KONGU ENGINEERING COLLEGE

(Autonomous Institution Affiliated to Anna University, Chennai)

PERUNDURAI ERODE – 638 060 TAMILNADU INDIA



REGULATIONS, CURRICULUM & SYLLABI – 2024

(CHOICE BASED CREDIT SYSTEM AND OUTCOME BASED EDUCATION)

(For the students admitted from the academic year 2024 - 2025)

BACHELOR OF TECHNOLOGY DEGREE IN ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING



B.TECH ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

			Н	ours /	Seme	ster			Max	imum N	Marks	-	
Course Code	Course Title	С	I .	LI	TW	SL	тн	Cre dit	CA	ESE	Total	Cate gory	Туре
		L	Т	Р	1 44	3L			CA	5	Total		
Theory/The	eory with Practical				1								
24EGT11	English for Effective Communication	45	0	0	45	0	90	3	40	60	100	HS	С
24MAC11	Matrices and Ordinary Differential Equations	45	7	16	52	0	120	4	50	50	100	BS	Α
24PHT11	Physics for Computer Systems	45	0	0	45	0	90	3	40	60	100	BS	С
24CSC12	Programming in C	45	0	30	45	0	120	4	100	0	100	ES	ОТ
24ITT11	Digital Logic Principles and Design	45	0	0	45	0	90	3	40	60	100	ES	Α
24TAM01	Heritage of Tamils	15	0	0	15	0	30	1	100	0	100	HS	ОТ
Practical /	Employability Enhancement						÷_			d	,		
24PHL11	Physics Laboratory for Computer Systems	0	0	30	0	0	30	1	60	40	100	BS	
24GCL11	Foundation Laboratory – Manufacturing, Design and Robotics	0	0	90	0	0	90	3	100	0	1.00	ES	*
24MNT12	Quantitative Aptitude - I	30	0	0	0	0	30	0	100	0	100	МС	1)
24VEC11	Yoga and Values for Holistic Education	15	0	15	0	0	30	1	100	0	100	HS	
24MNT11	Student Induction Program	0	0	90	0	0	90	0	100	0	100	мс	ı
	Total Credits to be	earne	d	142				23				1	

CI – Classroom Instructions, LI – Laboratory Instructions, TW – Term Work, SL – Self Learning, L – Lecture, T – Tutorial, P – Practical, C – Credit, TH – Total Hours, CA – Continuous Assessment, ESE – End Semester Examination.

Type: A – Analytical, D – Design using Hardware, S – Simulation using Coding, C – Concept, OC – Online course, OT - others

Signature of the Chairman

Board of Studies - AIM

B.TECH ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING CURRICULUM - R2024 (For the students admitted from the academic year 2024-25 onwards)

		Н	ours /	Seme	ster			Max	imum N	larks	- Er	
Course Title	С	1	LI	TIM	CI.	T 11	Cre dit	CA	ESE	Total	Cate gory	Туре
	L	Т	Р	. I VV	SL	IH		CA	ESE	Total		-
ry with Practical								-				
English For Effective Communication - II	45	0	0	45	0	90	3	40	60	100	HS	С
Probability Theory and Inferential Statistics	45	7	16	52	0	120	4	50	50	100	BS	А
Chemistry for Electronics and Computer Systems	45	0	0	45	0	90	3	40	60	100	BS	С
Python Programming	45	0	30	0	45	120	4	100	0	100	ES	ОТ
Foundations of Artificial Intelligence	45	0	30	0	45	120	4	50	50	100	PC	s
Tamils and Technology	15	0	0	15	0	30	1	100	0	100	HS	ОТ
nployability Enhancement				-			-	**		1		
Chemistry Laboratory for Electronics and Computer Systems	0	0	30	0	0	30	1	60	40	100	BS	*,
Foundation Laboratory - Electrical, IoT and Web Technologies	0	0	90	0	0	90	3	100	0	100	ES	
Quantitative Aptitude - II	30	0	0	0	0	30	0	100	0	100	МС	
	English For Effective Communication - II Probability Theory and Inferential Statistics Chemistry for Electronics and Computer Systems Python Programming Foundations of Artificial Intelligence Tamils and Technology mployability Enhancement Chemistry Laboratory for Electronics and Computer Systems Foundation Laboratory - Electrical, IoT and Web Technologies	English For Effective Communication - II Probability Theory and Inferential Statistics Chemistry for Electronics and Computer Systems 45 Python Programming 45 Foundations of Artificial Intelligence Tamils and Technology 15 mployability Enhancement Chemistry Laboratory for Electronics and Computer Systems Foundation Laboratory - Electrical, IoT and Web Technologies	Course Title CI L T ry with Practical English For Effective Communication - II Probability Theory and Inferential Statistics Chemistry for Electronics and Computer Systems 45 0 Python Programming 45 0 Foundations of Artificial Intelligence Tamils and Technology 15 0 mployability Enhancement Chemistry Laboratory for Electronics and Computer Systems Foundation Laboratory - Electrical, IoT and Web Technologies	Course Title CI LI L T P ry with Practical English For Effective Communication - II Probability Theory and Inferential Statistics Chemistry for Electronics and Computer Systems Python Programming 45 0 0 Python Programming 45 0 30 Foundations of Artificial Intelligence Tamils and Technology 15 0 0 mployability Enhancement Chemistry Laboratory for Electronics and Computer Systems Foundation Laboratory - Electrical, IoT and Web Technologies	Course Title	Tw SL Ty with Practical English For Effective Communication - II Probability Theory and Inferential Statistics Chemistry for Electronics and Computer Systems Python Programming 45 0 0 45 0 Chemistry for Electronics and Computer Systems Foundations of Artificial Intelligence Tamils and Technology To Demistry Laboratory for Electronics and Computer Systems Foundation Laboratory - Electronics and Computer Systems Foundation Laboratory - Electrical, IoT and Web Technologies Trum It P Trum It	Course Title					

CI - Classroom Instructions, LI - Laboratory Instructions, TW - Term Work, SL - Self Learning, L - Lecture, T -Tutorial, P - Practical, C - Credit, TH - Total Hours, CA - Continuous Assessment, ESE - End Semester

Type: A – Analytical, D – Design using Hardware, S – Simulation using Coding, C – Concept, OC – Online course, OT - others

Signature of the Chairman AIML Board of Studies -

B.TECH ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

SEMESTER	t – III												
			Но	ours / S	Semes	ter			Maxii	Maximum Marks			9 5
Course Code	Course Title	C	il .	LI	714/	01		Cred it			Tota	Cate gory	Туре
		Ļ	Т	Р	TW	SL	TH		CA	ESE	ı	9	
Theory/The	ory with Practical			ži		el se							
24MAT32	Discrete Mathematics and Linear Algebra	45	15	0	60	0	120	4	40	60	100	BS	Α
24ADC31	Java Programming	45	0	30	45	0	120	4	100	0	100	PC ·	ОТ
24ADT31	Computer Organization	45	15	0	60	0	120	4	40	60	100	PC	Α
24ADT32	Machine Learning	45	. 0	0	45	0	90	3	40	60	100	PC	Α
24ADT33	Data Structures	45	0	0	45	0	90	3	40	60	100	PC	Α
24MNT31	Environmental Science	30	0	0	0	0	30	0	100	0	100	МС	ОТ
Practical / B	Employability Enhancement		,				3					-	
24ADL31	Machine Learning Laboratory	0	0	30	0	0	30	1	60	40	100	PC	
24ADL32	Data Structures Laboratory	0	0	30	0	0	30	1	100	0	100	PC	
24GEP31	Mini Project – I	0	0	30	0	0	30	1	100	0	100	EC	
	Total Credits to	be ear	ned					21			3		5

CI – Classroom Instructions, LI – Laboratory Instructions, TW – Term Work, SL – Self Learning, L – Lecture, T – Tutorial, P – Practical, C – Credit, TH – Total Hours, CA – Continuous Assessment, ESE – End Semester Examination.

Type: A - Analytical, D - Design using Hardware, S - Simulation using Coding, C - Concept, OC - Online course, OT - others

Signature of the Chairman

Board of Studies - AIM

		(Common to all Engine	ering and Tech	nnology Brand	hes)					
Programme Branch		All B.E/B.Tech Branches	Sem	Category	L	Т	Р	SL*	Total	Credi
Prerequisit	tes	Nil	1	HS	45	0	0	45	90	3
Preamble		s course is designed to enhance the co various workplace communication and			al apti	ude i	n Eng	lish la	nguage i	required
Unit – I		ammar, Verbal Aptitude, Listening, S Speech – Articles – Determiners –								9
Building a Po Unit – II Grammar: T Prefixes and Asking Ques Strategies: A	Gray ypes of Suffixed tions – n Exce	g: Importance of Good Communication Attitude: An Excerpt from You Can Windermar, Verbal Aptitude, Listening, Soff Sentences – Assertive, Interrogative as – Collocations – Idiomatic Expression Role Play – Reading: Reading for Corpt from You Can Win-Writing: Description	 Writing: Empeaking, Read Imperative and Extension Listening Emprehension 	nail Etiquette - ding & Writin and Exclamato : Identifying r - Verbal and	– Emai g ory – C nain a d Non-	Uuest nd Se Verba	ing – ion T econd	Respo ags- V ary Po mmunic	/erbal A ints – Sp	Emails 9 ptitude peaking Winning
Unit – III Grammar: To from a Disconding: Narra Unit – IV Grammar: P Sentence Correct	Graenses cussion—Sc ative an Graenmelsi annels Graenmels Graenmels Graenmels Graenmels	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S.— Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Sammar, Verbal Aptitude, Listening, S	peaking, Readmbled Sentent - Discusses Every Day: peaking, Read Discourse Mail: Information Self-Esteem a	ding & Writin lices – Senten sing Tourist An Excerpt fr ding & Writin arkers – Verl – Speaking: and Image: And	ice For Destin Com You Ig Bal Ap Small In Exce	matic ations ou Ca otitud Talk erpt fr	e: Oi Teleom Y	istenir Readi n – Wr ne Wo phonic	ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win –	9 ng Note ocess of aragrap 9 titution reations Writing
Unit – III Grammar: To from a Disc Communicati Writing: Narra Unit – IV Grammar: P Sentence Co Reading: Ch Instructions – Unit – V Grammar: S – Cloze Test Speaking: A Excerpt from Specific Voca	Graenses cussion cussion Scative an Preposi pmpleti annels Recon Gra ubject t using greein you abulary	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S.— Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Sommar, Verbal Aptitude, Listening, S	peaking, Reambled Sentent — Discusses Every Day: peaking, Reambled Sentential Piscourse Mais Information — Self-Esteem and Peaking, Reambled Self-Esteem and Peaking, Reambled Self-Esteeming — Listening:	ding & Writin ices – Senten sing Tourist An Excerpt fr ding & Writin arkers – Verl – Speaking: and Image: And ding & Writin Aptitude: Hore Listening and to Summarize	ng Destination Young Small n Exceeding The Small of the S	matic ations ou Ca otitud Talk rpt fr	e: Oi Tele om Y	istenir Readi n – Wr ne Wo phonic ou Cal nones a	ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win –	9 ng Note ocess of aragraph 9 titution reations Writing 9 nograph cription
Unit – III Grammar: To from a Disc Communicati Writing: Narra Unit – IV Grammar: P Sentence Co Reading: Ch Instructions – Unit – V Grammar: S – Cloze Test Speaking: A Excerpt from Specific Voca TEXT BOOK	Grannels - Recon - Recon - Grannels - Recon - Grannels - Recon - Grannels - Union - Grannels - Recon - Grannels - Grannel	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S — Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incide anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Stions — Transitional Words/Phrases — on — Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, Storm Agreement — Gerunds and Infinitive Forms, Prepositions and Articles and Disagreeing — Reading: Skimmir Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English for Technical Can Win — Writing: Identity A Pand Savitha C, English For Technical Can Win — Writing: Identity A Pan	peaking, Readmbled Sentent — Discusses Every Day: peaking, Read Discourse Mail Information — Self-Esteem and Peaking, Readwes— Verbal As — Listening: ng — Reading 1 tifying Trends	ding & Writing Ices – Sentending Tourist An Excerpt from	ice For Destin Tom Young Small In Exceeding Identification of the International Identification of Iden	maticn ation: bu Ca btitud Talk Talk rpt fr	e: Or Y	istenir Readi n – Wr ne Wo phonic ou Car nones a ts from chievin Expres	ng: Takir ng: Pro iting: Pa ord Subs c Conver n Win –	9 ng Notes ocess of aragraph 9 titution reations Writing 9 nograph cription - ioals: Ai h Graph
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Unit – III Grammar: To from a Disc Communicati Writing: Narra Unit – IV Grammar: P Sentence Co Reading: Ch Instructions – Unit – V Grammar: S – Cloze Test Speaking: A Excerpt from Specific Voca TEXT BOOK 1. Sudh Delhi REFERENCE 1. Ashra 2 S. P.	Graenses cussion—Screposion—Screposion—Recon Graubject tusing greeing You (abulary custom parshari, 2016 ES:	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, S.— Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, S. Listening: Listening for Specific of communication — Building Positive ammar, Verbal Aptitude, Listening For Specific of communication — Building Positive ammar, Verbal Aptitude, Listening, S. Verb Agreement — Gerunds and Infinitive Verb Forms, Prepositions and Articles and Disagreeing — Reading: Skimmin Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity and N P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C, English for Technical Can Win — Writing: Transcoding: Identity A P and Savitha C A English	peaking, Readmbled Sentent — Discusses Every Day: peaking, Read Discourse Mail Information Self-Esteem and Peaking, Readwes— Verbal As — Listening: ng — Reading to tifying Trends pinded Edition, Mc	ding & Writin ices – Senten sing Tourist An Excerpt fr ding & Writin arkers – Verl – Speaking: and Image: An ding & Writin Aptitude: Hore Listening an to Summarize and Patterns ication, 2nd Eco	ng Desting Desting Parameter Small In Excession Grant	maticons ations ou Ca bititud Talk rpt fr ss, Ho titifying araphs	e: Or Person of Action of	istenir Readi n – Wr ne Wo phonic ou Car nones ts from chievin Expres	ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win – and Hom n a Desc g your G ssing wit	9 ng Note ocess of aragrap 9 titution sations Writing nograph cription doals: A th Grap

^{*} includes Term Work (TW) & Assignments, Tutorials and Case Studies

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	learn and use various aspects of English vocabulary to perform well in verbal aptitude tests of different types	Applying (K3)
CO2	listen and understand different spoken discourses	Applying (K3)
CO3	present ideas clearly and confidently in formal and informal conversations and discussions	Creating (K6)
CO4	comprehend the given text and respond appropriately for technical and professional purposes	Understanding (K2)
CO5	select appropriate words , phrases and grammatical units and apply them in both spoken and written communication	Analyzing (K4)

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PS01	PSO2
CO1						1.		1	3	1	.1		
CO2			= ,		-	i i		1	3		1		- 7
CO3								2	3	1	2		
CO4						1			3	1	2		
CO5					. =1				3		2		

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN – THEORY

Test / Bloom's Category*	Remembering (K1) %	Understa nding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	-	35	50	=	-	15	100
CAT2		45	35	· - 1	y ee 🛌	20	100
CAT3	-	30	35	35			100
ESE	-	20	40	20	-	20	100

* ±3% may be varied (CAT 1,2& 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - Sr H (English)



1	(Common to all Engi	neering and T	echnology l	orano	ches)			
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	1.	BS	45	7	16	52	120	4
Preamble	To provide the skills to the stude and ordinary differential equation	lents for solving	g different re	al tim	ne pr	oblen	ns by a	applying	matrices
Unit – I	Matrices:	C There	Jakob Fer Si	. 170			9	Tell ?	9
and Eigen vector matrices – Ortho	naracteristic equation – Eigen valuors (without proof) – Cayley – Ha gonal transformation of a symmet on of quadratic form to canonical f	amilton theorer tric matrix to dia	m (Statemen agonal form -	t and Qua	d app adrat	olicati	ions or	nly) - Or	thogona
Unit – II	Ordinary Differential Equation				9				9
Introduction – Se	olution of First order differential ed	quations: Exac	t differential	equat	tions	– Le	ibnitz's	Linear I	Equation
Unit – III	ation – Clairaut's equation - Appli Ordinary Differential Equation			wth a	nd d	ecay			
	l equations of second and higher			ents -	Par	ticula	r Inten	rale for th	9
eax - cosax /	$\sin ax - x^n - e^{ax}x^n$, $e^{ax}\sin bx$ and $e^{ax}\cos ax$	eax cosbx – Diff	erential Equa	ations	s with	h vari	able co	pefficient	s: Euler-
Cauchy's equati	on – Legendre's equation.	, , , , , , , , , , , , , , , , , , ,		1.					
Unit – IV	Applications of Ordinary Diffe							k	9
Method of varia	ation of parameters – Simultan differential equations: Simple h	eous first ord	er linear eq	uatio	ns \	with (consta	nt coeffi	cients –
associated cond	itions need to be given).	iarmonic mond	on – ⊏iecuio	CITO	uits	(וווט	erentia	ıı equatio	ons and
Unit – V	Laplace Transform:				-			-	9
Introduction - Co	onditions for existence - Laplace t	transform of ele	mentary fun	at: a =					
and integrals of			silicitially full	Cuon	s – E	Basic	proper	ties – De	rivatives
and integrals of t	ransforms – Transform of periodic	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu	nctions – Partial fraction method	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu	ransforms – Transform of periodic nctions – Partial fraction method th constant coefficients.	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu second order wi	nctions – Partial fraction method	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu second order with LIST OF EXPER	nctions – Partial fraction method th constant coefficients.	c functions - Inv	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients.	c functions - Inv – Convolution	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
LIST OF EXPER 1. Introduct 2. Compute	nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: ction to MATLAB	c functions - Inv - Convolution /ectors	erse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
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of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: ction to MATLAB ration of eigen values and eigen values and eigen values order ordinary differential equipment of Simultaneous first order ODE second order ODE by variation or	rectors uations equations s f parameters e transform of	verse Laplace Theorem – /	e tran Applio	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fusecond order will LIST OF EXPER 1. Introduct 2. Compute 3. Solving 4. Solving 5. Solution 6. Solving 7. Determ 8. Solution	nctions – Partial fraction method th constant coefficients. RIMENTS / EXERCISES: Etion to MATLAB Lation of eigen values and eigen values and eigen values of eigen values of eigen values of eigen values and eigen values of eigen va	rectors uations equations s f parameters e transform of	verse Laplace Theorem – /	e tran Applio	sfor	m: Inv	verse L	aplace tr	ansform
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^{*}includes Term Work (TW) & Online / Certification course hours

	SE OUTCOMES: upletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Use the matrix algebra methods and MATLAB for solving practical problems.	Applying (K3) Manipulation (S2)
CO2	Identify the appropriate method for solving first order ordinary differential equations.	Applying (K3) Manipulation (S2)
CO3	Solve higher order linear differential equations with constant and variable coefficients.	Applying (K3) Manipulation (S2)
CO4	Apply the concept of ordinary differential equations for modeling and finding solutions to engineering problems.	Applying (K3) Manipulation (S2)
CO5	Apply Laplace Transform to solve complex engineering problems.	Applying (K3) Manipulation (S2)

Mapping	of C	COs	with	POs	and	PSOs
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COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2	1	3			1 1 1/10				-j .	
CO2	3	3	2		3	200	arts in vi	Mark Carlo		A 95		1 _ Al	14
CO3	3	3	2		3		- T	F E = 2	= < 1 =				
CO4	3	3	2		3				, =	T = = = =	TE .	. 1-	
CO5	3	3	3		3								

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		40	60				100
CAT2		40	60	gereich geit	i amerikan	1 - 1	100
CAT3		30	70				100
ESE		30	70			1	100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - \$4 H



	Comments CCE IT CCD	AIDE O AI	IMI branala	5	10.	L			
12 (50) ME	(Common to CSE, IT, CSD,	AIDS & AI	INIL branche	S)					- 17U
Programme& Branch	BE/B.Tech - CSE, IT, CSD, AIDS and AIML branches	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Nil	1	BS	45	0	0	45	90	3
Preamble	This course aims to impart the knowledge on of fiber optics, and semiconductors. It also describes systems.								
Unit – I	Crystal Physics:	17				and the		T Ge	9
Unit – II Blackbody radia	ne, surface and volume imperfections. Quantum Physics and Applications: Ition – Planck's theory – Compton scattering – Ma me-independent and time-dependent wave equation							ainty pri	
Unit – III	Acoustics and Ultrasonics:				*				9
	cound Characteristics of sound Poverheration	and roverh	oration time	Gro	wth a	nd do	cay of c		
Classification of formula for reve remedies – Ul	sound – Characteristics of sound – Reverberation a rberation time – Determination of sound absorption trasonics – Properties of ultrasonic waves – Gennerator – Non-destructive testing – Flaw detection.	coefficier	nt – Factors	affecti	ng ac	coustic	s of bu	sound – :	Sabine's
Classification of formula for reve remedies – Ulf Piezoelectric ge Unit – IV	rberation time – Determination of sound absorption trasonics – Properties of ultrasonic waves – Gennerator – Non-destructive testing – Flaw detection. Laser and Fiber optics:	coefficier eration of	nt – Factors ultrasonic v	affecti /aves	ng ad – Ma	oustic	es of bu	sound – suildings a e genera	Sabine's and thei ator and
Classification of formula for reveremedies – Uli Piezoelectric ge Unit – IV Stimulated absoinversion – Pun	rberation time – Determination of sound absorption trasonics – Properties of ultrasonic waves – Gennerator – Non-destructive testing – Flaw detection. Laser and Fiber optics: Drption – Spontaneous emission – Stimulated emisping – CO ₂ laser – Holography – Fiber optics – ased on refractive index, modes and materials	coefficier eration of ssion – Ei Numerica	nt – Factors ultrasonic v instein's coe al aperture a	affecti vaves fficient	ng ac – Ma ts and cepta	eoustic agneto d thei	es of bu estrictiv r relation	sound – Suildings a e genera	Sabine's and their ator and 9 opulation ocation o
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Classification of formula for reveremedies – Ulf Piezoelectric gerunit – IV Stimulated absolution – Punoptical fibers be displacement serunit – V Intrinsic semicor gap – Extrinsic coefficient – App TEXT BOOK: 1. Katiyar Tamilar	rberation time – Determination of sound absorption trasonics – Properties of ultrasonic waves – Gennerator – Non-destructive testing – Flaw detection. Laser and Fiber optics: Deption – Spontaneous emission – Stimulated emisorping – CO ₂ laser – Holography – Fiber optics – assed on refractive index, modes and materials ensors. Semiconducting Materials: Inductor – Carrier concentration – Fermi level – Varies semiconductors – Carrier concentration in n-type a polications – Solar cell: Principle, construction and work (A.K., Pandey C.K., "Engineering Physics: Theory and asan K and Prabu K, "Physics for Engineering I", IV, V).	ssion – Ei Numerica – Fiber iation of c nd p-type orking.	nt – Factors ultrasonic v instein's coe al aperture a optic comn onductivity w semiconduc	affectivaves fficient action action action actions — Wiley	ts and cepta tion mpera Hall	d their nce a systemature - effect	r relations rela	sound — Suildings are general Pons — Pour Classific emperatemination ermination	Sabine's and thei ator and population oure and of band n of Hal
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*includes Term Work (TW) & Online / Certification course hours

		JTCOM			100	1.51							BT Ma		
On cor	mplet	ion of t	he cours	e, the st	udents	will be a	ble to	last D	325.0	Laboration	de la		(Highest	Level)	
CO1				tal syster es of crys						e, BCC,	FCC, HCF	crystal	Analyzir	ıg (K4)	
CO2				epts of quo							compton et	ffect and	Analyzing (K4)		
CO3	and	to rec	ognize th		ements	of acou	stically	good b	ouildings	and als	e Sabine's to to desc od.		Analyzir	ng (K4)	
CO4	appl thro	ications ugh opt	of laser tical fiber	in engine	ering ar	nd techn eptance	ology. T angle a	o apply and nun	the prin	ciple of perture a	working propagation and also to	n of light	Analyzir	ng (K4)	
CO5	intri	nsic sei	miconduc		to comp	oute the	carrier	concer	ntration of	of extrins	n and band ic semicor olar cell.		Analyzir	ng (K4)	
			3.1.			Mappin	g of CO	s with	POs and	I PSOs	1			Day's	
COs/F	Pos	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2	
CO	1	3	2	2			7		1	1	- F	1		- 5,- 1	
CO	2	3	2	2				-, -	1	1	-	1		1000	
CO	3	3	2	2			-		1	1		1	41		
СО	4	3	2	2					1	1		1			

2 1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

CO5

ASSESSMENT	PATTERN -	THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total
CAT1		40	50	10		c vid Inset	100
CAT2		40	50	10		-600001	100
CAT3		40	50	10			100
ESE	1 1- 1-	40	50	10		v . 1 12 1 A 44	100

 * ±3% may be varied (CAT 1,2,3 – 50 marks & ESE – 100 marks)

Signature of the Chairman Board of Studies - SEH (Physic)





	24CSC12- PROGRAMMI	ING IN	3						
	(Common to CSE, IT, CSD, AIDS	& AIML	branche	es)					
Programme & Branch	B BE/B.Tech - CSE, IT, CSD, AIDS and AIML branches	Sem	Cate gory	L	Т	Р	SL*	Tot al	Credit
Prerequisites	Nil Te la prou de la	11	ES	45	0	30	45	120	4
	titide existence of the particular desired		er een s'r		2.				
Preamble	The course aims to provide exposure to problem fundamental concepts of C Programming. This opposite in various domains								
Unit – I	Introduction to C and Control Statements		×		- 1			72	9
Constants - En	f a C program - Data - Variables – Declaring, a numeration Constants – Keywords – Operators: ements, - Control Structure: Decision-making state	Preced							
Unit – II	Arrays							×	9
	e: Repetitive statements – for loop, while loop, and ensional arrays –Array Operations and Manipulatio		e loop-A	rrays	s: D	eclar	ing an	d initia	lizing 1E
Unit – III	Strings and Pointers						,	U	9
Pointers: Memo	ed functions, Two-dimensional array of strings bry access and pointers, pointer basics, declaring, isms, operations on pointers	initializii	ng, and	deref	erei	ncing	g a poi	nter, p	aramete
Unit – IV	Functions s, The anatomy of a function – Types of functions	18				-			9
	s as arguments to functions – Calling function frome - Storage classes- Pre-processor directives: #de User Defined data types								- variabl
Structure basics	 declaring and defining a structure – nested struction epening and closing files – reading and writing 			edef	– Fi	le Ha	andling	g: Intro	
LIST OF EXPER	RIMENTS / EXERCISES:								
	s for demonstrating the use of different types of operators (Sequential structures)	erators I	ike arithi	metic	, log	gical,	relation	onal, a	nd
2 Program	s to Illustrate the different formatting options for inp	ut and c	output				6		of the
	s using decision-making statements like 'if', 'else if' e structures)	, 'switch	i', and co	onditi	ona	l, un	conditi	onal 'g	oto'
4 Program	s for demonstrating repetitive control statements like	ce 'for', '	while', a	nd 'd	o-w	hile'	(Iterati	ve stru	ctures)
3	s for demonstrating one- and two dimensional arra			1			12	F 1	
6 Program	s to implement various character and string operati	ons with	and wit	hout	buil	t-in I	ibrary	functio	ns.
	s to demonstrate the use of pointers	7			-				
0	s to demonstrate modular programming concepts u	ısing bu	ilt-in and	usei	r-de	finec	l functi	ons	
9 Program	s to illustrate the use of user-defined data types	,	9					7,0	
10 Program	s to implement file handling	Trans.	457						
	s Term Work/TW) & Online / Certification course l								

^{*}includes Term Work(TW) & Online / Certification course hours

TEXT BOOKS Sumitabha Das, Computer Fundamentals and C Programming, 1st Edition, McGraw Hill, 2018 1. **REFERENCES/ MANUAL / SOFTWARE:** YashavantKanetkar. "LetusC", 16th, BPBpublications, 2018. 1. ReemaThareja., "ProgramminginC", 2ndEdition, OxfordUniversityPress, NewDelhi, 2018 2. E.Balagurusamy, "ProgramminginANSIC", seventhedition, McGrawHillEducation, 2017. 3. 4 https://nptel.ac.in/courses/106/105/106105171/ **COURSE OUTCOMES:** BT Mapped On completion of the course, the students will be able to (Highest Level) Applying(K3), CO1 make use of control and iterative statements to develop simple applications Precision(S3) Applying(K3), develop simple C programs using the concepts of arrays and modular programming CO₂ Precision(S3) Applying(K3), CO₃ demonstrate the concepts of strings and pointers Precision(S3) Applying(K3), CO4 apply user-defined data types to solve given problems Precision(S3) Applying(K3), CO₅ implement functions and structures with pointer Precision(S3) Mapping of COs with POs and PSOs **PO7 PS01** PSO₂ COs/POs P01 PO₂ PO₃ **PO4** PO₅ **PO6 PO8 PO9** PO10 PO11 CO1 3 2 2 2 1 1 1 3 1 1 2 2 1 1 1 1 3 CO₂ 3 2 1 3 CO₃ 3 2 2 2 1 1 1 1 1 3 2 1 1 1 1 3 1 CO₄ 2. 2

Signature of the Chairman

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1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

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Board of Studies - CSE

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P. Kalaivami

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	(Common to IT,AIML	economic constitut	S AND DESIG	SN					
Programme & Branch	B.Tech., Information Technology, Artificial Intelligence and Machine Learning & Artificial Intelligence and Data science	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	1	ES	45	0	0	45	90	3
Preamble	This course enables the students to acquire the kr forms and their minimization methods and implement synthesis of various combinational, clocked sequentials.	itation usin	g logic gates.	Also,	this c	course	e cover	s the ana	
Unit – I	Number Systems and Boolean Algebra			14 10					9
	orems of Boolean Algebra – Boolean functions: Realiza	ation of fun	ictions using L	-ogic (jates	– cas	se stud	y.	
Unit – II	Gate Level Minimization						-		9
	Standard Forms of Boolean functions – Minimization of mentation– Exclusive-OR function – case study.	functions	using Karnau	gh Ma	p – D	on't–	Care C	Conditions	S – NANI
Unit - III	Combinational Logic							- Pair Lan	9
Converters - Ma	dure – Design procedure – Half Adder – Full Adder - Ha agnitude Comparator – Decoders – Encoders – Multiple d Decoders– case study.								
Unit - IV	To a second seco								don don
	Sequential Logic						-		9
Introduction - F	│ Sequential Logic Flip-flops					Table	e – Sta	te Diagra	9
Introduction – F Reduction and	Flip-flops – Triggering – Analysis of clocked sequentia Assignment– Mealy and Moore machines and their circ					Table	e – Sta	te Diagra	9
Introduction – F Reduction and A Unit - V Shift Registers:	Flip-flops – Triggering – Analysis of clocked sequentia Assignment– Mealy and Moore machines and their circ Register, Counter and Programmable Logic SISO– SIPO– PISO–PIPO–Universal Shift register– S	cuit design Synchronou	procedure - cause Counters: E	ase sto	udy. Cour				9 nm- State
Introduction – F Reduction and A Unit - V Shift Registers:	Flip-flops – Triggering – Analysis of clocked sequentia Assignment– Mealy and Moore machines and their circ Register, Counter and Programmable Logic	cuit design Synchronou	procedure - cause Counters: E	ase sto	udy. Cour				9 nm- State
Introduction – F Reduction and J Unit - V Shift Registers: – BCD Counter TEXT BOOK: Morris	Flip-flops – Triggering – Analysis of clocked sequentia Assignment– Mealy and Moore machines and their circ Register, Counter and Programmable Logic SISO– SIPO– PISO–PIPO–Universal Shift register– S	cuit design Synchronou PROM – Pl	procedure– ca us Counters: E LA – PAL– ca	ase stu	Cour	nter –	up-do	wn Binar	9 nm- State 9 y Counte
Introduction — F Reduction and A Unit - V Shift Registers: — BCD Counter TEXT BOOK: 1. Morris Edition	Flip-flops — Triggering — Analysis of clocked sequentia Assignment— Mealy and Moore machines and their circ Register, Counter and Programmable Logic SISO— SIPO— PISO—PIPO—Universal Shift register— S—modulo-N Counter— Programmable Logic devices: F—Mano M., MichealD.Ciletti, "Digital Design: With an Intro	cuit design Synchronou PROM – Pl	procedure– ca us Counters: E LA – PAL– ca	ase stu	Cour	nter –	up-do	wn Binar	9 nm– State 9 y Counte
Introduction – F Reduction and A Unit - V Shift Registers: – BCD Counter TEXT BOOK: 1. Morris Edition REFERENCES	Flip-flops — Triggering — Analysis of clocked sequentia Assignment— Mealy and Moore machines and their circ Register, Counter and Programmable Logic SISO— SIPO— PISO—PIPO—Universal Shift register— S—modulo-N Counter— Programmable Logic devices: Fundamental Mano M., Micheal D. Ciletti, "Digital Design: With an Introduced Register— Regi	cuit design Synchronou PROM – Pl oduction to	procedure— cause Counters: ELA – PAL – cause the Verilog H	Binary Se stud	Courdy.	nter –	up-do	wn Binar	9 nm- State 9 y Counte
Introduction — F Reduction and A Unit - V Shift Registers: — BCD Counter TEXT BOOK: 1. Morris Edition REFERENCES 1. Charle	Flip-flops – Triggering – Analysis of clocked sequentia Assignment– Mealy and Moore machines and their circ Register, Counter and Programmable Logic SISO– SIPO– PISO–PIPO–Universal Shift register– S – modulo-N Counter – Programmable Logic devices: F Mano M., MichealD.Ciletti, "Digital Design: With an Introduced Design (Counter), Pearson Education, Noida, 2020.	euit design Synchronou PROM – Pl oduction to	procedure— cause Counters: ELA – PAL – cause the Verilog H	Binary se stud	Courdy.	nter –	up-do	wn Binar	9 nm– Stat 9 y Counte

^{*}includes Term Work(TW) & Online / Certification course hours

		UTCOM ion of t		se, the s	tudent	s will be a	able to		ı II		-		BT Mapp (Highest L	
CO1				erent num an functio		stems and	binary o	codes ar	id apply	Boolean	algebra	to	Applying	(K3)
CO2						arious for ntation usi				inimizatio	on using	Мар	Applying	(K3)
CO3						rcuits like nd demult							Applying	(K3)
CO4	con	construct sequential logic circuits with various Flip flops Applying												
CO5						ers, build v nmable lo			synchroi	nous cou	nters ar	nd	Applying	(K3)
					h .	Mapping	g of COs	s with P	Os and	PSOs	, =	e ='	10 A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ostoje s
COs/P PSO	100	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10) PO1	PSO1	PSO2
CO	1	3	2	1	1		3	3	3	2	2	3	3	2
CO	2	3	2	1	1		3	3	3 .	2	2	3	3	2
CO	3	3	2	1	1		3	3	3	2	2	3	3	2
CO	4	3	2	1-	1		3	3	3	2	2	3	3	2
CO	5	3	2	1	1	9	3	3	3	2	2	3	3	2
1 – Sliç	ght, 2	– Mode	rate, 3 -	- Substar	itial, BT	- Bloom's	Taxono	my						
-		1				ASSESS	CMENT	DATTE	ON TH	EODV			187	
Tos	+ / RI	oom's	Po	member	ina	Understa		Apply	MARK NOV. B	Analyzi	na F	valuating	Creating	Total
	Catego		IVE.	(K1) %	iiig	(K2)	-	(K3)		(K4) %		(K5) %	(K6) %	%
	CAT			D D		50		- 50) '		4.5	nace pr	, ro <i>6</i> -040	100
9	CAT	2				40	ente an	60)		4-1-	- M. I	Thomas 1	100
	CAT	3				40		60)					100
	ESI	-				40	1	60	1					100

Signature of the Chairman

Board of Studies -



		- HERITAGE OF						11k (1p!	
	(Common to All Eng	gineering and Tec	hnology Brar	nches)		y == 1		1 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	NIL	1	HS	15	0	0	15	30	
Preamble	The objective of this course is to impararts, heroic games, doctrines, contribu	rt knowledge abo	ut Tamil lang	uage,	liter	ature	, painting	gs, sculptu	ires, folk
UNIT I	Language and Literature	7							3
sangam literatu buddhism & jai	lies in india - dravidian languages – tami ure – distributive justice in sangam litera nism in tamil land - bakthi literature azh nil - contribution of bharathiyar and bhara	ature - managem wars and nayanr	ent principles	s in th	niruk	ural -	tamil ep	oics and in	mpact o
UNIT II	Heritage - Rock Art Paintings to Mo	dern Art – Sculp	ture					: e04	3
sculptures, villa	modern sculpture - bronze icons - tribes age deities, thiruvalluvar statue at kany aswaram - role of temples in social and e	akumari, making	of musical i	temp nstru	le ca	ar ma s - n	king nridhang	massive to am, parai	erracotta , veenai
UNIT III	Folk and Martial Arts	* ·	- 3 -					-	3
	karagattam - villu pattu - kaniyan kooth	ari e de la compania		- ,					
sports and gam	Thinai Concept of Tamils	n = 1 1	124 TS 1	5.95				1 75 69	3
Sports and gan UNIT IV Flora and faun education and	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cit	ot from tholkappiy ties and ports of	/am and san sangam age	gam l	litera	iture and ir	- aram c	concept of	tamils ·
unit iv Flora and faun	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cit	ties and ports of	sangam age	- exp	ort a	iture and ir	- aram c	concept of ring sanga	tamils -
UNIT IV Flora and faun education and overseas conquents UNIT V Contribution of	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas.	tional Movement	t and Indian e of tamils o	- exp	ire	and in	arts of in	concept of ring sanga andia – sel	tamils am age
UNIT IV Flora and faun education and overseas conquent V Contribution of movement - ro	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Natatamils to indian freedom struggle - the	tional Movement	t and Indian e of tamils o	- exp	ire	and in	arts of in	concept of ring sanga andia – sel	tamils am age
UNIT IV Flora and faund education and overseas conquitation of movement - robooks. TEXT BOOK:	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Natatamils to indian freedom struggle - the	tional Movement cultural influence stems of medicin	sangam age t and Indian e of tamils of the — inscription	- exp Cultu ver th	ire ne ot ma	her p	arts of in	concept of ring sanga ndia – sel int history	tamils am age am age affective for tamils
WNIT IV Flora and faund education and overseas conquitaries UNIT V Contribution of movement - robooks. TEXT BOOK: 1. S.Mu	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils	tional Movement cultural influence stems of medicin	sangam age t and Indian e of tamils of the — inscription	- exp Cultu ver th	ire ne ot ma	her p	arts of in	concept of ring sanga ndia – sel int history	tamils am age am age affective for tamils
WNIT IV Flora and faund education and overseas conquitation of movement - robooks. TEXT BOOK: 1. S.Mu REFERENCES	Thinai Concept of Tamils a of tamils & aham and puram concep literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils to indian freedom struggle - the le of siddha medicine in indigenous systemathuramalingam, M.Saravanakumar, Heritatan description of Tamils to Indian Nata tamils	tional Movement cultural influence stems of medicin	t and Indian e of tamils one — inscription	Cultuver thons &	re ot ma	her p nuscr	arts of in ipts – pr	concept of ring sangarandia – sel rint history	f tamils am age of a frespect of tamil
Sports and game UNIT IV Flora and faund education and overseas conquitaries UNIT V Contribution of movement - robooks. TEXT BOOK: 1. S.Mu REFERENCES Historical Instite The Grant of Samuel Contribution of Movement - robooks.	Thinai Concept of Tamils a of tamils & aham and puram concept literacy during sangam age - ancient cituest of cholas. Contribution of Tamils to Indian National States of Stat	tional Movement cultural influence stems of medicin itage of Tamils, Y	t and Indian e of tamils one — inscription es Dee Publi	Culturer thous &	Pvt	her p nuscr	arts of in ipts – pr	concept of ring sanga andia – sel int history Units I,II,I	f tamils am age 3 f-respect of tami

^{*}includes Term Work(TW) & Online / Certification course hours

COUR	SE OUTCOMES:	BT Mapped
படிப்	பை முடித்தவுடன், மாணவர்கள்	(Highest Level)
CO1	explain valuable concepts in language and literature of tamils.	Understanding (K2)
CO2	illustrate about the tamils sculpture and their paintings.	Understanding (K2)
CO3	summarize about the tamils folk and martial arts.	Understanding (K2)
CO4	explain the thinai concept of tamils.	Understanding (K2)
CO5	explain the contribution of Tamils to the Indian National Movement and Indian culture.	Understanding (K2)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	s. Fr		No.			2	3	2	2	y	3		
CO2	- 1 - 4	1=				2	3	2	2		3		1 11
CO3						2	3	2	2		3		× ,
CO4						2 .	3	2	2		3		
CO5				2- T- F		2	3	2	2		3		- n - 1

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total
CAT1	40	60	= = /	44.	v = e, = _ ==	-	100
CAT2	40	60	н — а				100
CAT3	40	60					100
ESE			1 .	NA	. ,	· · · · · · · · · · · · · · · · · · ·	

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks)

Signature of the Chairman



	24TAM01-தமிழ	ுர் மரபு			1			my W	
	(Common to All Engineering and	d Technol	ogy Branches)		-			3 1
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	T	Р	SL*	Total	Credit
Prerequisites	NIL	1	нѕ	15	0	0	15	30	1
Preamble	தமிழர்களின் மொழி, இலக்கியம், ஓவியங் விளையாட்டுக்கள், திணைக் கோட்பாடுகள், ழ பற்றிய அறிவை வழங்குவதே இந்த பாடத்தில்	இந்திய	பண்பாட்டிற			_		கலைகள பங்கள்	
<mark>அ</mark> லகு <i>-</i> ।	மொழி மற்றும் இலக்கியம்								3 2111
இலக்கியத்தி கருத்துக்கள் ஆழ்வார்கள் இலக்கிய வ	ழிக் குடும்பங்கள் - திராவிட மொழிகள் - தமிழ் ன் சமயச் சார்பற்ற தன்மை - சங்க இலக்கியத் - தமிழ் காப்பியங்கள், தமிழகத்தில் சமண மற்றும் நாயன்மார்கள் - சிற்றிலக்கியங்கள் ளர்ச்சியில் பாரதியார் மற்றும் பாரதிதாசன் ஆகி	த்தில் ப பௌத்த - தமிழீ யோரின்	கிர்தல் அற சமயங்கவ இல் நவீன பங்களிப்பு)ம் - ளின் இல	திரு தாச் க்கிய	க்குர கம் பத்தி	றளில் - பச்	மேலான தி இல ளர்ச்சி -	ன்மைச் க்கியம் தமிழ்
அலகு - ॥	மரபு - பாறை ஓவியங்கள் முதல் நவீன ஓவி ல் நவீன சிற்பங்கள் வரை - ஐம்பொன் சிலை								3
குமரிமுனை தமிழர்களின் அலகு - III தெருக்கூத்து	பொருட்கள், பொம்மைகள் - தேர் செய்யும் கணையில் திருவள்ளுவர் சிலை - இசைக் கருவிகள் சமூக பொருளாதார வாழ்வில் கோவில்களின் நாட்டுப்புறக் கலைகள் மற்றும் வீர் விளையார், கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து	ா - மிரு பங்கு. ட்டுக்கள்	நதங்கம், ப ர	றை,	ഖ്ങ	ळ ा,	யாழ்,	நாதஸ்	வரம் 3
	ாட்டம், தமிழர்களின் விளையாட்டுகள்.			in the					
அலகு - IV	தமிழர்களின் திணைக் கோட்பாடுகள்			Fig. 3	-119				3
கோட்பாடுகள் சங்ககால ந	தாவரங்களும், விலங்குகளும் - தொல்காப்பிய ர் - தமிழர்கள் போற்றிய அறக்கோட்பாடு- சங் கரங்களும் துறை முகங்களும் - சங்ககாலத் சாழர்களின் வெற்றி. இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண் தெலைப்போரில் தமிழர்களின் பங்கு - இந்திய	கக்கால் ந்தில் ஏ ரபாட்டி <u>ர</u> ்	த்தில் தமிழ ரற்றுமதி ம ற குத் தமி ழ	ழகத்தி மற்றுட மர்களி	நில் ம் இ ன் ப	எழு இறக் பங்க	த்தறில குமதி ளிப்பு	பும் கல் - கட	வியும் லகடந்த
இந்திய விடு	த இயுக்கும் இக்கிய முகக்குமுக்கில்		•		_				
இந்திய விடு சுயமரியாதை	த இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல	சித்த	மருத்துவ		_	ாங்கு	-	கல்வெ	
இந்திய விடு சுயமரியாதை		சித்த	•		_	I ங்கு	-		
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK:		சித்த பாறு.	மருத்துவத		_	Iங்கு	-		
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK: 1. ஆ. பூ	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல நபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022,	சித்த பாறு.	மருத்துவத		_	ப ங்கு			
இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES நமிழ	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பூபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, ச : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்)	சித்த மாறு. அலகு 1, ர (வெளி	மருத்துவ <u>த</u>	த்தின் 	L))))	கல்வெ	ட்டுகள்
இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES 1. தமிழ பணி	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, : நக வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்) னித்தமிழ் - முனைவர் இல. சுந்தரம் (விகடன் பிர	சித்த மாறு. அலகு 1, r (வெளி! சுரம்)	மருத்துவத் II,III,IV,V. யீடு தமிழ்நா	ந்தின் ரடு பா	ட்டு	ால் ப))))	கல்வெ	ட்டுகள்
இந்திய விடு சுயமரியாதை கையெழுத்த TEXT BOOK: 1. ஆ ட REFERENCES 1. தமிழ பணி	பப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பூபாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, ச : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்)	சித்த மாறு. அலகு 1, r (வெளி! சுரம்)	மருத்துவத் II,III,IV,V. யீடு தமிழ்நா	ந்தின் ரடு பா	ட்டு	ால் ப))))	கல்வெ	ட்டுகள்

^{*}includes Term Work(TW) & Online / Certification course hours

SE OUTCOMES:	BT Mapped
ப முடித்தவுடன், மாணவர்கள்	(Highest Level)
தமிழ் மொழி மற்றும் இலக்கியத்தில் மதிப்புமிக்க கருத்துக்களை விளக்க முடியும்.	Understanding (K2)
தமிழர்களின் சிற்பம் மற்றும் அவர்களின் ஓவியங்கள் பற்றி விளக்க முடியும்.	Understanding (K2)
தமிழர்களின் நாட்டுப்புற மற்றும் தற்காப்புக் கலைகளைப் பற்றி சுருக்கமாகக் கூற முடியும்.	Understanding (K2)
தமிழர்களின் திணைக் கோட்பாடுகளைப் பற்றி விளக்க முடியும்.	Understanding (K2)
இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு பற்றி விளக்க முடியும்.	Understanding (K2)
	ப முடித்தவுடன், மாணவர்கள் தமிழ் மொழி மற்றும் இலக்கியத்தில் மதிப்புமிக்க கருத்துக்களை விளக்க முடியும். தமிழர்களின் சிற்பம் மற்றும் அவர்களின் ஓவியங்கள் பற்றி விளக்க முடியும். தமிழர்களின் நாட்டுப்புற மற்றும் தற்காப்புக் கலைகளைப் பற்றி சுருக்கமாகக் கூற முடியும். தமிழர்களின் திணைக் கோட்பாடுகளைப் பற்றி விளக்க முடியும். இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்பாட்டிற்குத் தமிழர்களின் பங்களிப்பு பற்றி

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1			1			2	3	2	2	=	3		
CO2			18	A		2	3	2	2	2 2	3		
CO3	1 . 1 . 1					2	3	2	2		3		
CO4			_			2	3	2	2		3		
CO5						2	3	2	2		3		

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT	PATTERN -	THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total
CAT1	40	60	1/2 35.	d x			100
CAT2	40	60			1	9	100
CAT3	40	60					100
ESE	_			NA		,	

* $\pm 3\%$ may be varied (CAT 1, 2 & 3 – 50 marks)

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Board of Studies - S& H (Chemistry)



				24PI	HL11 -	PHYSI	CS LAB	ORATO	DRY FO	R CC	MPU	TER S	YSTI	EMS				
			3						, AIDS	& All	ML br	ranche	s)					
Progra Brancl	amme& h		BE/B.1 branch		CSE, IT	, CSD,	AIDS a	nd AIM	L Se	m.	Cate	egory	L	Т	Р	SL*	тот	Credit
Prered	quisites		Nil					41		1	E	38	0	0	30	0	30	1
Pream	v		freque apertu workin related	ncy, coi re of ar g of p-r I to soci	mpress n optica n diode etal rec	ibility of Il fiber,	a liqui specific JT, and	d, wave resista	elength once, ba	of las	ser, pa ap, th	article : nicknes:	size, s of	acco a thi	eptan n film	ce and	gle and i	ch as AC numerica ge on the / produc
	OF EXPE																	
1.	Deterr	ninat	ion of t	he frequ	uency o	f alterna	ating cu	rrent us	ing elec	trical	lly vib	rating t	uning	fork	(Me	lde's a	pparatus).
2.	Deterr	ninat	ion of t	he wave	elength	of the g	given se	micond	uctor las	ser.				0				
3.	Deterr	ninat	ion of t	he parti	cle size	of the	given po	owder u	sing las	er.								
4.	Deterr	ninat	ion of t	he acce	eptance	angle a	and num	nerical a	aperture	of th	e give	en optic	al fib	er.			11	
5.	Obser	vatio	n of the	e I-V cha	aracteri	stics of	a p-n ju	nction o	diode.		,							***************************************
6.	Obser	vatio	n of the	e I-V cha	aracteri	stics of	a uni ju	nction t	ransisto	r.				7			9	
7.	Deter	ninat	ion of t	he spec	cific res	istance	of the g	iven me	etallic wi	re us	ing C	arey Fo	ster	's bri	dge.			
8.	Deter	ninat	tion of t	he band	d gap o	f a give	n semic	onducti	ng mate	rial u	ısing p	post-off	ice b	ox.				
9.	Deter	ninat	tion of t	he thick	ness o	f a thin	film usir	ng air-w	edge arr	ange	ement	t.	ĸ				- 19	
10.	Writin	coc	ding for	any on	e of the	above	experin	nents / d	developii	ng a	proje	ct / a pr	oduc	t.			,	
REFE	RENCES	6/ M.	ANUAL	/SOFT	WARE													
1.	Labor	atory	Manua	al			:-											
	SE OUT			urse, th	ie stud	ents wi	ll be ab	le to							A ,	_ = #	(Hi	Mapped ghest evel)
CO1				uency o			g currei	nt, the v	vavelenç	gth o	f a se	emicono	ducto	r las	er ar	d the	Analyz	ring (K4) sion (S3)
CO2	detern	inet	he acc	eptance	angle				e of an o	optica	al fibe	er, the I	-V ch	narad	terist	ics of	Analyz	zing (K4), sion (S3)
CO3	detern	nine	the spe	ecific re	sistance	e of a n	netallic	wire, th	e band o		of sen	nicond	ıcting	g ma	terial	s, the	Analyz	zing (K4), sion (S3)
									vith POs		1 PSC)s						(00)
COs/P	POs P	01	PO2	PO3	PO4	PO5	PO6	P07	PO8		09	PO10)		P01	1	PSO1	PSO2
CO		3	2	2	3				3		1		\top		2			1
CO2	2	3	2	2	3				3	_	1				2			>
CO	3	3	2	2	3	*			3	•	1				2			

*includes Term Work (TW) & Online / Certification course hours

Signature of the Chairman Board of Studies - SLH (Physica)

(4)



CPC

		·					I BE/BT		ruring, anches)		· ·			
Programme Branch	&		All BE/	BTech	Branch	es	Se	m. C	ategory	L	ТР	SL*	Total	Credi
Prerequisite	s			Nil			. 1.	/2	ES	0	0 90	0	90	3
Preamble			puter-a	ided De					velop a p s, 3D Pri				basic kn tics and	owledge
LIST OF EXF	PERIM	ENTS /	EXER	CISES:		,			· .		* 7			
				PART	A – Ma	nufactı	iring La	borato	ory (30 H	ours)				
1 Selection	n of pr	oduct, fr	ee han	d sketch	ning and	detailir	ng		o A			4		
2 Constru	ction o	f model	using A	rc/TIG/	MIG/Ga	s/Spot	welding	operati	ions				ui)	
3 Enhanci	ng the	model	with she	eet meta	al									
4 Creating	the pa	arts of tl	ne mod	el using	lathe						i			
5 Creating	the pa	arts of tl	ne mod	el using	milling	and dril	ling mad	chines	al .					
		P	ART B	– Produ	uct Des	ign and	l Develo	pmen	t Labora	tory (30	Hours)			
1 Free ha	nd ske	tching a	nd deta	iling of	the com	ponent	}					r.		
2 3D part	modell	ling of th	ne comp	onent u	using CA	AD softv	vare	7			-	_	7.1	_
3 Enginee	ring A	nalysis	of the c	ompone	nt mode	el			is a					
4 Generat	e the o	compon	ent usir	ng 3D pr	inter	4.						4.		
				PA	RT C -	Roboti	cs Labo	ratory	(30 Hou	rs)				i i
Design o	of elec	tronic ci	rcuit an	d its de	bugging									
2 Assemb	ly and	interfac	ing of s	ensors,	actuato	ors and	wireless	comm	union mo	odules w	ith audr	no UNC)	-
3 Develop	ment o	of embe	dded p	rogramr	ning and	d interfa	cing for	motion	control	and obs	tacle av	oidance		
4 Demons	stration	and te	sting of	robot in	static e	environn	nent							
				R	EFERE	NCES/	MANUA	AL /SO	FTWARE	: :	24	ž.		1
1 Foundat	tion Er	ngineerii	ng Labo	ratory N	Manual		-			W a				*
2 SOLID	WORK	S 2022	Softwa	re		**						ii e		
COURSE OI			ırse, th	e stude	ents wil	l be abl	e to		R 5	2 4			Γ Mappe thest Lev	
CO1	develo		rototype	model	using m			ations	like weldi	ing,		Ap	plying (Ka	3),
CO2	sketch	3D mo	del and	develo	p the pr	ototype	using 3	D printe	er	*			plying (K ecision (S	
CO3	desigr	and de	evelop t	he auto	nomous	robot fo	or real-ti	me apı	olications	· .			plying (K ecision (S	
					Mappin	g of C	Os with	POs a	nd PSOs	S		, ,	_	
COs/POs /PSOs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO ²	1 - F	PSO2
CO1	3	3	3	2				3	2		2			1
CO2	3	3	3	3				3	2		2			
CO3	3	3	3	2				3	2		2			

20%

Starre

Signature of the Chairman Board of Studies - Mechanical

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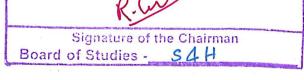


		· · ·		24	4MNT12	- QUAI	NTITATIV	VE AP	TITUDE - I			2	17		
			(C	ommo	n to all E	nginee	ring and	Tech	nology bra	ınche	s)				· · · · · · · · · · · · · · · · · · ·
Program Branch	nme &	All B.	E/B.Tec	h Bran	ches	· ·	Se	em.	Category	L	Т	Р	SL*	Total	Credit
Prerequ	isites	Basic	Mather	natical	skills			1	MC	20	0	0	10	30	0
Preamb	le				lving skil		nhance a	analyti	cal skills.			-		-	
Unit – I	, avatama				Equation		divioibilit	, BO	DMAC Dl	- 11	<u> </u>		20.4	.	6
-Simplif	ication – F	Problem	ıs.						DMAS Rul						
									linear equa	ations	with	ı two ı	/ariabl	les – Ap	plications
Unit - II	aneous li				nd Perce		simple pr	robiem	S.				-		6
Ratio ar	nd Propo	rtion: T	hird, Fo	ourth an	d mean p	proportio			son of ratio			ound	ratio -	Duplica	
									Simple pro						
Unit - II				ss, Inte		ercentag	jes – Pro	biems	on populat	ion –	Pro	biems	on de	preciation	on. 8
Profit ar	nd Loss:	Basic c	oncepts	- Cost	price – S	Selling p	orice – Pr	ofit an	d Loss – S	imple	pro	blems			-
Simple a	and Comp	pound i	interes	t: Conc	epts – Pe	ercentag	e of inter	est – D	Difference b	etwe	en s	imple	intere	st and c	ompound
	- Simple p	orobiem	S.	_						-					1
TEXT B			"0		۸ - 4:4l 4	· · · · · · · · · · · · · · · · · · ·					. = .		0.01		
1.	limited, 2		Quani	itative /	Aptitude 1	or Com	ipetitive i	=xamır	nations", Re	evised	1 Ec	lition,	S.Cha	ind and	company
REFERE	ENCES/ N	/IANUA	L/SOF	TWAR	E:				-						
1.	Abhijit G 2020.	uha,"Qu	ıantitati	ve Apti	tude for	Compet	titive Exa	aminati	on", 7 th Ed	dition,	Мс	Graw	Hill E	Education	on, India,
2.	https://wv	ww.india	abix.cor	n/aptitu	de/quest	ions-and	d-answer	<u>s</u>							***************************************
3.	https://w	ww.gee	ksforge	eks.org	/aptitude-	-questio	ns-and-a	answer	<u>'S</u>						
	E OUTCO			the etc.	danta:	11 ha ah	la 4a		,					ВТ Мар	
CO1					two varia		ile to	17.						lighest	
		1.0												Applying	<u> </u>
CO2					centage									Applying	(K3)
CO3	Solve pr	ofit and	loss, s	imple in	iterest an	nd comp	ound inte	erest p	roblems.				,	Applying	(K3)
	. "				Mappin	g of CC)s with F	Os ar	nd PSOs	·					
COs/PO	s PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	PO9	PO	10	PO1	1 P	SO1	PSO2
CO1	2	2													
CO2	2	2											7		
CO3	3	3				6			1						
1 – Sligh	nt, 2 – Mo	derate,	3 – Sul	bstantia	l, BT- Blo	oom's T	axonomy	/	11					***	-
	ų, [*]	-0			ASSES	SMENT	PATTE	RN - T	HEORY						(6)
	Bloom's gory*		nember (K1) %		Underst		Apply (K3)		Analyzing (K4) %		alu (K5	ating		eating (6) %	Total %
	.Τ1				30		70				, , ,		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	-, ,,	100
CA	T2		0 _		30)	70		tionidade en actividade en actividade						100
CA	T3				30)	70		1				1		100
		1													



 * ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks) *includes Term Work (TW) & Online / Certification course hours







Sermode Ac-	24VEC11 - YOGA AND VALUES	FOR H	OLISTIC DE	VELO	OPM	ENT			
e. Action	(Common to All Engineering	ng and Te	chnology B	ranch	es)				
rogramme & Branch	All B.E./B.Tech. Branches	Sem.	Category	L	Т	P.	SL*	Total	Credit
Prerequisites	Nil	1	HS	15	0	15	0	30	1
E + 3130m (F) + 1		Mad al	March 1274	-	-171	1.57		e a l	H 155 1
Preamble	Yoga or yogasanas are considered as is method to bring harmony of body a of the greatest gifts to the world benefitted by learning yoga.	nd mind	for general v	wellbe	ing.	Yoga	is cor	sidered	as one
Unit – I	Introduction:	5 925 15	almen evi.	(F = 1 = 1 = 1	ele i e		No age		2
and Regulatior & Bandhas - Sl	Yoga – Definitions - Concepts - Aims ar as of Asanas – Classifications of Yogasa hatkarma (Cleansing Practice) - Streams	anas – Pa	atanjali's As	htang	a Yo	ga –			Mudras
Unit – II	Yoga and Mind:								2
	Mind - Five Elements and the Mind - M								Role of
Unit – III	ological problems: Mood Disorders, Major Yoga and Values, Diet:	or Depres	Sive Disorde	er, Cy	ciotn	ymic	Disord	ler.	
	- Social Values - Role of Yoga in Person	nality Int	ogration C	00000	oto o	f Nloti	ural Di	t Not	2
	ve Diet – Soothing Diet – Constructive D		egration - C	oncer	วเร บ	ı wall	irai Die	et - Matt	ıropatny
Unit – IV	Asanas:	1 -			-				2
Prayer - Startin	ng & Closing - Preparatory practices - L	oosening	Practices -	- Mea	ning,	Defi	nitions	and Ob	jectives
of Asanas - Pri	nciples of Practicing Asanas. Asanas: Si	tanding –	Sitting - Pr	one –	Sup	ine –	Surya	namask	ar.
Unit – V	Pranayama and Meditation:								2
Pranayama. P Techniques – N	ctices for awareness - Definitions an ranayama: Nadi Shuddhi - Kapalaba Meditation.								
TEXT BOOK:									
1. Swami 1969.	satyananda saraswathi, "Asana prana	yama mu	dra bandha	a", Bih	nar s	choo	l of yo	oga, 4 th	Edition,
2. Swami	mukthi Bodhanandha, "Hatha yoga prad	ipika", Bi	nar school o	f yoga	a, 4 th	Editi	on, 19	85.	
REFERENCES	S:			7.					
1. B.K.S. I	yenkar, "Yoga the path of holistic health	", DK Lim	ited, 2 nd Ed	ition, 1	1969				
2. Selvara	su, "Kriya cleansing in yoga", Aruvi yoga	a, 3 rd Edit	ion, 2002.	1.5			× , , 2	- f	-
Z. Selvara	isu, "Kriya cleansing in yoga", Aruvi yoga	a, 3° Edit	ion, 2002.	24	-	-		2	-

	SE OUTCOMES: npletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	realize the importance of yoga in physical health.	Applying (K3)
CO2	realize the importance of yoga in mental health.	Applying (K3)
CO3	realize the role of yoga in personality development and diet.	Applying (K3)
CO4	do the loosening practices, Asanas and realize its benefits.	Applying (K3)
CO5	do the practice of Pranayama, meditation and realize its benefits	Applying (K3)

Map	oing of	COs with	POs	and PSOs	
					•

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011
CO1	4 9 80 1			- , .	6-	3		2	1		
CO2						3		2		4-5	
CO3	1		7			3	a .	3	- / -	Townships	
CO4						3		2	3		
CO5	T ABOUT					3		. 3			

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT	PATTERN -	THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzin g (K4) %	Evaluati ng (K5) %	Creating (K6) %	Total %
CAT1	e le mari	- <u>-</u>			r - Emily		=
CAT2	,		-	-		<u>.</u>	
CAT3	20	30	50	-	-		100
ESE		<u>-</u>			-	-	-

* ±3% may be varied (CAT3 - 100 marks)

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U Unature of the Chairman
Board of Studies - S& H (modfs)



	(Common to all E	ingineering and	Technology by	ranches	s)		1 3		
Programme & Branch	All B.E/B.Tech Branches	Sem	Category	L	T	Р	SL*	Total	Credit
Prerequisites	Nil	2	HS	45	0	0	45	90	3
Preamble	This course aims at up skilling students in practicing the langua and academic contexts.	ge skills to acc	quire verbal an	id com	munic	write a	as well proficie	as to fac ncy in pro	ilitate the ofessiona
sUnit – I	Grammar, Verbal Aptitude, List	ening, Speakir	ng. Reading &	Writin	a				9
to a Match Comm Etiquette – Readi <i>Atomic Habit</i> s Wr i	, Compound, and Complex Senten entary and Filling in a Table – List ng: Scanning a Text, Power Point ting: Business Letters: Enquiry and	ening to TED ta Presentations Complaint	alks - Speakin – The Best V	g: Apol Vay to	logizir Start	na – T	alking a	about Mar : An Exc	nners and erpt from
Unit – II	Grammar, Verbal Aptitude, List and Indirect Speech – Verbal Apti	ening, Speakir	ig, Reading &	Writin	g				9
Choices and Profe	ng Information – Career Related ssional Skills – Reading: Reading An Excerpt from <i>Atomic Habits</i> - Wr	for Local and G iting: Job Appl	Blobal Compret lication: Cover	nension	- Ho	w to I	Find and	Fix the	auses o
W1116 111	Grammar Verbal Antitude Liet	ening Speaking	na Readina 9	Mritim	~	toour	16 – Sil		
	Grammar, Verbal Aptitude, List	ening, Speakir	ng, Reading &	Writin	q				9
Grammar: Active	and Passive Voice - Verbal Aptitu	de: Error Spotti	ng, Reading & ng – Sentence	Writin	g /emer	nt – A	obreviat	ions and A	9 Acronyms
Grammar: Active - Listening: Liste	and Passive Voice – Verbal Aptituning to Podcast Interviews and New	de: Error Spotti	ng, Reading & ng – Sentence Speeches – Sr	Writin Improv	g /emer a: Pre	nt – Al	obreviat	ions and A	9 Acronyms
Grammar: Active - Listening: Liste Opinions about P	and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev odcast – Reading: Reading a Pr	de: Error Spotti vs/Motivational ocedure – Cro	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co	Writin Improv peaking ommun	g /emer g: Pre icatio	nt – Al esentii n - H	obreviating a Poi	ions and A	9 Acronyms / – Giving
Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac	and Passive Voice – Verbal Aptituning to Podcast Interviews and New	de: Error Spotti vs/Motivational ocedure – Cro	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co	Writin Improv peaking ommun	g /emer g: Pre icatio	nt – Al esentii n - H	obreviating a Poi	ions and A	9 Acronyms / – Giving
Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac based Essays	and Passive Voice – Verbal Aptitu ning to Podcast Interviews and Nev odcast – Reading: Reading a Pr I Habits Impossible: An Excerpt fro	de: Error Spotti vs/Motivational ocedure – Cro m <i>Atomic Habit</i> :	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T	Writin Improverse Deaking Ommun Types o	g /emer g: Pre icatio f Essa	nt – Al esentii n - H	obreviating a Poi	ions and Ant of View Make Goo	9 Acronyms / – Giving od Habits d Opinior
Grammar: Active – Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV	and Passive Voice – Verbal Aptituning to Podcast Interviews and Newodcast – Reading: Reading a Pril Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List	de: Error Spotti vs/Motivational ocedure – Cro m Atomic Habiti ening, Speakir	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T	Writin Improved the community of the com	g /emer g: Pre icatio f Essa	nt – Al esentii n - H ays: 7	obreviating a Poi ow to I Argumei	ions and Ant of View Make Goo ntative and	9 Acronyms / – Giving od Habits d Opinior
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bace based Essays Unit – IV Grammar: If/Conc	and Passive Voice – Verbal Aptituning to Podcast Interviews and Newodcast – Reading: Reading a Pril Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Co	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T ng, Reading & evices - Verba	Writin Improved the community of the com	g /emer g: Pre icatio f Essa g ude:	nt – Alesentii n - H ays: /	obreviating a Poi ow to I Argumei	ions and Ant of View Make Goontative and	9 Acronyma
Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit – IV Grammar: If/Conc Selection – Listen	and Passive Voice – Verbal Aptituning to Podcast Interviews and Newodcast – Reading: Reading a Pril Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, List litional Clause – Modals Verbs – Coing: Listening and Filling a Mind Mind Mind Mind Mind Mind Mind Mind	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co s – Writing: T ng, Reading & evices - Verba o Interviews, C	Writin Improve the seaking of the se	g /emer g: Pre icatio f Essa g ude:	nt – Alesentii n - Hays: /	obreviating a Poi ow to I Argumen nce Cor	ions and Ant of View Make Goontative and	9 Acronym: / – Giving d Habit: d Opinion 9 Sentence
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Grammar: Active - Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte Communication: M Atomic Habits Wri Unit - V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits - Writing: TEXT BOOK:	and Passive Voice – Verbal Aptituming to Podcast Interviews and New odcast – Reading: Reading a Professional Clause – Modals Verbs – Communications: Listening and Filling a Mind Merviewing Classmates - Reading: Flodes of Technology-based Communication – Verb – Ing for key points – Speeches of New Pool of Policians and Technology – Reading Communication – The Goldilocks Report Writing: IV Report and Case	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speaking onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speaking Preposition cor New Inventions ng: Categorizing s Rule: How to Study Report	ng, Reading & ng – Sentence Speeches – Sp ss Cultural Co ss – Writing: T ng, Reading & evices - Verba o Interviews, Co rmation, Rese w to Stick with and Document ng, Reading & mbinations – V – Speaking: g Information - Stay Motivate	Writin Improvocation Improvoca	g yemer g: Pre icatio f Essa g ude: y talks y for S Habi is/We g Apti for a nical (e.e.)	Sentes Supports Evide: In Grant Series Supports Evide: In Grant	obreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day es Coding iving Penunication k: An E	ions and Ant of View Make Good Intative and Interesting Action Commission - Interesting and Department on Effective Accerpt from	9 Acronyme 7 – Giving 8 d Habit 9 Sentence dvice and Technica erpt fron 9 coding - Talking we use o
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Grammar: Active Listening: Liste Opinions about P Inevitable and Back based Essays Unit – IV Grammar: If/Conc Selection – Listen Suggestions – Inte Communication: M Atomic Habits Wri Unit – V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits – Writing: TEXT BOOK: 1. Sudharsha Delhi, 2016 REFERENCES: 1. Ashraf Rize S. P. Dhan	and Passive Voice – Verbal Aptituming to Podcast Interviews and New odcast – Reading: Reading a Professional Excerpt from Habits Impossible: An Excerpt Impossible: An Excerpt Impossible: An Excerpt Impossible: An Impossible: A	de: Error Spotti vs/Motivational ocedure — Cro m Atomic Habits ening, Speakir onversational D ap — Listening to Reading for Info unication — Ho views: Product a ening, Speakir Preposition cor leve Inventions ng: Categorizing s Rule: How to Study Report Fechnical Comm on, 2nd Edition,	ng, Reading & ng – Sentence Speeches – Speeches – Speeches – Writing: Tong, Reading & evices - Verba of Interviews, Commation, Resew to Stick with and Document ng, Reading & mbinations – Speaking: g Information - Stay Motivate munication, 2nd	Writin Improved the community of the com	g yemer g: Pre icatio f Essa g ude: / talks g for S Habi iss/We g Apti for a nical (fe and	Sente Sente Serte Supports Events Events Gomm Wor	obreviating a Poi ow to I Argumen nce Con eaking: rting Every Day es Coding iving Penunication k: An E	ions and Ant of View Make Goothative and Frection — Giving Addidence — An Excorpt and Deermission — Con: Effective excerpt from Fresty Press	9 Acronym 7 – Giving 8 d Habit d Opinion 9 Sentence dvice and Technica erpt from 0 Coding - Talking ve use of m Atomic

^{*} includes Term Work (TW) & Assignments, Tutorials and Case Studies

2020 20 0 0 0 0 0	SE OUTCOMES: upletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	construct contextual and functional grammar to enhance the linguistic competence	Applying (K3)
CO2	listen, comprehend and infer implied meanings of the given text	Applying (K3)
CO3	speak clearly to develop competence to participate in oral discourses such as discussions / meetings / interviews and deliver presentations	Creating (K6)
CO4	critically read various texts by understanding contextual meanings and respond appropriately	Understanding (K2)
CO5	Analyze different genres of writing and making precise non-technical and technical documents	Analyzing (K4)
, VI (-	Mapping of COs with POs and PSOs	

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PS01	PSO2
CO1	a a mystic	ent.			system in	1 1	ومستهاج	1	3	1	1		
CO2	ie i							2	3	-3,	1		E .
CO3					1 42 -		1 7	2	3	1	2	i in lega	
CO4						1		. 4.7	3	1	2		er f
CO5	,=								3		2		- 11

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understand ing (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	-	30	70		The State of the S	<u> </u>	100
CAT2		30	35		67 July 1197 4	35	100
CAT3	- 1, 1-	20	45	35	15 15 15 15 15 15 15 15 15 15 15 15 15 1		100
ESE	-	20	55	10		15	100

* $\pm 3\%$ may be varied (CAT 1, 2& 3 – 50 marks & ESE – 100 marks)

Door.

Signature of the Chairman Board of Studies - SaH (English) J. Region



ngdet, in art 4	(Common to AIDS ar	nd AIML	branches)			2			4. 1
Programme & Branch		Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites		2	BS	45	7	16	52	120	4
									5.32
Preamble	To impart knowledge and problem solving c handling real time applications in Artificial in			y and	sta	tistica	conce	pts nece	ssary fo
Unit – I	Probability and Random Variables:							1 E-4	9
Discrete and	Axioms of probability – Conditional probability of Continuous random variables – Probability raction – Moment generating functions.	– Total mass fur	probability – nction – Pro	Baye babili	e's t ity c	heore lensity	m – Ra r functi	andom v on – Cu	ariable ımulativ
Unit – II	Standard Probability Distributions:		information -						9
Discrete Distr	ibutions: Binomial distribution – Poisson distribution – Gaussian distribution.	ibution	- Continuou	s Dis	strib	utions	: Unifo	rm distr	
Unit – III	Two Dimensional Random Variables:	· 10							9
	Joint probability distributions - Marginal and	conditi	onal distribut	tions	- (Covari	ance -	Correla	
regression.									
Unit – IV	Testing of Hypothesis:								9
difference of n	Critical region and level of significance – Types neans – Small sample tests: Student's t-test for mparison of variances – Chi-square test for inde	testing s	significance of	of sing	tes gle r	ts: Z- mean	test for and dif	single n ference o	nean an of mean
Unit – V	Design of Experiments:		1						9
Analysis of va	riance - One way classification: Completely F	Randomi	zed Design -	- Tw	o w	ay cla	ssificat	ion: Rar	domize
1. Introd	duction to R studio.	<u> 6.00</u>	el o de la			er (51			LT
	ifying probability involving discrete and continuc							Parent Into	
	outation of probability using Binomial, Poisson a								
4. Findi	ng the Marginal and conditional distributions of	two-dime	ensional rand	lom v	⁄aria	ble.			
5. Com	outation of correlation coefficient for the given d	ata.							
6. Testi	ng significance of means by student's t – test.							1-0.	la la
7. Testi	ng the independence of attributes by Chi-square	e test.				5 9			1.37
8. Analy	ze whether the difference in means is statistica	ılly signif	icant by com	plete	ly ra	andom	ized de	esign.	
TEXT BOOK:			-						
	las C.Montgomery, George C.Runger, "Applied & Sons, Inc, USA, 2018.	d Statisti	ics and Prob	ability	y fo	r Engi	neers",	7 th Editi	on, Joh
REFERENCE	S/ MANUAL / SOFTWARE:							-	
1. Editio	m Mendenhall, Robert J. Beaver and Barbara n, Cengage Learning, USA, 2013.								
^{2.} 2016	. Devore., "Probability and Statistics for Enginee							· 	
o. Pears	son. R.A., Miller. I and Freund. J., "Miller and F son Education, India, 2018.								
4. S.C.C 2022	Gupta, V.K.Kapoor, "Fundamentals of Mathemat	ical Stati	istics", 12 th Ed	dition	, Su	Itan C	hand &	Sons, N	ew Delh
5. Proba	ability Theory and Inferential Statistics Laborato	ry Manu	al.						
	udes Term Work (TW) & Online / Certification of								

*includes Term Work (TW) & Online / Certification course hours

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Interpret the concept of random variables and know the basics of R studio	Applying (K3) Manipulation (S2)
CO2	Apply the standard probability distributions in engineering problems.	Applying (K3) Manipulation (S2)
CO3	Apply the concepts of two dimensional random variables and regression in intelligent systems.	Applying (K3) Manipulation (S2)
CO4	Apply statistical tests for solving engineering problems involving small and large samples.	Applying (K3) Manipulation (S2)
CO5	Apply the concepts of analysis of variance to experimental data.	Applying (K3) Manipulation (S2)

Mapping of COs with POs and PS	Os
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COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	1		3		125.49		977 117	4742.11			Ten C
CO2	3	3	2		3					2		-,	
CO3	3	3	2	3	3	1							
CO4	3	3	3	3	3	- 1							r prijer
CO5	3	3	3	3	3								

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSES	SMENT	PATTERN	- THEORY
AUULU			- IIILUKI

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	i e šie i	30	70				100
CAT2		. 30	70		A to get about 1		100
CAT3	2	30	70				100
ESE		30	70	- (,-,-	Transact Area by		100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

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	(Common to EEE, EIE, ECE, CSE, C	CSD, IT, AIDS	& AIML bra	nches	s)				·
Programme & Branch	B.E - EEE, EIE, ECE, CSE, CSD, B.Tech - IT, AIDS & AIML branches	Sem.#	Category	L	т	Р	SL*	Total	Credit
Prerequisites	Nil	1/2	BS	45	0	0 .	45	90	3
Preamble	This course aims to emphasize the engineering storage devices, organic electronic materials, far management. It aims to impart the fundament societal applications.	abrication of F	CBs, insulat	ing m	ateri	als a	nd the	need for	e-waste
Unit – I	WATER TECHNOLOGY						×	- !	9
hardness of wate disadvantages of carbonate and cal Unit – II Batteries: Introdu	es of water - hardness of water- expression of harder by EDTA method – determination of alkalini using hard water in industry: scale, sludge and begon conditioning - External treatment method - delection - discharging and charging of battery - chardary battery: Ni-Cd battery -modern battery: lithiu	ity - DO, BO poiler corrosio mineralization racteristics of	D and COE n - softening process and battery - type	of water	finitionater: rse of	on a Inter osmo	nd Sig rnal tre osis. – prim	nificance atment p	only) process
Cells: Introduction	n - Importance and classification of fuel cells - des	scription, princ	iple, compor	ents	and				
	ric acid fuel cell and direct methanol fuel cell - com	parison of ba	tteries with fu	iel ce	lls.			_ 1	
Unit – III	ORGANIC ELECTRONIC MATERIALS nic Materials: Introduction – types of organic ser								9
	naterials – organic light emitting diodes – constru	uction and wo	orking mecha	anism	- cc	ompa	arison o	of LCD v	s OLED
	naterials – organic light emitting diodes – construction – electroplating (copper) process - INSULATING MATERIALS	uction and wo	orking mecha	anism	- cc	ompa	arison o	of LCD varcuit boar	s OLED
Fabrication of PC fabrication. Unit – IV Introduction - requestration in the community of	B: Introduction – electroplating (copper) process - INSULATING MATERIALS uirements - classification (solid, liquid & gas) - pre - solid organic insulator: epoxy resin - liquid insu g electrical resistivity of materials - composition, pre	electroless p eparation, projulator: transfo	orking mechalating (nickel perties and a primer oil - ga	pplica	etion	ompa – pri s of :	nted ci	of LCD vercuit boar organic i	s OLED rd (PCB 9 nsulator sistivity
Fabrication of PC fabrication. Unit – IV Introduction - requestion materials factors influencing	B: Introduction – electroplating (copper) process - INSULATING MATERIALS uirements - classification (solid, liquid & gas) - pre - solid organic insulator: epoxy resin - liquid insu g electrical resistivity of materials - composition, pre	electroless p eparation, projulator: transfo	orking mechalating (nickel perties and a primer oil - ga	pplica	etion	ompa – pri s of :	nted ci	of LCD varcuit boar organic i organic i ctrical res	s OLED rd (PCB 9 nsulator sistivity
Fabrication of PC fabrication. Unit – IV Introduction - requesteramic materials factors influencing polymers as elect Unit – V Introduction - E- V human health - newaste (magnetics)	B: Introduction – electroplating (copper) process - INSULATING MATERIALS uirements - classification (solid, liquid & gas) - pre - solid organic insulator: epoxy resin - liquid insulator: electrical resistivity of materials - composition, proceed insulator.	electroless peparation, pro- ulator: transforoperties and a s substances in techniques in	perties and a perties are oil - gas applications of the control of the	anism) proc applicate instance in the second in the secon	ational ationa	s of s r: SF istivit	solid in solid in solid in set energy aste on emistry ess) - d	organic in ctrical reservises. Nice	s OLED rd (PCB 9 nsulator sistivity chrome 9 nent and ing of e
Fabrication of PC fabrication. Unit – IV Introduction - requester materials factors influencing polymers as elect Unit – V Introduction - E- V human health - new waste (magnetics)	B: Introduction – electroplating (copper) process - INSULATING MATERIALS uirements - classification (solid, liquid & gas) - presidence of electrical resistivity of materials - composition, presidence insulator. E-WASTE AND ITS MANAGEMENT Waste definition - sources of e-waste — hazardous deed for e-waste management - waste minimization deep arration, eddy current, density separation - reconstructions.	electroless peparation, pro- ulator: transforoperties and a s substances in techniques in	perties and a perties are oil - gas applications of the control of the	anism) proc applicate instance in the second in the secon	ational ationa	s of s r: SF istivit	solid in solid in solid in set energy aste on emistry ess) - d	organic in ctrical reservises. Nice	s OLED 9 nsulator sistivity chrome 9 nent and ing of e
Fabrication of PC fabrication. Unit – IV Introduction - requesteramic materials factors influencing polymers as elected. Unit – V Introduction - E - V human health - newaste (magnetic semethods of e- was methods of e- was methods.) TEXT BOOK: 1. Roussak 2013, for	B: Introduction – electroplating (copper) process - INSULATING MATERIALS uirements - classification (solid, liquid & gas) - pre - solid organic insulator: epoxy resin - liquid insu- g electrical resistivity of materials - composition, pre- rical insulator. E-WASTE AND ITS MANAGEMENT Vaste definition - sources of e-waste – hazardous- ed for e-waste management - waste minimization- separation, eddy current, density separation - reco- ste - Incineration, pyrolysis, land fill - global scenar , O.V. Gesser, H. D. " Applied Chemistry: A Te- Unit I, II.	electroless peparation, propulator: transform operties and a substances in techniques	perties and a perties are of a perties and a perties and a perties and a perties are of	anism) prod applicate inside the second indicate in the second in the s	- ccess ation: ation: res s of aste - aing p - cas	ompa pri s of : s of : SF istivit	solid in sol	organic in ctrical reservironn of recyclisposal tr	s OLED rd (PCB 9 nsulator sistivity chrome 9 nent and ing of e reatmen
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Fabrication of PC fabrication. Unit – IV Introduction - requestration in the polymers as elected. Unit – V Introduction - E- V Introduction - E- V human health - newaste (magnetic smethods of e- was methods of e- was methods of e- was methods. 1. Roussak 2013, for Palanisan Edition, P	B: Introduction – electroplating (copper) process - INSULATING MATERIALS uirements - classification (solid, liquid & gas) - pre - solid organic insulator: epoxy resin - liquid insulator: g electrical resistivity of materials - composition, pre rical insulator. E-WASTE AND ITS MANAGEMENT Waste definition - sources of e-waste – hazardoused for e-waste management - waste minimization separation, eddy current, density separation - recorded to the composition of the	electroless perparation, propulator: transform operties and a substances in techniques in techniques in the control of e-waste extbook for Electrol of	perties and a perties are of a perties and a perties and a perties and a perties are of	anism) prod applicate inside the second indicate in the second in the s	- ccess ation: ation: res s of aste - aing p - cas	ompa pri s of : s of : SF istivit	solid in sol	organic in ctrical reservironn of recyclisposal tr	s OLED rd (PCB g nsulator sistivity chrome g nent and ing of e reatmen
Fabrication of PC fabrication. Unit – IV Introduction - requestration in the second content of the second co	B: Introduction – electroplating (copper) process - INSULATING MATERIALS uirements - classification (solid, liquid & gas) - pre - solid organic insulator: epoxy resin - liquid insulator: g electrical resistivity of materials - composition, pre rical insulator. E-WASTE AND ITS MANAGEMENT Waste definition - sources of e-waste – hazardoused for e-waste management - waste minimization separation, eddy current, density separation - recorded to the composition of the	electroless peparation, propulator: transformer and a substances in techniques in techniques for e-waste extbook for Electroless and K., Kows V, V.	perties and a pe	effect leach leach leach lodia	- ccess ation: ulato res s of aste - cas	ompa — pri ss of : r: SF e-wa — che poroce e stu ogists	solid in sol	organic in ctrical reservironn of recyclisposal tr	s OLEC rd (PCE 9 nsulato sistivity chrome 9 nent an ing of e reatmer

*includes Term Work(TW) & Online / Certification course hours

1st sem for EEE, EIE, ECE & 2nd sem for CSE, CSD, IT, AIDS & AIML

A. A. A. A. A. A.	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	analyze the water quality parameters for suitability of industrial and domestic applications.	Analysing (K4)
CO2	examine the chemistry of energy storing devices and meeting the future prospectus of energy storage.	Analysing (K4)
CO3	simplify the working mechanism of organic electronic materials and apply the concept of plating techniques in PCBs fabrication.	Analysing (K4)
CO4	identify the suitable insulating materials for industrial applications.	Analysing (K4)
CO5	categorize the e-waste and reduce its impacts on future environment.	Analysing (K4)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	1		1					1.		
CO2	3	2	1	1									- 4
CO3	3	2	1	1	v Ti							r	
CO4	3	2	1	1		~	· ·	3					
. CO5	3	2	3	1		2	17			4	-		

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total
CAT1		40	50	10			100
CAT2	P	40	50	10			100
CAT3		40	50	10		_ x	100
ESE	, I	40	50	10	×		100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman

Board of Studies - らんり

N O		24ADC21 - PYTHON PE	ROGRAI	MMING	,			-		
(Co	mmo	n to Artificial Intelligence and Data Science &Art	tificial In	itelligence a	nd Ma	chin	e Lea	rning l	oranche	s)
Programme Branch	&	B.Tech – Artificial Intelligence and Data Science & B.Tech – Artificial Intelligence and Machine Learning	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisite	s	Nil	2	ES	45	0	30	45	120	4
Preamble) 	This course provides practical exposure to basic programming, GUI and Web programming.	concept	s of Python P	rogra	mmin	g incl	uding c	bject- or	iented
Unit – I	-	Introduction:							19	9
Basic Conce Calendars an	epts: k id cloc	Keywords, identifiers and variables- Data types – tyks.	pe castir	ng – user inp	ut – o	perat	ors –	Flow c	ontrol sta	atements
Unit – II		Functions and Data Structures:	A SECTION				FEREN	The second	DATES OF THE PARTY OF	9
 nested lists Basics of Cre 	. Tuple	 function arguments – modules – Recursion – Speces: Creating, initializing and accessing – tuple functionitializing and accessing – dictionary functions and 	ions – sw	vapping tuple	s, unp	g, tra ackir	ng tup	les – D	siicing –ī ictionarie	unctions es:
Unit – III	i shates	Object Oriented Programming:								9
Concepts of Inheritance a	f OOF nd Na	 OOP concepts for Python – Built in Attributemespace – Method types – Exceptions: Built-in and 	es and User de	methods – p fined excepti	oolym ons.	orphis	sm –	operat	or overl	oading -
Unit – IV		Strings, Files and Regular Expressions:			4			.1161	£ dagge	9
Strings : Buil packages. Fil	t-in me les: Fil	ethods for string manipulation – Modules and Pack e operations – Reading and Writing a file. Regular	kages: in Express	nport stateme sions: match,	ent – s searc	creati ch, su	ng us ıb, fin	er defi d all an	ned mod d finite fu	ules and inctions.
Unit – V		Databases and Web Frameworks:								9
4		ENTS / EXERCISES:	1							
_		rate tuple, list and dictionary operations			_	× ,	-	2 32		
3. Dei	monst	rate the use of constructors								
4. Imp	olemer	nt different types of inheritance								
5. De	monst	rate the usage of exception handling	- 🔻 -	i i Kara i		384		L DOM	f-a de	and a l
6. Exp	olore s	tring manipulation functions		<u> </u>			. 6	***		
7. Use	e file c	oncepts to perform operations		, i		. 104.				
	form v	validation of inputs using Regular Expressions				- 1		119		
		a web application using Flask	(13	e Charmia	Ti lo	210	<i>L</i>			,
*includes Te TEXT BOOK		ork(TW) & Online / Certification course hours	DAME OF BRANCH SER		1	330	97.55	ta .m	60 <u>[</u>	
		pta, G P Biswas. "Python Programming", 1"Edition,	. McGrav	v Hill Educati	on. 20)20 fc	or Unit	s I II III	IV	
			,cordv	- III Ladoati	J., 20	20 10	. 0111	1,11,111	1. V.	
2. https	.//wwv	v.javatpoint.com/flask-app-routing for Unit V.								*.

REFE	ERENCES/ MANUAL / SOFTWARE:
1.	Bill Lubanovic, "Introducing Python Modern Computing in Simple Packages", 2nd Edition, O'Reilly Media, 2019.
2.	Samuel Dauzon, Aidas Bendoraitis and Arun Ravindran. "Django: Web Development with Python", 1st Edition, Packt Publisher, 2017.
3.	Software: Python
4.	Laboratory Manual

	SE OUTCOMES: upletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	demonstrate the use of input, output and flow control function in python	Applying (K3), Precision(S3)
CO2	design and develop Python Programs using core data structures like Lists, Tuples and Dictionaries.	Applying (K3), Precision(S3)
CO3	implement the concepts of object-oriented programming using Python.	Applying (K3), Precision(S3)
CO4	develop python programs using File Operations and searching pattern using regular expressions.	Applying (K3), Precision(S3)
CO5	implement web applications related to Databases using flask and Web Services.	Applying (K3), Precision(S3)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	2			-			3.60		3	2
CO2	3	2	2	2			- 11 _	-		117 -X 7		3	3
CO3	3	2	2	2	-							3	3
CO4	3	2	2	2		-			-54	20.00	1	3	3
CO5	3	2	2	2	2	*		= 14		ı ×		3	3

1- Slight, 2- Moderate, 3- Substantial, BT- Bloom's Taxonomy

Portal : Code Tantra

Signature of the Chairman

Board of Studies - CSE, DT



((Common t	o Artificial Intelligence and Data Science and Ar	tificial Ir	ntelligence a	nd M	achin	e Lea	arning	branche	s)
Prograr Branch		B.Tech – Artificial Intelligence and Data Science & B.Tech – Artificial Intelligence and Machine Learning	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequ	uisites	Nil	2	PC	45	0	30	45	120	4
Preamb	le	This course imparts knowledge on data science processing and visualization. It also aims to processing techniques								
Unit -		Fundamentals of Data Science							- 1	9
Relation	nship with o	ficial Intelligence - Machine Learning - Data Scie ther fields – Relationship between data science a of data – Data Collection – Data Preprocessing.	ence and and infor	d its Relation mation scien	nships ice –	S – D Com	ata S putation	Scienc onal T	e: Applic hinking -	ations - Skills -
Unit – II	l , etc	Data Processing and Visualization	-	= 1 (0)						9
		n – Reshaping - Operations. Matplotlib: Scatterplot ary - accessing rows and columns - conditional acce							m. Pand	as:
Unit – II		Regression				3				9
		ression – Regression Models – Linear Regression N	Model an	d Machine Le	earnin	a – F	valua	tina M	odel Qua	
different	t metrics - I	nsurance cost prediction problem.	riodo: ari	a maonino E	Jarrin	9 -	·vaiaa	ung w	odor dad	iity usiii
Unit – ľ		Feature Engineering			-				,048. TH	9
Feature										
and Line	e Engineerin	g - Insurance cost modelling problem - Reasons	for Mod	el Errors – R	ectific	ation	of Me	odel E	rrors - C	verfittir
and Und	derfitting – C	g – Insurance cost modelling problem – Reasons Periving Data to Train the Model – Train/Test Split o	for Mode on the Ins	el Errors – R surance Probl	ectific em.	ation	of Mo	odel E	rrors – C	verfittir
and Und	derfitting – D	Periving Data to Train the Model – Train/Test Split o Classification	n the Ins	surance Probl	em.				- 1	9
and Und Unit - V	derfitting – D	Deriving Data to Train the Model – Train/Test Split o Classification sification – Approach followed by Classification Al	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ression
unit – V Introduc Evaluati	derfitting – D V etion to Clasing Classific	Periving Data to Train the Model – Train/Test Split o Classification	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ession
Unit – V Introduc Evaluati with Cor	derfitting – E / ction to Clas ing Classific nfusion Mate	Deriving Data to Train the Model – Train/Test Split o Classification sification – Approach followed by Classification Aleation Model Accuracy – Classification with Logisti	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ession
Unit – V Introduc Evaluati with Cor	derfitting – E	Deriving Data to Train the Model – Train/Test Split of Classification Is ification – Approach followed by Classification Aleation Model Accuracy – Classification with Logistic ix- Importance of Class wise Accuracy.	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ession
unit – V Introduct Evaluati with Con	derfitting – E / ction to Clas ing Classific nfusion Mate F EXPERIM Perform c	Classification Seriving Data to Train the Model – Train/Test Split of Classification Selfication – Approach followed by Classification Aleation Model Accuracy – Classification with Logisticity- Importance of Class wise Accuracy. ENTS / EXERCISES:	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ession
Unit – V Introduce Evaluati with Con	derfitting – E / ction to Classing Classific nfusion Mate F EXPERIM Perform c	Classification Seriving Data to Train the Model – Train/Test Split of Classification Selfication – Approach followed by Classification Aleation Model Accuracy – Classification with Logisticistic Importance of Class wise Accuracy. ENTS / EXERCISES: Operations using Numpy	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ession
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unit – V Introduc Evaluati with Cor LIST Of 1. 2. 3. 4.	derfitting – E / ction to Classific Infusion Mate F EXPERIM Perform of Perform of Perform of Perform of Perform of	Classification Seriving Data to Train the Model – Train/Test Split of Classification Selfication – Approach followed by Classification Aleation Model Accuracy – Classification with Logisticix- Importance of Class wise Accuracy. ENTS / EXERCISES: Operations using Numpy Visualization using Matplotlib Operations using Pandas Interpretations using Pandas Interpretations on datasets	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ression
unit – V Introduce Evaluati with Cor LIST OF 1. 2. 3. 4. 5.	derfitting – E	Classification Seriving Data to Train the Model – Train/Test Split of Classification Selfication – Approach followed by Classification Aleation Model Accuracy – Classification with Logisticity. Importance of Class wise Accuracy. ENTS / EXERCISES: Operations using Numpy Visualization using Matplotlib Operations using Pandas Selfication using Pandas Selfication using Matplotlib Operations using Pandas Selfication using Pandas Selfication using Matplotlib Operations using Pandas Selfication using Pandas Selfication with Logistic Accuracy.	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ression
unit – V Introduce Evaluati with Con 1. 2. 3. 4. 5. 6.	derfitting – E V ction to Classing Classific nfusion Mate F EXPERIM Perform of Perform of	Classification Seriving Data to Train the Model – Train/Test Split of Classification Selfication – Approach followed by Classification Aleation Model Accuracy – Classification with Logisticity. Importance of Class wise Accuracy. ENTS / EXERCISES: Seperations using Numpy Visualization using Matplotlib Seperations using Pandas Seperations using Pandas	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ression
unit – V Introduc Evaluati with Cor 1. 2. 3. 4. 5. 6.	derfitting – E V ction to Classing Classific nfusion Mate F EXPERIM Perform of Perform of Perform f Perform li Perform li Programs es Term Wo	Classification sification — Approach followed by Classification Aleation Model Accuracy — Classification with Logisticity.— Importance of Class wise Accuracy. ENTS / EXERCISES: Operations using Numpy risualization using Matplotlib Operations using Pandas inear regression on datasets eature engineering for the given dataset ogistic regression on datasets sto illustrate confusion matrix	n the Ins	surance Problem Surance Prob	em. Repre	esenta	ation o	of Logi	stic Regr	9 ression
and Unit – V Introduce Evaluati with Cor LIST OF 1. 2. 3. 4. 5. 6. 7. *include	derfitting – E	Classification sification — Approach followed by Classification Aleation Model Accuracy — Classification with Logisticity.— Importance of Class wise Accuracy. ENTS / EXERCISES: Operations using Numpy risualization using Matplotlib Operations using Pandas inear regression on datasets eature engineering for the given dataset ogistic regression on datasets sto illustrate confusion matrix	gorithms	surance Probles – A Visual ssion – Intro	em.	esenta n to	ation c	of Logi	stic Regr	9 ression Hands-o

1.	Arthur K. Kordon "Applying Data Science: How to Create Value with Artificial Intelligence". Springer Nature, Switzerland, Edition, 2020.
2.	Avrim Blum, John Hopcroft and Ravindran Kannan. "Foundations of Data Science". Cambridge University Press, Edition, England, 2020.
3.	Software: Python
4.	Laboratory Manual

	SE OUTCOMES: upletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	adapt the data science for finding solution for given problems	Applying (K3) Precision(S3)
CO2	perform data processing and data visualization of real world data	Applying (K3) Precision(S3)
CO3	use regression models to solve problems	Applying (K3) Precision(S3)
CO4	apply feature engineering techniques and estimate model errors	Applying (K3) Precision(S3)
CO5	use logistic regression to solve problems	Applying (K3) Precision(S3)

					Mapping	g of COs	with PC	s and P	SOs				12 ,=
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	4.	. , , , , ,			7	- 1		- 1	3	2
CO2	3	2	3	1	1	70					1	3	2
CO3	3	2	3	1	1					1 2	1	3	2
CO4	3	2	3	1	1					15 - 15	1	3	2
CO5	3	2	3	1	1						1	3	2

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total %
CAT1	, -	40	60				100
CAT2	-	40	60				100
CAT3	=	. 40	60				100
ESE	-	40	60		7		100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman

Board of Studies - CSB , DT

TO DENIC CONTERNICOS Rajad

	24TAM02 - TAMILS								
	(Common to All Engineerin	ng and Techn	ology Branc	hes)				. 12 EF5	
Programme & Branch	All BE/BTech Branches	Sem.	Category	L	Т	Р	SL*	тот	Credit
Prerequisites	Nil	2	HS	15	0	0	15	30	1
Preamble	This course aims to impart the essential know	ledge on the t	tamil culture a	nd rel	ated	techn	ology		
UNIT – I	WEAVING AND CERAMIC TECHNOLOGY					. 7			3
Weaving Industr	y during Sangam Age – Ceramic technology – B	lack and Red	Ware Potterie	es (BF	RW) -	- Graf	fiti on P	otteries.	es la
UNIT – II	DESIGN AND CONSTRUCTION TECHNOLO	GY	1 3243	25-4	4	_	PuP	12/9	3
stones of Sanga Temples of Cho	Structural construction House & Designs in hous am age – Details of Stage Constructions in Sila las and other worship places – Temples of Naya – Chetti Nadu Houses, Indo – Saracenic archited	ppathikaram aka Period –	 Sculptures Type study (M 	and T ladura	Гетр ai Ме	les of	Mama	llapuram	- Grea
UNIT – III	MANUFACTURING TECHNOLOGY	, -	T = 3			a -		-	3
Minting of Coin	ding – Metallurgical studies – Iron industry – Iron is – Beads making – industries Stone beads vidences – Gem stone types described in Silappa	- Glass bea							
UNIT – IV	AGRICULTURE AND IRRIGATION TECHNO	LOGY	Let 1	*			71		3
	nds, Sluice, Significance of Kumizhi Thoompu of Agro Processing – Knowledge of Sea – Fisho cific Society.								
UNIT – V	SCIENTIFIC TAMIL & TAMIL COMPUTING								3
	Scientific Tamil – Tamil computing – Digitalizationil Digital Library – Online Tamil Dictionaries – So			pmer	nt of	Tamil	Softwa	re – Tan	nil Virtua
TEXT BOOK:			· .			, (C_			
1. Social Life	e of Tamils (Dr.K.K.Pillay) A joint Publication of T	NTB & ESC a	ınd RMRL – (i	n prin	t)		> -		
2. Social Life	e of the Tamils – The Classical Period (Dr.S.Siga	ravelu) (Publi	shed by: Inter	natior	nal In	stitute	of Tan	nil Studie	s).
REFERENCES:				w did	W.	9			
1 1.	வரலாறு - மக்களும் பண்பாடும் - கே ே ில் பணிகள் கழகம்), உலகத் தமிழாராட்				U	ாடு ட	ாடநூ	ல் மற்ற	றும்
	ந்தமிழ் முனைவர் இல. சுந்தரம், விகட							11111	
3. கீழடி ை	வகை நதிக்கரையில் சங்ககால நகர நா	ாகரிகம்.(தெ	ால்லியல் த	துறை	၅ ရ	വണി	பீடு)		
· · · · ·	ந ஆற்றங்கரை நாகரிகம் (தொல்லியல்	துறை வெ	பளியீடு	1				t/	
	ற் அற்றியால்லர் நாலர்மா (அவர்வையை			ublich	ed b	v : Inte			
4. பொருன ₅ Historical	Heritage of the Tamils (Dr.S.V.Subatamanian, D	r.K.D. Thiruna	avukarasu) (Pi	ublisii		,	ernatior	nal Institu	ite of
4. பொருன 5. Historical Tamil Stu 6. The Contr	Heritage of the Tamils (Dr.S.V.Subatamanian, D dies) ribution of the Tamils to Indian Culture (Dr.M.Vala	armathi)(Pupli	shed by Interr	nation	al Ins	stitute	of Tam	il Studie:	
4. G山爪仮の 5. Historical Tamil Stu 6. The Contr Keeladi –	Heritage of the Tamils (Dr.S.V.Subatamanian, D dies)	armathi)(Pupli aigai; (Jointly	shed by Interr	nation	al Ins	stitute	of Tam	il Studie:	
4. GUIT(頂の 5. Historical Tamil Stu 6. The Contr 7. Keeladi – Tamilnadi 8. Studies in	Heritage of the Tamils (Dr.S.V.Subatamanian, D dies) ribution of the Tamils to Indian Culture (Dr.M.Vala 'Sangam City Civilzation on the banks of river Vala Text Book and Educational Services Corporation the History of India with Special Reference to Ta	armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.l	shed by Interr Published by:) K.K.Pillay) (Pu	nation Depa	al Ins	stitute nt of	of Tam Archae Autho	nil Studie: ology & r)	s).
4. GUIT(頂面 5. Historical Tamil Stu 6. The Contr 7. Keeladi — Tamilnadi 8. Studies in	Heritage of the Tamils (Dr.S.V.Subatamanian, Ddies) ribution of the Tamils to Indian Culture (Dr.M.Vala Sangam City Civilzation on the banks of river Vala Text Book and Educational Services Corporation	armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.l	shed by Interr Published by:) K.K.Pillay) (Pu	nation Depa	al Ins	stitute nt of	of Tam Archae Autho	nil Studie: ology & r)	s).

*includes Term Work (TW) & Online / Certification course hours

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	explain weaving and ceramic technology in tamil culture and tamil society.	Understanding (K2)
CO2	Illustrate about the design and construction technology.	Understanding (K2)
CO3	summarize about the manufacturing technology.	Understanding (K2)
CO4	explain the agriculture and irrigation technology.	Understanding (K2)
CO5	explain the significance of tamil in scientific and computing.	Understanding (K2)
000	Oxplain the digitileaned of tariii in edicitatio and compating.	Onderstanding

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	and the state of the			S. E.A.Te.	-1	3		3	2	2			
CO2	akinste	la de de		· - ×	18 1	3	in-	3	2	2		1057 15	al sec
CO3	THE T					3		3	2	2			
CO4						3		3	2	2			
CO5		8				3		3	2	2			

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSES	SMENT PA	ATTERN -	- THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	40	60					100
CAT2	40	60	2	- 1			100
CAT3	40	60					100
ESE				NA	f		

* ±3% may be varied (CAT 1,2,3 - 50 marks)

Signature of the Chairman

Board of Studies - 5 & H (Physia)



	(Common to All Engineering and 1	Technolog	y Branches)			.F			
Programme & Branch	All BE/BTech Branches	Sem.	Category	Ĺ	Т	Р	SL*	тот	Credi
Prerequisites	Nil	2	HS	15	0	0	15	30	1
முன்னுரை	தமிழ் கலாச்சாரத்தோடு ஒன்றிய தொழில் ந		ள பற்றிப்	எடுத்	துவை	ரத்த	5ல்	-) C 64	
அலகு - ।	நெசவு மற்றும் பானை தொழில்நுட்பம்	D.C.						3	7.5
சங்க காலத்த் கீறல் குறியீடு	ில் நெசவு தொழில் – பானைத் தொழில்நுட்ட கள்	றக வ்ப	ப்பு சிவப்பு	- ШП	்	பகள்	iπ — Ι	பாண்ட	_களில்
அலகு - ॥	வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்ப		Maria de la	å (pri		4 50	alum,	3	
– சங்க கால விவரங்கள் – வழிபாட்டுத் மீனாட்சி அப	ில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சா த்தில் கட்டுமான பொருட்களும் நடுகல்லும் மாமல்லபுரச்சிற்பங்களும், கோவில்களும் – ச தலங்கள் – நாயக்கர் காலக் கோயில்கள் மமன் ஆலயம் மற்றும் திருமலை நாயக்கர்	– சிலம் சோழர் ச –மாதிரிச	பதிகாரத்தி காலத்து டெ கட்டமைப்பு	ல் (பருங் கள்	மேரை கோய பற்ற	_	அபை கள் அறித	மப்பு ப மற்று தல், ப	பற்றிய ம் பிற மதுரை
	சன்னை இந்தோ-சாரோசெனிக் கட்டிடக் கலை. 		*		-			- 100	- 1
அலகு - 111	உற்பத்தித் தொழில்நுட்பம்							3	1
வரலாற்றுச்ச! உருவாக்கும்	ம் கலை – உலோகவியல் – இரும்புத் தொ என்றுகளாக செம்பு மற்றும் தங்க நாணய தொழிற்சாலைகள் – கல்மணிகள் – கண்ணாடி ன்டுகள் – தொல்லியல் சான்றுகள் – சிலப்பதிக	ங்கள் - - மணிக	- நாணயா ள் – சுடும	ங்கள் ண் ப	அ ணிச	ச்சம ள்	டித்த	လ် –	மணி
அலகு - ו∨	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில்ந							3	
	குளங்கள், மதகு – சோழர்கால குமிழித் தூட சக்காக வலைக்கப்பட்ட சிணைகள், வேணக							- S.	
கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ	தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ நகம்.	ற்றை மற	ற்றும் வேள	ाळंग	യന ഒ	пij	ந்த ெ	சயல்ப	ஈடுகள்
கால்நடைகளு – கடல்சார் <i>அ</i> அறிவுசார் சமூ அலகு - v	தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ நகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ்	ன்மை ம <u>ர</u> ரித்தல் <i>–</i>	ற்றும் வேள பெருங்கட	ாண் ல் கு	மை ச றித்த	пர்ந்	ந்த ெ ண்ை	சயல்ப டய அ 3	ாடுகள் புறிவு -
கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ அலகு - v அறிவியல் த மென்பொருட் தமிழ் அகராத	தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ நகம்.	னமை மர ரித்தல் <i>—</i> — தமிழ்	ற்றும் வேள பெருங்கட நூல்களை	ாண் ல் கு மில்	மை ச ஹித்த ாபதிப்	пђ <u>і</u> ў 5 ц6	ந்த ெ ண்ை செய்	சயல்ப டய அ <u>3</u> தல் –	ாடுகள் புறிவு - தமிழ்
கால்நடைகளு – கடல்சார் அ அறிவுசார்ச் மூ அலகு - v அறிவியல் த மென்பொருட் தமிழ் அகராத் TEXT BOOK:	தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளான் புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்குவ நகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விச்	னமை மர ரித்தல் — — தமிழ் ககழகம் ளை (வெ	ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி	ாண் ல் சூ மின் ழ்நா	மை ச ஹித்த ாபதிப் நூலக	п <u>ј</u> ј 5 ப6 பபு (5 ம்	ந்த ெ ண்ண செய் – இ	சயல்ப டய அ 3 தல் – கணைய	ாடுகள் புறிவு - தமிழ் பத்தில்
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பர்ப				<u>மாணவர்</u>		<u> </u>			-				(Highest L	evei)
CO1	தமி! தொ			ம் மற்ற ற்றி வி	• • • • • • • • • • • • • • • • • • • •	•		த்தினு	டைய	ப நெசவு	மற்றும்	பானை	Understandi	ng (K2)
CO2		ழர்களி யும்.	ன் வடி	வமைப்ப	ு மற்ற	<u>ற</u> ும் கட	· டிடத்	ந் தொழ	<u>நி</u> ல்ந	<u>၂</u> ட்ப ஆற்	றல் பற்றி	விளக்க	Understandi	ng (K2)
CO3	தமி	ழர்களி	ன் உற்ப	<u>பத்தித்</u> ெ	தாழில்	்நுட்பப்	் பற்	றி சுருச்	கமா	கக் கூற பு	நடியும் .	da and mi	Understandi	ng (K2)
CO4		ழர்களி யும்.	ன் வே	ளாண்ை	ம மற	ற்றும்	நீர்ப <u>்</u> ப	ாசனத்	தெ	ரழில் <u>ந</u> ுட்ப	ம் பற்றி	விளக்க	Understandi	ng (K2)
CO5	தமி	ழர்களி	ன் அறி	வியல்	தமிழ்	மற்றுப்	் கன	ளினித் <u>த</u>	ழ்வ	பற்றி வி	ாக்க முடிய	ம்.	Understandi	ng (K2)
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	est / Bl Categ	oom's ory*	Ren	nemberin (K1) %	g Un	derstan (K2) %		Applyii (K3) %		Analyzing (K4) %	Evaluating	g (K5) %	Creating (K6) %	Total
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Š., n. i.	CAT	3	in me at and	40		60		8 - 1 - 2					2	100
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Signature of the Chairman
Board of Studies - 5 & H (Physics

* ±3% may be varied (CAT 1,2,3 – 50 marks)



		24	CYL13 -					LECTRON				SYST	EMS		
D							E, CSE, C	CSD, IT, A	IDS & AIM	L branc	nes)				
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1.	Asses	ssment		ven water	sample	for the su	uitability o	f drinking /	/ industrial	purpos	e by e	stimat	ting the	carbona	ate, nor
2.		0.000	-				in the giv	en river/bo	ore well wa	iter sam	ple.				-
3.	Perfo	rm Win	kler's met	hod for th	ne determ	nination of	fdissolved	d oxygen ir	n the given	wastev	ater sa	ample			- 1
4.	Deter	minatio	n of COD	in the giv	ven wate	r sample.		N.		· ·					
5.	Estim	ation o	fstrength	and amo	unt of ac	id in a giv	en solutio	n using pH	l meter.						
6.	Deter	minatio	n of stren	gth and a	mount of	f mixture	of acids p	resent in th	ne given so	olution u	sing C	onduc	ctivity r	neter.	
7.	Deter	minatio	n of conc	entration	of Nickel	by Spect	rophotom	etric metho	od.			8	i.		
8.	Estim	ation o	f copper o	content fro	om discar	rded PCB	's by lodo	metric met	thod.				171		a si
9.	Deter	minatio	n of iron	present in	the give	n sample	by perma	nganomet	ric method	•					
10.	Volum	netric e	stimation	of chrom	ium from	electropla	ating slud	ge using p	ermangan	ometric	method	i.	100		
11.	Electi	roplatin	g process	(Demon	stration).	7		1 6			100	-			
12.	Repo	rt prepa	aration -ba	ased on t	ne data re	eceived fr	om the ar	alysed wa	iter quality	parame	ters (D	emor	nstratio	n).	
REFER	RENCE	S/ MAN	UAL/SO	FTWARE	:				-	e I					
1.	Palar	nisamy ganapat	P.N., Mathy Publis	anikandaı hers, Ero	n P., Ge de, 2024	eetha A.	and Mai	njula Rani	K., "Che	emistry	Labora	atory	Manua	al", 1 st	Edition
COURS On con				, the stud	lents wil	l be able	to						(H	BT Map _l lighest L	
CO1	estim	ate the	amount o	of hardnes	ss, alkalir	nity, DO a	nd COD	present in	the given s	sample.	0			nalyzing Precision	
CO2	interp	ret the	experime	ntal resul	ts obtain	ed from c	onductivity	y meter an	d pH mete	r.	-		Д	nalyzing Precision	(K4),
CO3			the deter			by Spect	rophotom	eter, Copp	er by Iodo	metry, I	on and	i	А	nalyzing Precision	(K4),
			,	.320,,,,,,		appina o	f COs wit	h POs and	d PSOs					1000001	(00)
COs/P	Os	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	P010	P	011	PSO1	PSO
CO1	1	2	2	3	2		2	1	т . Т						
CO2	2	2	2	3	2		2	1							
	3		2	3	2		2								1

^{*}includes Term Work(TW) & Online / Certification course hours

1st sem for EEE, EIE, ECE & 2nd sem for CSE, CSD, IT, AIDS & AIML

Signature of the Chairman



									AL, IOT A				02001		
Progra Branc		. &	All BE	/BTech B				Sem.	Categor	y L	Т	Р	SL*	Total	Credit
Prerec		es	Nil				2	1/2	ES	0	0	90	0	90	3
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LIST)F FX	PERIM		house wir		net of Th	ings and	Web Te	echnologie	S.				, si	
LIOT	<i>J</i> 1 LA	LIXIII	LINIO	LALKOR		A – Elec	trical Ins	tallatio	n (30 Hou	rs)			-		
1.	Det	erminat	tion of Ic	ad curren	its and se	elect suita	able comp	onents	for Protec	tion					(4)
2.	Dev	elop a	wiring c	ircuit for in	ncandesc	ent lamp	and fluor	escent	lamp using	Simpl	e and	Stair	case W	/iring	
3.	Dev	elop ar	nd Inves	tigate wiri	ng circuit	ts for Call	ling Bell S	System :	and Dimm	able Li	ght		4		
4.	Cre	ate wiri	ng circu	it for sing	e phase	motor	= 6	e e	- 10.00						
5.	Dev	elopme	ent of IC	T based	energy m	onitoring	and contr	rol		0					=
6.	Меа	asurem	ent and	analysis o	of electric	cal param	eters for l	Photovo	oltaic Sola	r Panel	X.				
	7						ernet of	Things	(30 Hour	s)					
1.	Des	sign a S	lingle la	yer PCB I	ayout des	signing		1	* 1				-		
2.	Fab	ricate S	Single la	yer PCB	printing							ji.	×	D	
3.	Ass	emblin	g, solde	ring and c	lesolderii	ng practio	e on sing	le layer	PCB					- 200	
4.	Ser	sor an	d actuat	or interfac	ing with	internet e	nabled m	icrocon	troller						
5.	Ser	nsor an	d actuat	or calibrat	tion										,
6.	Inte	gration	of micr	ocontrolle	r based s	system wi	th Cloud	platforn	n						
	Т				PAR	TC-We	b Techn	ologies	s (30 Hour	s)					*
1.	Des	sign a s	imple w	eb page ι	sing bas	ic HTML	tags and (CSS pro	perties				*		
2.	Des	sign a re	esponsiv	e webpag	e using E	Bootstrap	framewor	rk	· .	α <					
3.	Des	sign a v	vebpage	e for signu	p and log	gin valida	tion form	using J	avascript a	and PH	Р	-		· · · · · ·	
4.						PHP, M	ySQL and	d host th	ne website	in the	serve	ſ .			***
REFE	RENC	ES/ M	ANUAL	/SOFTW	ARE:										
1.			Manua												
2.		CI.Free Reilly, 2		isabeth R	obson, "I	Head Firs	t JavaScr	ipt Prog	gramming	A Brair	n-Frier	idly G	Buide",	1st Editio	n,
3.	Eric	T.Free	eman,El	isabeth R	obson, "I	Head Firs	t HTML a	ind CSS	6",2nd Edi	ion, O'	Reilly	, 201	2	(4)	, ,
4.	Lyn	ın Beigl	nley,"He	ead First S	QL",1st	Edition, C	Reilly,20	007.							
		UTCO		urse, the	studente	، مطالف	abla ta					2	Ι,	BT Map Highest I	
CO1	1			viring circ				heir rec	uirement					Applying	(K3)
		-												Precision Applying	
CO2	-			d solution:		1		e cases	.	-	<u> </u>			Precision Applying	(S3)
CO3	Des	sign an	a nost a	n interact				h DO-	and Doc					Precision	
COs/F		P01	PO2	PO3	PO4	PO5	PO6	PO7	PO PO	PO9	PO	10	PO11	PSO1	PSO
/PSC	-	3	3	3	2	3		1	3	2	2		2	1.001	1 302
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9 0			(C	ommon	to all E	nginee	ring and	Techi	nology bra	nches).			
Progra Branch	mme & 1	All B.	E/B.Tec	h Branc	ches		Se	em.	Category	L	ТР	SL*	Total	Credit
Prereq	uisites	Basic	Mather	natical	skills			2	MC	20	0 0	10	30	0
Preaml	ble	To imp	art prob	olem sol	ving skil	Is and e	enhance a	analytic	cal skills.			1	-	,
Unit – I					s, Time				3					6
Mixture	rule – App nd Work:	olication Concep	s – Pro	blems. ork and v					i – Simple Simple prob		ns on	averag	jes – All	
Time a		ce: Tim	e, spee	d and d				Avera	ige speed -	Relat	ve spe	ed – P	roblems	on boat
Unit – I							bability:		K.					8
	tation and											-,		
TEXT E	pility: Bas	ic Conce	epis – P	фрисац	ons – Si	mpie pri	obiems.							
1.	Dr.R.S.A limited, 2		"Quant	itative A	ptitude 1	for Com	petitive E	xamin	nations", Re	vised	Edition	, S.Ch	and and	compan
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REFER	RENCES/		L/SOF	TWARE	:									
REFER		MANUA				Compe	titive Exa	minati	on", 7 th Ed	ition, I	/lcGrav	w Hill	Education	on, India
	Abhijit G 2020.	uha,"Qu	ıantitati	ve Aptiti	ude for		titive Exa		on", 7 th Ed	ition, I	/IcGra	w Hill	Educatio	on, India
1.	Abhijit G 2020. https://w	MANUA uha,"Qu ww.india	iantitati	ve Aptitu	ude for le/quest	ions-and		<u>s</u>		ition, I	/lcGra	w Hill	Educatio	on, India
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ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		30	70	ž.			100
CAT2		30	70			2	100
CAT3	-	30	70		-		100

 * ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

*includes Term Work (TW) & Online / Certification course hour

Signature of the Chairman Board of Studies - \$4 H





organization Ta	24MAT32 – DISCRETE MATHE	MATICS	AND LINEA	R AL	GEB	RA	79	1	117
(Common	to Artificial Intelligence and Data Science &						e Lea	rning br	anches)
Programm & Branch		Sem.	Category	L	T	Р	SL*	Total	Credit
Prerequisi	ites Nil	3	BS	45	15	0	60	120	4
Preamble	To provide in-depth knowledge in var relations, which serve as a foundation for to apply algebraic structures in coding the	or machin							lop skills
Unit – I	Mathematical Logic: nal Calculus: Propositions – Logical connective			- 50					9+3
 Validity of Predicate (inference specification) 	is – Truth tables – Tautologies and contradiction of arguments. Calculus: Predicates – Statement function – Volor Predicate calculus – Rules of universa on and generalization.	/ariables	Quantifier	s – U	niver	se of	f disco	urse – T	heory of
Unit – II	Relations:								9+3
	product of sets – Relations on sets – Types of Graph of a relation – Equivalence relation – Pathon of lattices. Group Theory:								
	d Subgroups (Definitions only) - Homomorph	hism – C	osets – Lag	range	e's th	eore	m (Coding 1	
	es – Basic notions of error correction – Error rec								
Unit - IV	Vector spaces	1			•				9+3
	ces – Subspaces – Linear combinations and Sumn space and Null Space – Rank and nullity		near indepe	nden	ce – l	Base	s and o	dimensio	n – Row
Unit – V	Inner Product Spaces:	me e	a dignity"	78.34	403	- 2		1116 - A	9+3
	ucts – Inner Product Spaces – Angle and Orth midt orthonormalization process – QR decomp		y in inner pro	oduct	spac	ces –	Ortho	normal v	ectors -
TEXT BOO	OK:			1					×
	erarajan T., "Discrete Mathematics with Graph Publishing Company, New Delhi, 2022 for Un			atorio	s", R	eprir	t Editio	on, Tata	McGraw
2. Ho	ward Anton, Chris Rorres, "Elementary Linear	Algebra"	, 11 th Edition	, Johi	n Wile	ey &	Sons,	2019 for	Units IV,
REFEREN	CES:								
	nneth H. Rosen, Kamala Krithivasan, "Discrete ucation Private Limited, New Delhi, 2023.	e Mathen	natics and its	Арр	licatio	ons",	8 th Edi	tion, Mc0	Graw Hill
	bert Strang, "Introduction to Linear Algebra",	, 4 th Edit	ion, Wellesle	ey-Ca	mbri	dge I	Press,	Wellesle	ey, USA,
	vid C. Lay, Steven R. Lay, Judith McDonald, ucation Limited, England, 2016.	"Linear	Algebra and	Its A	pplic	ation	s", 5 th	Edition,	Pearson

*includes Term Work (TW) & Online / Certification course hours

	SE OUTCOMES: upletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Apply propositional and predicate logic to validate the arguments.	Applying (K3)
CO2	Understand various types of relations which has applications in cryptography and combinatorial optimization.	Understanding (K2)
CO3	Apply the concepts of group structures in coding theory.	Applying (K3)
CO4	Illustrate the concept of vector spaces commonly used in intelligent systems.	Understanding (K2)
CO5	Apply the concepts of inner product spaces in orthogonalization and decomposition in data reduction.	Applying (K3)

Mappir	na of	COs	with	POs	and	PSOs

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	1,14	1	ruits.			1	- 1	. No.	-den-	1	les -
CO2	3	2	1						PI .			2	
CO3	3	2	1	2	[1]		- 4-		i na Tipe	1	To the	2	
CO4	3	2	1			e.					6 3 150	1	an 19
CO5	3	3	3	3	AU.					rsal (Ler	erŲ į	3	10

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total
CAT1		40	60	EL 30/01/1 10 ²	is hemigrathe	tartirdo (mes	100
CAT2		40	60	_		Summer impri	100
CAT3	named accident	50	50	L i light at	prog C - Tingy-	J	100
ESE		40	60	i my	of Parish San	G red	100

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman



Common to Artificial Intelligence and Data Science & Artificial Programme & B. Tech. Artificial Intelligence and Data Science Branch B. Tech. Artificial Intelligence and Machine Learning Prerequisites Nil	Sem. 3 Cluding inheritation of Object- Ore Statements- Statements- Statements - Varial or Access - Imports - Java's Bultiple Threads ling - I/O Basic	PC Ince, interfaction ince, incention ince	L ces, exercises, exer	r P 30 30 30 30 30 30 30 30 30 30 30 30 30	SL ² O 45 ion ha Javas, met ctors – Object estract faces	Total 120 Indling, Buzz hods ar this kects – R Classe	9 words - nd String 9 eyword - ecursion 9 es - fina 9 cception r Threac
Branch B.Tech. Artificial Intelligence and Machine Learning Nil	of Object- Or Statements- Statements - Arguments - Varial or Access - Imports - Java's Bultiple Threads ling - I/O Basic	PC nce, interfact iented Progrings: Basic ag Methods ent Passing- ole Length A Method Dissorting Packa uilt-in Excep – Priorities s	rammi String - Cons - Returning - Returning - Returning - Synco	o 30 30 30 30 30 30 30 30 30 30 30 30 30	o 45 ion ha - Javas, met etors - Object estract faces	ndling, a Buzz hods ar this ke cts – R Classe	threads 9 words and Strin 9 eyword ecursio 9 sceptior r Threa 9
Preamble This course concisely introduces Java programming, in generics and collections Unit - I Introduction to OOP and Java Overview of OOP — Object-oriented programming paradigms — Features Overview of Java—Data Types, Variables and Arrays — Operators — Control Buffer Class Unit - II Classes and Objects Classes: Class Fundamentals-objects—Assigning Object Reference Variables Garbage Collection — Stack Class. Overloading Methods — Objects as Param—Access Control—Static — Nested and Inner Classes — Command—Line Argulit — III Inheritance, Packages and Interfaces Inheritance: Basics — Super keyword -Multilevel Hierarchy—Method Overrice with Inheritance. Packages and Interfaces: Packages — Packages and Memburit — IV Exception Handling, Multithreading and I/O Exception Handling basics — Multiple catch Clauses — Nested try Statemed Multithreaded Programming: Java Thread Model—Creating a Thread and M Communication—Suspending—Resuming, and Stopping Threads—Multithread Unit - V String Handling, Generics, Collections Generics: Introduction — Example — Parameters — General Form —	of Object- Or Statements- Statements- Arguments - Varial or Access - Imports - Java's Bultiple Threads ling - I/O Basic	iented Progrings: Basic Ig Methods ent Passing - ple Length A Method Dis borting Packa uilt-in Excep – Priorities s	rammi String - Con: - Returning - Returni	cept ng - clas struc ning nts -At- Inte	Javas, met	a Buzz hods and this ke cts – R Classe	threads 9 words nd Strin 9 exyword ecursio 9 es – fina 9 exception r Thread
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frameworks: Overview – Collection Classes – Collection Interfaces. List of Exercises / Experiments: Simple Java programs using operators, arrays and strings.	eneric Method	ls, Construc	ctors a	ind	Interfa	ices. C	ollectio
Simple Java programs using control statements			> =				
			Y		Ton (s)		
Demonstrate the concepts of inheritance & polymorphism.		3 2000	GP, He	1010			
4. Develop an application using interfaces by accessing superclass co	structors and	methods.	- 17	4	11		-
5. Develop an employee payroll application using packages.			_			0	
6. Implement exception handling and creation of user-defined exception	ns.						
7. Implement a program to demonstrate multithreading and inter-threa	l communication	n.					
8. Perform file operations.							
9. Develop applications to demonstrate the features of generics classes	s and interface	S.					
10. Implement the concepts of collection frameworks.					2-		
TEXT BOOK:							300
1. Herbert Schildt., "Java: The Complete Reference", 12th Edition, McC	raw Hill Educa	tion, 2022.				,	
REFERENCES/MANUAL/SOFTWARE:						,	
1. Cay S.Horstmann, "Core Java Volume 1 - Fundamentals", 12 th Edition	n, Prentice Ha	I, 2024					
E Balagurusamy, " Programming with Java",7th Edition, Mc C	raw Hill Publ	ication,202	23				
3. Software: JDK, Eclipse IDE, MySQL							-
Laboratory Manual							

*Includes Term Work (TW) & Online / Certification course hours



	OUTCOM etion of th		e, the stu	ıdents wi	ll be abl	e to	range's T Aj er rik	E-U byr-if a bear		urteg tøjer Ia. er hegil	mi melit sa 7561.7	BT Mappe Lev	d (Highes vel)	
CO1	apply fund	damenta	l prograr	nming co	oncepts	to solve	diverse p	roblems			- *	Applying (K3) Precision(S3)		
	utilizing classes and objects											Applying (K3) Precision(S3)		
make use of programming features like inheritance, package usage, and interface implementation across various applications.												ng (K3) ion(S3)		
develop robust Java applications by effectively utilizing I/O packages, implementing exception-handling mechanisms, and managing concurrency with threads												Applying (K3) Precision(S3)		
CO5	effectively	utilize c	collection	framew	orks to r	nanage a	and mani	pulate da	ata in so	ftware app	olications		ng (K3) ion(S3)	
				200	Мар	ping of	COs with	n POs aı	nd PSO	s	-12 / 2		13-12-1	
COs/ PO	s PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2	
CO1	3	2	2	2	2		-	2	Docum	Jan - 7 1	2	3	2	
CO2	3	2	2	2	2			2			2	3	2	
CO3	3	2	2	. 2	2		A 27,	2		5 11 11 1	2	3	2	
CO4	3	2	2	2	2			2	- Fagh	-	2	3	2	

Portal: Code Tantra

3

CO5

Signature of the Chairman Board of Studies - CSE, IT

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

2

2

1-14 W.R	24ADT31 - COMPUTER ORGA	NIZATION	1						
(Comi	non to Artificial Intelligence and Data Science &Artificial I	ntelligen	e and Mach	ine L	earni	ng br	anche	es)	
Programme & Branch	B.Tech. Artificial Intelligence and Data Science & B.Tech. Artificial Intelligence and Machine Learning	Sem.	Category	L	Т	Р		r –	Credi
Prerequisites	Nil	3	ES	45	15	0	60	120	4
Preamble	This course provides knowledge on basics of operations and discusses the performance issues of process.	computer essor, mer	organizatio	n, ir	ntrodu	ces	vario	us ai	rithmeti
Unit – I	Basic Structure of Computers and Machine Instruction				-			g)+3
Functional Units Locations and Ad Sets.	 Basic Operational Concepts – Number Representation dresses – Memory Operations – Instruction and Instruction 	and Arith on Sequer	nmetic Opera ncing – Add	ations ressir	s – F ng Mo	erfor des	mance - CIS	e – M C Inst	1emory ruction
Unit – II	Arithmetic Unit:						П	9	9+3
Addition and Sub Signed Numbers	traction of Signed Numbers – Design of Fast Adders – I – Fast Multiplication – Integer Division	Multiplicat	tion of Unsig	gned	Numl	oers	– Mul	tiplica	tion of
Unit – III	Processing Unit:							g)+3
Fundamental Cor – Basic concepts	ncepts – Instruction Fetch and Execution Steps – Control – Pipeline Organization – Pipelining Issues - Data Depe	Signals - ndencies	Hardwired Memory D	cont elay -	rol – – Bra	Pipe	lining Delay	: Pip	elining
Unit – IV	Memory System:	1			. 1			9)+3
Basic Concepts - Memories : Mapp	- Semiconductor RAM Memories – Read-Only Memories ing Functions –Virtual Memory – Secondary Storage : Mag	 Direct Jnetic Har 	Memory Aco	cess	– Me	mory	Hiera	archy	–Cach
Unit – V	I/O Organization:	- 1						9)+3
Accessing I/O Decension - Arbit	evices – Interrupts – Enabling and Disabling Interrupts ration – Interface Circuits – Interconnection Standards: U	HandlSB.	ing Multiple	Dev	rices	– Bu	s Str	ucture	– Bu
TEXT BOOK:		-							-
	acher, ZvonkoVranesic, SafwatZaky and NaraigManjikian, "(n, McGraw Hill International Edition, 2023	Computer	Organization	and	Emb	edded	Syst	ems",	
REFERENCES:			- "W"	Ti .					
	David, A. and Hennessy John L., "Computer Organization an	d Design:	The Hardwa	re/S	oftwa	e Inte	erface	", 5 th (Edition,
1. Patterson Harcourt A	Asia, Morgan Kaufmann, Singapore, 2014.								
Harcourt A	Asia, Morgan Kaufmann, Singapore, 2014. Villiam, "Computer Organization and Architecture: Designing I	for Perforr	nance", 9 th E	dition	n, Pea	rson	Educa	ition,N	ew

^{*}Includes Term Work(TW) & Online / Certification course hours



COURSE (On comple	tion of th	e course					2	1 1170	_=				ed (Highes		
							perations s effectiv		ital comp	outer, a	long with	Applying (K3)			
CO ₂ a	bility to d	esign, lı	mplemer	ntation a	nd Analy	sis of da	ata path fo	or instru	ction exe	cution.		Apply	ing (K3)		
							pare the v		echnique	s relate	ed to	Apply	ing (K3)		
							rformance d the exte			e transf	er of data	Apply	ing (K3)		
	1ake use nterrupts			devices a	and stand	dard I/O	interfaces	s and ide	entify the	various	types of	Apply	ing (K3)		
0 2 1			18	1 1	Марр	ing of (COs with	POs an	d PSOs						
COs/ POs	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2		
CO1	3	3	3									3	2		
CO2	3	3	2									3	2		
CO3	3	2	3				9					3	3		
CO4	3	2	3		11	5.1			- 1			3	3		
CO5	3	2	2							-		3	3		
Slight,	2 – Mod	erate, 3	- Subs	tantial, E	BT- Bloo	m's Tax	onomy					A.			
1	, Dr. 7,				ASSE	SSME	NT PATTI	ERN – T	HEORY	- T - 4					
	Bloom's gory*	Re	membe (K1) %		Jndersta (K2)	-	Applyin %		Analyz (K4)		Evaluating (K5) %	Creating (F	(6) Tota %		
CA	AT1				50		50					,	100		
CA	AT2				50		50			-			100		
CA	AT3				50		50						100		
E	SE	- 1			50		50						100		

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* ±3% may be varied (CAT 1, 2, 3 – 50 marks & ESE – 100 marks)

	24ADT32 - MACHINE LEAR					F			
(Comr	mon to Artificial Intelligence and Data Science & Artificial Int	telligence	and Machin	e Lea	rning	g br	anch	nes)	lg.
Programme & Branch	B.Tech. Artificial Intelligence and Data Science & B.Tech. Artificial Intelligence and Machine Learning	Sem.	Category	L	Т	P	SL	Total	Credit
Prerequisites	Nil	3	PC	45	0	0	45	90	3
Preamble	The course provides the concepts and algorithms in macl time problems.	hine learn	ing and the r	netho	ds to	ар	ply t	hem i	n real
Unit – I	Introduction to Machine Learning		Mar Prints	14	15 5		THE T	7.12	9
Learning – Macl Multivariate Data	ne Learning – Machine Learning in relation to other fields – hine Learning Process and Applications – Data – Data Anal – Feature Engineering – Dimensionality Reduction techniques	Types of ytics –Des	Machine Leascriptive Stat	arning istics-	– C – Un	hall ivari	enge iate,	es of Bivar	Machine iate and
Unit – II	Similarity based Learning and Regression Analysis	-							9
Classifier – Loca Validation Metho	imilarity based Learning – Nearest Neighbor Learning – Weigh illy weighted Regression – Introduction to Regression – Linear ds for Regression - Multiple Linear Regression.	ited K-Nea rity, Corre	arest Neighborn and Ca	or Algausati	orithi	m – Lin	Nea ear I	rest C Regre	ssion –
Unit – III	Decision Tree Learning			_ \					9
	earning Model – Decision Tree Induction Algorithms: ID3 Tre Trees Construction – Regression Trees – Validating and Pruning			5 Cor	nstru	ctior	1 –	Classi	fication
Unit – IV	Bayesian Learning and Support Vector Machines	y or Decisi	on rices.						9
Bayes Algorithm,	Learning – Bayes Theorem Fundamentals – Classification using Bayes Optimal Classifier, Gibbs Algorithm – Other Naïve Bayes ane – Functional and Geometric Margin	Bayes Mo Classifie	odel: Naive Bars – Introduct	ayes A ion to	Algori Sup	thm	, Bru Vec	te For tor Ma	ce
Unit – V	Ensemble Learning, Clustering Algorithms and Reinfor	cement L	earning .						9
Approaches – Pr	arallel Ensemble Models – Incremental Ensemble Models – S roximity Measures – Hierarchical Clustering Algorithms –Partit procement Learning as Machine Learning – Components – Marko	ional Clus	tering Algorit	odels hm- (–Inti Over	odu view	ction of	to C Reinfo	lusterino rcemen
TEXT BOOK:	Q ² (a)	4				-			
1. S.Sridha	r, M.Vijayalakshmi, "Machine Learning", 1st Edition, Oxford Univ	ersity Pres	ss, 2021.			-	d i		
REFERENCES:	. Yes a second second	la del	Ĭ -	1 44	u 7-			1.153	
1. David Fo	orsyth, "Applied Machine Learning", Springer, 2019.								
2. Saikat D	utt, Subramanian Chandramouli, Amit Kumar Das , "Machine Le	earning",1s	st edition, Pea	arson	Educ	atio	n, 2(019	
3 ShaiSha	lev-Shwartz and Shai Ben-David, "Understanding Machine Lear ge University Press, USA, 2014.								

^{*}Includes Term Work (TW) & Online / Certification course hours



	E OUTCOMES: pletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	extrapolate basic concepts of machine learning data and apply feature engineering	Applying (K3)
CO2	apply similarity based learning and regression analysis for sample datasets	Applying (K3)
CO3	apply ID3, C4.5 and CART algorithms for constructing, validating and pruning decision tree	Applying (K3)
CO4	apply bayesian learning and support vector machine models for sample datasets	Applying (K3)
CO5	demonstrate ensemble learning, clustering algorithms and reinforcement learning	Applying (K3)

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PSO1	PSO2
CO1	3	2	2	2	2	2		=, - 7		1	2	3	2
CO2	3	2	2	2	2	2			n 2	ter ci e	2	3	2
CO3	3	2	2	2	2	2					2	3	2
CO4	3	2	2	2	2	2					2	3	2
CO5	3	2	2	2	2	2					2	3	2

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		40	60	70.00		e in - esercia	100
CAT2		40	60	× 11			100
CAT3		40	60			AUUg	100
ESE		40	60	Transfer and the	T WITHER T	-1 -1 - 1	100

* ±3% may be varied (CAT 1, 2, 3 – 50 marks & ESE – 100 marks)

Board of Studies - CSE, IT



10	24ADT33- DATA STRUCTUR	RES					1 2	k	
(Comm	on to Artificial Intelligence and Data Science & Artificial In	telligence	and Machin	e Lea	rning	g bra	anch	es)	
Programme & Branch	B.Tech. Artificial Intelligence and Data Science & B.Tech. Artificial Intelligence and Machine Learning	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	3	PC	45	0	0	45	90	3
2 8YF 2112		+		1	1	nle"	F	1.5	
Preamble	The course focuses on the basic concepts and applications	of linear o	data structure	es and	nonl	inea	ır da	ta stru	ctures
Unit – I	List:								9
Data Structures – List – Applications	Abstract Data Types (ADT)-List ADT and Array Implementat of Linked Lists.	ion – Linke	ed List – Dou	ıbly L	inked	List	t — C	ircula	r Linke
Unit – II	Stack and Queue:		1						9
Unit – III Preliminaries: Imp Binary Search Tr Deletion. Unit – IV	Trees: blementation of trees –Tree Traversals – Binary trees: Implerees: Construction – Searching – Insertion – Deletion – Find	nentation– d Min – Fi	Expression nd Max – A	trees VL tre	– Th	e So Rota	earc	n Tree – Ins	9 e ADT ertion
Definitions – Rep Applications of DF Graph Coloring	presentation of Graphs – Types of Graph – Depth-first transfers: Bi-connectivity – Euler circuits – Finding Strongly Connection	aversal – ed Compo	Breadth-first nents – Appl	trave ication	ersal ns of	– T BFS	opol 3: Bip	ogical partite	Sort graph
Unit – V	Searching, Sorting and Hashing:	<u></u>	Market Li	5			57. + 1	07.5	9
Searching: Linear Chaining – Open /	search – Binary Search – Sorting: Bubble sort – Shell sort Addressing: Linear Probing – Quadratic Probing – Double Has	. – Bucket hing – Reh	sort – Hash ashing – Ext	iing: F endib	lash e Ha	Fun shin	ction g.	ns – S	Separat
ТЕХТ ВООК:	·								
1. Weiss M.	A., "Data Structures and Algorithm Analysis in C", 2nd Edition,	Pearson E	Education, Lo	ondon	, 201	9.	=		
REFERENCES:							8.1	1	
1. Thomas F 2009.	H. Cormen, Charles E. Leiserson, Ronald L.Rivest, Clifford Ste	in, "Introdu	ction to Algo	rithms	3", 3rd	Edit	tion,	McGra	aw Hill,
2. Narasimh	a Karumanchi, "Data Structures and Algorithms Made Easy", (Career Mor	nk Publication	ns, 20	16.				

^{*}Includes Term Work (TW) & Online / Certification course hours



	E OUTCOMES: Diletion of the course, the students will be able to	BT Mapped (Highes Level)
CO1	solve problems using various implementations of linked list.	Applying (K3)
CO2	make use of ADTs like stack and queue for solving real world problems.	Applying (K3)
CO3	implement the tree structure and its operations.	Applying (K3)
CO4	apply appropriate graph algorithms for computing problems.	Applying (K3)
CO5	demonstrate the concept of sorting, searching and hashing techniques.	Applying (K3)

Mapping of COs with POs and PSOs

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2			2		5.0 %	r -		2	3	2
CO2	3	2	2			2					2	3	2
CO3	3	2	2			2					2	3	2
CO4	3	2	2			2					2	3	2
CO5	3	2	2			2					2	3	2

1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

ASSESSM	IENT	DATI	FRN -	THEODY
AGGEGGIV		гагі	EKIN -	INCURI

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total %
CAT1		50	50	- 7 - 6 - 1		71 Let	100
CAT2		40	60			44, 75	100
CAT3	m 1	40	60	F 5 5	-1 'N 1 = 1 a	A L	100
, ESE		40	60		-		100

* ±3% may be varied (CAT 1, 2, 3 - 50 marks & ESE - 100 marks)

Signature of the Chairman Board of Studies - CSE,IT





1 - 1 mile 1 - 2	24MNT31 - ENVIRO	DNMENTAL SCI	ENCE								
- 2 - 45 12 - 12	(Common to All Engineering	ng and Technolo	gy Branches)		7.2.3		1.15005			
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	Т	Р	SL*	Total	Credi		
Prerequisites	NIL	3/6	MC	30	0	0	0	30	0		
Preamble	This course provides an approach to uno pollution control & monitoring methods for awareness for engineering students onsocial	r sustainable lif	e and also	to pr							
Unit – I	Environmental Studies and Natural Reso			7.5	11				6		
Introduction to En resources–case s	vironmental Science – uses, over-exploitation tudies.	and conservation	on of forest,	wate	r, mi	nera	l, food,	energy a	and land		
Unit – II	Ecosystem and Biodiversity	of TOUR on Mark	-						6		
Food web only). E	cept and components of an ecosystem -structu Biodiversity: Introduction – Classification – Bio of biodiversity - case studies.	ural and function geographical cla	al features – ssification of	Fundia	ction: - Va	al att lues	ributes of biod	(Food cl	hain and Threats		
Unit – III Environmental Pollution											
Environmental Po rain, ozone layer o	llution: Definition – causes, effects and control depletion (b)Water pollution (c) Soil pollution - F	Role of an individ	Air pollution ual in preven	- Clim	nate of	chan Iutio	ge, glo n - case	bal warm e studies.	ing, acid		
Unit – IV	Environment Quality Standards and Mon								6		
chlorine, sulfates, objectives and pro	ty standards - Water quality parameters and phosphates, iron and manganese, DO, BOD, occess of EIA - environment protection act – and act-case studies	COD (definition,	specifications	s and	limit	s onl	y) - Intr	oduction	to EIA -		
Unit – V	Social Issues and the Environment								6		
approaches for su	ble to Sustainable development - three pilla stainable development- Social issues: Urban pment and rehabilitation, E-waste recycling - role	roblem related to	energy - po	pulat	ion g	growt	h and	explosion	inability- - issues		
TEXT BOOK:		3		31							
	aushik, and Kaushik C.P., "Environmental Sciel New Delhi, 2023.	nce and Enginee	ring", 6th Mu	ılticolo	our E	ditio	n, New	Age Inte	rnationa		
REFERENCES:											
Edition ,P	ny P.N., Manikandan P., Geetha A., Manjula earson Education, New Delhi, 2024.		^			ă.					
	rucha, —Textbook of Environmental Studie es Press India Private Limited, Hyderguda, Hyd		duate Cours	sesll,	Univ	ersit	y Grai	nds Com	mission		
								W	Mary 1		

^{*}includes Term Work(TW) & Online / Certification course hours

2002 2000	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	illustrate the various natural resources and role of individual for its conservation	Understanding (K2)
CO2	elaborate the features of ecosystem and biodiversity to find the need for conservation.	Understanding (K2)
CO3	manipulate the sources, effects and control methods of various environmental pollution.	Applying (K3)
CO4	make use of the knowledge of Quality standards, EIA and environmental legislation laws to monitor the environment.	Applying (K3)
CO5	utilize the knowledge of various social issues and impact of population explosion on environment towards sustainability.	Understanding (K2)

	Mapping	of	COs	with	POs	and	PSOs
--	---------	----	-----	------	------------	-----	-------------

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PS01	PSO2
CO1	2	1	3	,		2	1			× 1		1 = - E	
CO2	2	1	3			2	.1					19	
CO3	2	2	3	7	Hō	2	1		34 ,		x	-1-4-5	Stoff /
CO4	2	2	3		, , , , ,	2	1		- 1 - 12	1 2 4 - 24 - 4			BASE.
CO5	2	1	3			2	1	79	1 1				

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total
CAT1	25	40	35			DOMEST:	100
CAT2	25	40	35	1			100
CAT3	25	40	35			45.83	100
ESE		2 6		NA	Transfer	1	

* ±3% may be varied (CAT 1, 2 & 3 – 50 marks)

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	/Comm	on to	Artificial	ntollia-				*		BORATOR		no l c				7
Progra	amme 8		Artificial I B.Tech. A					and the same of the same of the		T	and Machi			T		
Brancl			B.Tech. A	rtificial	Intellig	ence a	nd Mac	hine Lea	arning	Sem.	Category		T P		Total	Cred
rerec	quisites	1	Nil							3	PC	. 0	0 30	0	30	1
Pream	ble		The cours problems.	e focus	es on th	e algo	rithms ir	n machir	ne learni	ing and th	e methods	to ap	oly th	em in	real t	ime
LIST	OF EXP	ERIME	NTS / EXI	ERCISE	S:						17					
1.	Create	e a sa	mple datas	et and e	explore	statistic	cal opera	ations us	ing Pan	das and vi	sualize the	result	s thro	ugh p	lots.	
2.	Apply	Apply preprocessing techniques for sample dataset.														
3.	Perform dimensionality reduction using PCA and SVD.															
4.	Implement K-Nearest Neighbor Algorithm.															
5.	Implement linear regression and multiple linear regression algorithms.														*********	
6.	Implement and demonstrate decision tree based ID3 algorithm.															
7.	Implement Naïve Bayes algorithm.															
8.	Implement Support Vector Machine algorithm.															
9	Imple	ment a	and compa	re the w	orking c	of Ranc	lom Fore	est class	ifier with	Adaboos	model.					
10.	Imple	ment k	K-Means cl	ustering	algorith	nm.			л					1.		
DEEE	DENCE	C/MA	NUAL /SO	ETMAR	· E ·											
1.			Manual	TIVVAIN	·											
 2.	-		ython													
					(*)											
	SE OU		ES: he course	, the stu	udents	will be	able to		1 3. 2			E	BT Ma	pped Leve	(High	est
CO1	create	e datas	set and exp	olore sta	itistical o	operati	ons								ing (K3	
CO2	imple	ment s	supervised	learning	algorit	hms w	ith samp	le datas	et	1 (P .)			- 4	Apply	ion (S3 ing (K3 ion (S3	3)
CO3	apply	enser	nble and c	lustering	metho	ds for s	sample o	dataset			F 8 . 5		1.	Apply	ing (K3 ion (S3	3)
				7		Mappir	ng of Co	s with F	Os and	I PSOs						
COs/P	Os	P01	PO2	PO3	PO4		PO6	P07	PO8	PO9	PO10	PO11	F	SO1	P	SO2
CO1		3	2	2	2	1	1			2	1	1		3		2
		3	2	2	2	1	1			2	1	1		3		2
CO2																2

*Includes Term Work (TW) & Online / Certification course hours

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 $\hbox{B.Tech Artificial Intelligence and Data Science - R2024}.$





					24/	ADL32-I	DATA S	TRUCTU	IRES I	LABOR	ATOR	Υ							
(Commo	n to	Artificia	al Intell	igence	and Da	ta Scier	nce & Art	tificial	Intelli	gence	and Machin	e Le	arr	ning	brar	ches)	
Progran Branch								ata Scier achine L		ng	Sem.	Category	L	Т	Р	SL*	Total	Crec	
Prerequ	uisites		Nil		,						3	PC	0	0	30	0	30	1	
Preamb	le		The cou		uses on	develo	ping ap	plications	using	the cor	ncepts	of Linear an	d No	n-li	inea	r Dat	а		
LIST O	FEXPE	RIME	NTS / E	EXERCI	SES:														
1.	Implem	entat	ion of s	ingly lin	ked list	and its	operatio	ons			H						9		
2.	Implem	entat	ion of d	loubly li	nked list	t and its	operati	ons											
3.	Implem	entat	ion of s	tack an	d its ope	erations													
4.	Infix to	postf	ix conve	ersion u	sing sta	ick ADT	• 1												
5.	Evalua	ting p	ostfix e	xpression	on using	stack /	ADT				٧,	2			-				
6.	Implem	entat	ion of q	queue ai	nd its op	eration	s												
7.	Implementation of queue and its operations Implementation of binary search tree traversals																		
8.	Implementation of graph traversal techniques																		
9.	Implem	nentat	ion of li	near an	d binary	/ search	n algoritl	hms										-	
10.	Implem	nentat	ion of s	orting a	lgorithm	าร													
					· ·														
REFER	ENCES	/ M A I	MITAL /	SOETM	ADE:			-								1			
1.	T			Windov		 (- s	**********			·							
 2.	+		: / Java												-		-		
3.	Labora	tory N	Manual									w.						-	
										. ,				1					
COURS				rse, the	studen	ts will	be able	to						В	ТМ		ed (Hi	ghest	
CO1	implement linear and non linear data structures to solve the given problem												Applying (K3) Precision (S3)						
CO2	use a	data s	tructure	e to imp	lement a	another	data str	ructure						Applying (K3) Precision (S3)					
CO3	implem	nent s	earchin	ng and s	orting o	peration	ns for a	given pro	blem			1		Applying (K3) Precision (S3)					
						Марі	oing of	Cos with	ı POs	and PS	Os						-		
		201	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO1) PO11		P	SO1		PS	02	
COs/F	POs F															-			
	POs F	3	2	2	2	3			2	2	2	3			3		2	2	
COs/F CO1 CO2	POs I			2	2	3			2	2	2	3		e) - lankei (e	3				

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy
*Includes Term Work (TW) & Online / Certification course hours

