriate words, Sentence Correction	
Activity: Practici	ng the use of appropriate words and sentences through web tools.	
Module: 11	Business Correspondence	4 hours
	Format and purpose: Business Letters - Sales and complaint letter	
Activity: Letter v	vriting- request for Internship, Industrial Visit and Recommendation	
<u> </u>		
Module: 12	Career Development	6 hours
1 1	ette, Resume Preparation, Video Profile	
Activity: Prepai	ration of Video Profile	
Module: 13	Art of Technical Writing - I	4 hours
	ctions, Process and Functional Description	4 110015
	g Technical Instructions	
Tenvity. withing		
Module: 14	Art of Technical Writing – II	4 hours
	ort and Proposal	, noui
1	ical Report Writing, Technical Proposal	
	Total Lecture hours:	60 hours
Text Book / W		
-	umar & Pushp Lata, Communication Skills, 2 nd Edition, OUP, 2015	
, ,	Martin, High School English Grammar & Composition, Regular ed., N	D. Blackie FLT
Books, 20		D. DIACKIC L'LI
DOOKS, Z	J10	



# VIT® Vellore Institute of Technology (Deemed to be University under section 3 of UGC Act, 1936)

CURRICULUM (2019 - 2020)

Refer	rence Books				
1	Peter Watkins, Teaching and Dev	veloping Read	ling Skills: (	Cambridge Handb	ooks for Language
	Teachers, Cambridge, 2018				
2	Aruna Koneru, Professional Speaki	ng Skills, OUF	<b>P</b> , 2015.		
3	J.C.Nesfield, English Grammar Eng	glish Grammar	r Compositio	on and Usage, Mac	millan. 2019.
4	Richard Johnson-Sheehan, Technic	al Communica	ition Today,	6th edition, ND: I	Pearson, 2017.
5	Balasubramaniam, Textbook of E	nglish Phonet	ics For Indi	an Students, 3rd	Edition, S. Chand
	Publishers, 2013.				
Web	Resources				
1. <u>htt</u>	ps://www.hitbullseye.com/Sentence-	Correction-Pr	actice.php		
2. <u>htt</u>	ps://hitbullseye.com/Critical-Reason	ing-Practice-Q	uestions.ph	<u>2</u>	
Mod	de of Evaluation: Presentation, Disc	ussion Role P	lav Assignm	ents FAT	
11100	de of Evaluation: 1 resentation, Dise		iay, 1100151111		
List	of Challenging Experiments (India	rative)	. 0		
	of Challenging Experiments (Indic	,			0.1
1.	Reading and Analyzing Critical Rea	isoning question	ons		
1. 2.	Reading and Analyzing Critical Rea Listening and Interpretation of Vic	isoning question	ons		12 hours
1. 2. 3.	<ul> <li>Reading and Analyzing Critical Rea</li> <li>Listening and Interpretation of Vic</li> <li>Letter to the Editor</li> </ul>	asoning questic leos	ons		12 hours 6 hours
1. 2. 3. 4.	Reading and Analyzing Critical RealListening and Interpretation of VicLetter to the EditorDeveloping structured Technical T	asoning questic leos falk	ons		12 hours 6 hours 12 hours
1. 2. 3. 4. 5.	Reading and Analyzing Critical RealListening and Interpretation of VicLetter to the EditorDeveloping structured Technical TDrafting SOP (Statement of Purpor)	asoning questic leos falk	ons		12 hours 6 hours 12 hours 10 hours
1. 2. 3. 4.	Reading and Analyzing Critical RealListening and Interpretation of VicLetter to the EditorDeveloping structured Technical TDrafting SOP (Statement of Purpor)	asoning questic leos 'alk ose)			6 hours 12 hours 10 hours 12 hours
1. 2. 3. 4. 5.	Reading and Analyzing Critical RealListening and Interpretation of VicLetter to the EditorDeveloping structured Technical TDrafting SOP (Statement of Purpor)	asoning questic leos 'alk ose)		tory Hours	12 hours 6 hours 12 hours 10 hours 12 hours
1. 2. 3. 4. 5. 6.	Reading and Analyzing Critical Real         Listening and Interpretation of Vic         Letter to the Editor         Developing structured Technical T         Drafting SOP (Statement of Purpor)         Video Profile	asoning questic leos 'alk ose) <b>T</b>	otal Labora	tory Hours	12 hours 6 hours 12 hours 10 hours
1. 2. 3. 4. 5. 6. <b>Mode</b>	Reading and Analyzing Critical RealListening and Interpretation of VicLetter to the EditorDeveloping structured Technical TDrafting SOP (Statement of Purpor)	asoning questic leos 'alk ose) <b>T</b>	otal Labora	tory Hours	12 hours 6 hours 12 hours 10 hours 12 hours