# 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 ENGINEERING DEGREE IN MECHATRONICS ENGINEERING

# DEPARTMENT OF MECHATRONICS ENGINEERING



## B.E. MECHATRONICS ENGINEERING CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

			Н	ours /	Seme	ster			Maximum Marks				
Course Code	Course Title	С	I	LI	TW	SL	ТН	Cre dit	CA	ESE	Total	Cate gory	Туре
=	* 1	L	Т	Р	1 00	3L	1111		UA.	ESE	Total	ë	
Theory/The	eory with Practical		91			4				-			В
24EGT11	English for Effective Communication - I	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
24CYT12	Chemistry for Mechanical Systems	45	0	0	45	0	90	3	40	60	100	BS	С
24CSC11	Problem Solving and Programming in C	45	0	30	45	0	120	4	100	0	100	ES	ОТ
24MET11	Engineering Drawing	30	15	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				*						,		
24CYL12	Chemistry Laboratory for Mechanical Systems	0	0	30	0	0	30	1	60	40	100	BS	
24GCL12	Foundation Laboratory – Electrical, IoT and Web Technologies	0.	0	90	0	0	90	3	100	0	100	ES	
24MNT12	Quantitative Aptitude – I	30	0	0	0	0	30	0	100	0	100	мс	
24MNT11	Student Induction Program	0	0	90	0	0	90	0	100	0	100	мс	
	Total Credits to be earned									-			

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 - Mechatronus



## B.E. MECHATRONICS ENGINEERING CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

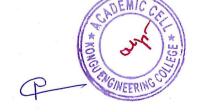
SEMESTER	₹-11		t				۸				- 0		6 ,
			Н	ours /	Seme	ster			Max	imum N	Marks		
Course Code	Course Title	С	í	LI	TW	SL	Cre dit		CA	ESE	Total	Cate gory	Туре
		L T P			CA	ESE	Total	g.					
Theory/The				0			100						
24EGT21	English for Effective Communication - II	45	0	0	45	0	90	3	40	60	100	HS	С
24MAC21	Multivariable Calculus and Complex Analysis	45	7	16	52	0	120	4	50	50	100	BS	Α
24PHT21	Applied Physics	45	0	0	45	0	90	3	40	60	100	BS	С
24ITC23	Python Programming	45	0	30	45	0	120	4	100	0	100	ES	ОТ
24MET21	Engineering Mechanics	45	0	0	45	0	90	3	40	60	100	PC	А
24TAM02	Tamils and Technology	15	0	0	15	0	30	1	100	0	100	HS	ОТ
Practical /	Employability Enhancement		ļ-							N et			
24PHL21	Applied Physics Laboratory	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	100	ES	
24MNT21	Quantitative Aptitude – II	30	0	0	0	0	30	0	100	0	100	МС	
24VEC11	Yoga and Values for Holistic Development	15	0	15	0	0	30	1	100	0	100	HS	
v	Total Credits to be e	arne	t			3 120		23			n - L	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

 $\label{eq:course} \mbox{Type: A - Analytical, D - Design using Hardware, S - Simulation using Coding, C - Concept, OC - Online course, OT - others$ 

Signature of the Chairman

Board of Studies - Mechatronics



### B.E. MECHATRONICS ENGINEERING CURRICULUM – R2024 (For the students admitted from the academic year 2024-25 onwards)

SEMESTE	R – III				0				tes	-	4		
	1 8 P		Н	ours /	Seme	ster			Max	imum N	/larks		
Course Code	Course Title	С	СІ		TW	SL	TH	Cre dit	CA	FOF	Tatal	Cate gory	Туре
		L T P			CA	ESE	Total		J.				
Theory/The	eory with Practical					-				181			
24MTC31	Electrical Machines	45	0	30	45	0	120	4	50	50	100	ES	С
24MTC32	Sensors and Signal Processing	45	0	30	45	0	120	4	50	50	100	РС	С
24MTT31	Theory of Machines	45	15	0	60	0	120	4	40	60	100	РС	Α
24MTT32	Fluid Mechanics and Thermodynamics	45	15	0	60	0	120	4	40	60	100	PC	C
24MTT33	Electron Devices and Digital Circuits	45	0	0	45	0	90	3	40	60	100	PC	Α
24GET31	Universal Human Values	30	0	0	30	0	60	2	100	0	100	HS	ОТ
Practical /	Employability Enhancement						2.		20	9 56:			
24MTL31	Computer Aided Drafting Laboratory	0	0	30	- 0	0	30	1	60	40	100	PC	
24MTL32	Electron Devices and Digital Circuits Laboratory	0	0	30	0	0	30	1	60	40	100	PC	
24GEP31	Mini Project - I	0	0	30	0	0	30	1	100	0	100	EC	
Total Credits to be earned 24									100	41			

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 - Mechatronics



		(Common to all Enginee	ering and Tech	nnology Brand	hes)					
Programm Branch		All B.E/B.Tech Branches	Sem	Category	L	Т	Р	SL*	Total	Credi
Prerequisi	ites	Nil	1	HS	45	0	0	45	90	3
Preamble		s course is designed to enhance the covarious workplace communication and			al apti	ude i	n Eng	glish la	nguage i	required
Unit – I		ammar, Verbal Aptitude, Listening, Sp f Speech – Articles – Determiners – V								9
Building a Pount – II  Grammar: T  Prefixes and Asking Ques Strategies: A	Grange Suffixed Stions –	g: Importance of Good Communication Attitude: An Excerpt from You Can Windows Ammar, Verbal Aptitude, Listening, Splan Sentences – Assertive, Interrogative, as – Collocations – Idiomatic Expression Role Play – Reading: Reading for Court from You Can Win-Writing: Descript	<ul> <li>Writing: Empeaking, Read Imperative and Emperative an</li></ul>	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- \ ary Po mmuni	/erbal A ints – Sp	Emails 9 ptitude peaking Winning
Unit – III Grammar: T from a Dis Communicat Writing: Narr Unit – IV Grammar: F Sentence Co Reading: Ct Instructions - Unit – V	Graness cussion—Scrative and Granels completing annels Granes Gra	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, Sp. — Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Sp. Sp. — Transitional Words/Phrases — on — Listening: Listening for Specifics of communication — Building Positive ammar, Verbal Aptitude, Listening, Sp. Aptitude, Listening, Ap	peaking, Read mbled Senten nt — Discuss is Every Day: peaking, Read Discourse Mais Information — Self-Esteem as peaking, Read	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: T from a Dis Communicat Writing: Narr Unit – IV Grammar: F Sentence Co Reading: Ch Instructions - Unit – V Grammar: S – Cloze Tes Speaking: A Excerpt from Specific Voc	Grand	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, Sp. — Phrasal Verbs— Verbal Aptitude: Jun — Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Sp. 1 (1997)	peaking, Reambled Sentent — Discusses Every Day:  peaking, Reambled Sentential Piscourse Mais Information — Self-Esteem and Peaking, Reambled Self-Esteem and Peaking, Reambled Self-Esteeming — Reading to the Peaking of the Peaking Reading of the Peaking Reading to the Peaking Reading Reading of the Peaking Reading Re	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 Car nones :	ng: Takir ng: Pro iting: Pro ord Subs c Conver n Win –	9 ng Notes ocess of aragraph  9 titution reations- Writing  9 nographs cription -
Unit - III  Grammar: T from a Dis Communicat Writing: Narr Unit - IV  Grammar: F Sentence Co Reading: Ch Instructions - Unit - V  Grammar: S - Cloze Tes Speaking: A Excerpt from Specific Voca TEXT BOOK	Grand	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, Sp. – Phrasal Verbs– Verbal Aptitude: Jun – Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Sp. tions – Transitional Words/Phrases – on – Listening: Listening for Specific of communication – Building Positive ammar, Verbal Aptitude, Listening, Sp. Verb Agreement – Gerunds and Infiniti Verb Forms, Prepositions and Articles grand Disagreeing – Reading: Skimmir Can Win – Writing: Transcoding: Identity of the Agreement of the Agreemen	peaking, Reacmbled Sentent — Discuss s Every Day:  peaking, Reac Discourse Mail Information Self-Esteem a peaking, Reacyes—Verbal As—Listening:  ng — Reading to 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 s, Ho tifying a aphs	e: Or Y	istenir Readi n – Wr ne Wo ephonic ou Car nones : 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
Unit - III Grammar: T from a Dis Communicat Writing: Narr Unit - IV Grammar: F Sentence Co Reading: Ch Instructions - Unit - V Grammar: S - Cloze Tes Speaking: A Excerpt from Specific Voca TEXT BOOK  1. Sudh Delh	Grannels - Record Grabulary	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, Sp. – Phrasal Verbs– Verbal Aptitude: Jun – Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Sp. tions – Transitional Words/Phrases – on – Listening: Listening for Specific of communication – Building Positive ammar, Verbal Aptitude, Listening, Sp. Verb Agreement – Gerunds and Infiniti Verb Forms, Prepositions and Articles grand Disagreeing – Reading: Skimmir Can Win – Writing: Transcoding: Identity of the Agreement of the Agreemen	peaking, Reacmbled Sentent — Discuss s Every Day:  peaking, Reac Discourse Mail Information Self-Esteem a peaking, Reacyes—Verbal As—Listening:  ng — Reading to 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 s, Ho tifying a aphs	e: Or Y	istenir Readi n – Wr ne Wo ephonic ou Car nones : 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
Unit – III  Grammar: T from a Dis Communicat Writing: Narr Unit – IV Grammar: F Sentence Co Reading: Ch Instructions - Unit – V Grammar: S – Cloze Tes Speaking: A Excerpt from Specific Voc. TEXT BOOK 1. Sudh Delh REFERENC	Grienses cussion—Screative an Grannels—Record Grienses Grannels—Record Grannel	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, Sp. – Phrasal Verbs– Verbal Aptitude: Jun – Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Sp. tions – Transitional Words/Phrases – on – Listening: Listening for Specific of communication – Building Positive ammar, Verbal Aptitude, Listening, Sp. Verb Agreement – Gerunds and Infiniti Verb Forms, Prepositions and Articles grand Disagreeing – Reading: Skimmir Can Win – Writing: Transcoding: Identity of the Agreement of the Agreemen	peaking, Reading Sentent — Discusses Every Day:  peaking, Reading Discourse Mais: Information — Self-Esteem as peaking, Reading, Reading Reading — Reading to tifying Trends	ding & Writing Ices – Sentending Tourist An Excerpt from	ice For Desting of Small on Exceeding of Identity of Sin Grid Identity o	matic ation: bu Ca btitud Talk Talk rpt fr s, Ho tifying araphs	e: Or Yes and Arand Aran	istenir Readi n – Wr ne Wo ephonic ou Car nones : ts from chievin Expres	ng: Takir ng: Pro iting: Pa ord Subs c Conver n Win –	9 ng Notes cocess of aragraph  9 titution reations- Writing  9 nograph cription - foals: Ai th Graph ss, New
Unit – III  Grammar: T from a Dis Communicat Writing: Narr Unit – IV  Grammar: F Sentence Co Reading: Ch Instructions - Unit – V  Grammar: S – Cloze Tes Speaking: A Excerpt from Specific Voc TEXT BOOK  1. Sudf Delh  REFERENC  1. Ashr 2 S. P	Grannels - Record Subject tusing abulary (c: marshari, 2016) - Ref Rizv	ermission and Inviting Chief Guest ammar, Verbal Aptitude, Listening, Sp. – Phrasal Verbs– Verbal Aptitude: Jun – Speaking: Retelling an Incider anning - Motivating Yourself and Other and Compare & Contrast ammar, Verbal Aptitude, Listening, Sp. tions – Transitional Words/Phrases – on – Listening: Listening for Specific of communication – Building Positive ammar, Verbal Aptitude, Listening, Sp. Verb Agreement – Gerunds and Infiniti Verb Forms, Prepositions and Articles grand Disagreeing – Reading: Skimmir Can Win – Writing: Transcoding: Identity of the Agreement of the Agreemen	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 s, Ho s, Ho catifying araphs	e: Or Person of Action of	istenir Readi n – Wr ne Wo phonic ou Cal 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 ch Grap

<sup>\*</sup> 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	<del>-</del>	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 Eng	ineering and T	echnology	orano	ches	)			
Programme & Branch	All B.E/B.Tech Branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	. Lize 1.	BS	45	7	16	52	120	4
Preamble	To provide the skills to the stu- and ordinary differential equati	dents for solving	g different re	al tim	ne pr	oblen	ns by a	applying	matrices
Unit – I	Matrices:	The state of	plate fer a				9	1-1-7	9
and Eigen vector matrices – Ortho	naracteristic equation – Eigen val ors (without proof) – Cayley H gonal transformation of a symme in of quadratic form to canonical	lamilton theorer etric matrix to dia	m (Statemer 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 e	quations: Exac	t differential	equat	tions	– Le	ibnitz's	Linear I	Equation
Unit – III	ation – Clairaut's equation - App Ordinary Differential Equation			wtn a	na a	ecay.			9
	equations of second and higher			ents -	Par	ticula	r Intea	rals for th	e types:
eax - cosax /	sinax – xn – eaxxn, eax sinbx and	eax cosbx - Diff	ferential Equ	ations	s with	n vari	able co	pefficient	s: Euler-
Cauchy's equati	on – Legendre's equation.	, , , , , , , , , , , , , , , , , , ,		1				*	1000
Unit – IV	Applications of Ordinary Dif					111		ls	9
Method of varia	ation of parameters – Simultar differential equations: Simple	neous first ord	er linear ed	uatio	ns \	vith (	consta	nt coeffi	cients –
associated cond	itions need to be given).	namonic mone	on – Electric	, Circ	uits	(וווט)	erentia	ıı equatio	ons and
Unit – V	Laplace Transform:			-				-	9
Introduction - Co	onditions for existence - Laplace	transform of ele	amentary fun	atia =					
and intograls of			Silicital y luii	Cuon	s – E	asic	proper	ties – De	rivatives
and integrals of	ransforms – Transform of period	ic functions - Inv	verse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu	nctions – Partial fraction method	ic functions - Inv	verse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu	ransforms – Transform of period nctions – Partial fraction methoc th constant coefficients.	ic functions - Inv	verse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu second order wi	nctions – Partial fraction method	ic functions - Inv	verse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fu second order wi	nctions – Partial fraction method th constant coefficients.	ic functions - Inv	verse 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.	ic functions - Inv	verse 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	ic functions - Inv I – Convolution	verse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
LIST OF EXPER  1. Introduct 2. Comput  3. Solving	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: etion to MATLAB eation of eigen values and eigen	c functions - Inv	verse Laplace	e tran	sfor	m: Inv	verse L	aplace tr	ansform
cond order with second order w	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: ction to MATLAB ration of eigen values and eigen first order ordinary differential ed	vectors  equations	verse 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.  RIMENTS / EXERCISES: ction to MATLAB ration of eigen values and eigen first order ordinary differential echigher order ordinary differential	vectors quations equations	verse 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.  RIMENTS / EXERCISES: ction to MATLAB ration of eigen values and eigen first order ordinary differential echigher order ordinary differential n of Simultaneous first order ODE	vectors quations equations soft parameters	verse Laplace Theorem – v	e tran Applio	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen first order ordinary differential edhigher order ordinary differential of Simultaneous first order ODE second order ODE by variation of the constant of the	vectors quations equations equations for parameters ee 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: Extion to MATLAB Lation of eigen values and eigen first order ordinary differential exhipher order ordinary differential of Simultaneous first order ODE second order ODE by variation of the control of the cont	vectors quations equations equations for parameters ee transform of	verse Laplace Theorem – /	e tran Applio	sfor	m: Inv	verse L	aplace tr	ansform
of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen first order ordinary differential exhipher order ordinary differential of Simultaneous first order ODE second order ODE by variation of hing Laplace and inverse Laplace of Second order ODE by employed	vectors quations equations equations sof parameters e transform of bying Laplace transform	verse Laplace Theorem – /	ns	esfori	m: Inv	verse L olution	aplace tr of linear	ansform ODE of
of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: Extion to MATLAB Lation of eigen values and eigen first order ordinary differential exhipher order ordinary differential of Simultaneous first order ODE second order ODE by variation of the control of the cont	vectors quations equations equations se transform of bying Laplace transvathy K., "En	verse Laplace Theorem – /	ns	esfori	m: Inv	verse L olution	aplace tr of linear	ansform ODE of
of elementary fusecond order will  LIST OF EXPER  1. Introduct 2. Compute 3. Solving 4. Solving 5. Solution 6. Solving 7. Determ 8. Solution  TEXT BOOK:  1. Kandas Reprint	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen first order ordinary differential exhipher order ordinary differential of Simultaneous first order ODE second order ODE by variation of ining Laplace and inverse Laplace of Second order ODE by employed amy P., Thilagavathy K. and Gui	vectors quations equations equations se transform of bying Laplace transvathy K., "En	verse Laplace Theorem – /	ns	esfori	m: Inv	verse L olution	aplace tr of linear	ansform ODE of
of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: Etion to MATLAB ration of eigen values and eigen first order ordinary differential ed higher order ordinary differential of Simultaneous first order ODE second order ODE by variation of ning Laplace and inverse Laplace of Second order ODE by employed amy P., Thilagavathy K. and Gui Edition 2016, S.Chand and Co.,	vectors quations equations equations es of parameters e transform of leving Laplace transform navathy K., "En New Delhi.	basic functio ansforms	ns ather	natic	m: Inv	verse L olution	aplace tr of linear	ansform ODE of B.Tech",
of elementary fusecond order with second order w	nctions – Partial fraction method th constant coefficients.  RIMENTS / EXERCISES: etion to MATLAB ration of eigen values and eigen first order ordinary differential edhigher order ordinary differential of Simultaneous first order ODE second order ODE by variation of ning Laplace and inverse Laplace and Second order ODE by employed amy P., Thilagavathy K. and Gui Edition 2016, S.Chand and Co., MANUAL / SOFTWARE:	vectors quations equations equations es of parameters ce transform of leving Laplace transform New Delhi.	basic functionansforms  Gineering Management	ns Willem	natic:	m: Inv	First Y	ear B.E/	B.Tech",
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<sup>\*</sup>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 COs with POs and	d 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 98 40	27 1	1 _ Al	Ή .
CO3	3	3	2		3		- T	F E = 2	= < 1 =				
CO4	3	3	2		3				, =	T = 7 = 5	I =	. 1-	
CO5	3	3	3		3								

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

ASSESSME	IT DA	TTERN -	THEODY
ASSESSIVIE	NI FA	I I E KIN -	INCURI

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



	(Common to Mechanical, Mechat	ronics & Auto	mobile branc	hes)					
Programme & Branch	B.E - MECH, MTS & AUTO branches	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Nil	1	BS	45	0	0	45	90	3
Preamble	.This course explores the basic principles of	of water trea	tment enerc	nv str	rage	de de	vices	electroch	omietn
13 3 5 5	corrosion, fuels and combustion. It also aims t	to impart the t	undamentals						
Unit – I	towards innovations in engineering and also for WATER TECHNOLOGY	societai appi	ications.	- 6	-		-		9
	es of water - hardness of water- expression of hard	iness - units o	of hardness -	wate	una	litý n	arame		
	er by EDTA method – determination of alkalin								
	using hard water in industry: scale, sludge and b								
	Igon conditioning - External treatment method - de		_					atment p	rocess
Unit – II		Tilli le la li Zatioi	i process and	reve	ise c	SIIIO	515.		<u> </u>
	ELECTROCHEMISTRY AND CORROSION	olyopio coll	Cloatrada na	tontio	1 N	l	1		9
	y: Introduction - cells - types - representation of ga								
	struction, working and applications of glass electro								
	Corrosion: Introduction - chemical corrosion - Pi								
	alvanic series- factors influencing rate of corrosion	n - corrosion c	ontrol by org	anic o	coatir	ng (p	aints) -	- constitue	ents and
functions with exa	ampies.								
	ENERGY STORAGE DEVICES				2 22				
Batteries: Introdu	uction - discharging and charging of battery - char							ary batter	
Batteries: Introdu button cell - secon	uction - discharging and charging of battery - chaindary battery: Ni-Cd battery -modern battery: lithiu	m-ion battery	- choice of b	atterie	es foi	r elec	ctric ve	ary batter hicles.	y: silve Fue
Batteries: Introdubutton cell - secon Cells: Introductio	uction - discharging and charging of battery - char ndary battery: Ni-Cd battery -modern battery: lithiu n - Importance and classification of fuel cells - des	m-ion battery scription, princ	- choice of b	atterie nents	es for	r elec	ctric ve	ary batter hicles.	y: silve Fue
Batteries: Introdu button cell - secon Cells: Introductio fuel cell, phospho	uction - discharging and charging of battery - chai ndary battery: Ni-Cd battery -modern battery: lithiu n - Importance and classification of fuel cells - des ric acid fuel cell and direct methanol fuel cell - com	m-ion battery scription, princ	- choice of b	atterie nents	es for	r elec	ctric ve	ary batter hicles.	y: silve
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Batteries: Introduction cell - secon Cells: Introduction fuel cell, phospho Unit - IV Introduction - cla (simple problems metallurgical coken number, compressurit - V Lubricants: Introduction + Claubricants: Industrial + Claubricants: Industrial + Claubricants: Industrial + Claubricants: Industrial + Claubricants: Introduction + Clau	uction - discharging and charging of battery - chaindary battery: Ni-Cd battery -modern battery: lithium - Importance and classification of fuel cells - descrict acid fuel cell and direct methanol fuel cell - come FUELS AND COMBUSTION Issification of fuels - characteristics of a good fuelstification in gnition engine - cetane number - gaseous fuelstification - classification - properties: viscosity, viscarbon residue. Explosives: Introduction - classification - good adhesive - classification adhesives.  The company of the c	m-ion battery scription, prince parison of battery scription, prince parison of battery scription. It is combustionally considered and consid	- choice of beingle, comporteries with function - calorific varieties etroleum - kruffash and fire anufacture of adhesives -	atterie nents uel ce values - pro nockin impo adhe	es foi and Ills. 5 - g exxima g: sp at, clair trant esive	r electromork ross ross ate a park oud a exp bono ogists	and no nalysis ignition and polosives ding- c	ary batter hicles. fuel cells:  get calorific an engine of the mical and	ry: silve Fue alkalin C value cance - octan O oiliness TN an action of
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<sup>\*</sup>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	analyze the water quality parameters for suitability of industrial and domestic applications.	Analysing (K4)
CO2	investigate the fundamental principles of electrochemistry and corrosion control measures to prevent corrosion.	Analysing (K4)
CO3	examine the chemistry of energy storing devices and meeting the future prospectus of energy storage.	Analysing (K4)
CO4	investigate the concepts of fuels and combustion for efficient engineering applications.	Analysing (K4)
CO5	examine the needy engineering materials for betterment of industries.	Analysing (K4)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PS01	PSO2
CO1	3	2	2	1	A. 6	1	in is a			,		de conse	1010
CO2	3	2	1	1	4 *								I I I'm
CO3	3	2	1	1									rb <sub>fic</sub>
CO4	3	2	1	1								1.3.7	4 .
CO5	3	2	1	1					y F 1 1 1 1 1 1		Ÿ,	or a who	per

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		40	50	10	* [2]	k = 1	100
CAT3		40	50	10			100
ESE	- 0	40	50	10	я		100

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

Signature of the Chairman Board of Studies - CAN CA SERVICO STATE TO SERVICO STATE OF ST

Programme & Branch	All BE/BTech Engineering & Technology branches, except CSE, IT,CSD, Al&ML, Al&DS	Sem	Category	L	т	P	SL*	Total	Credit
Prerequisites	Nil	1	ES	45	0	30	45	120	4
Preamble	The course is designed for use by free deals with the techniques needed to p solve problems and the ways the confocuses on developing programming sk	ractice of mputers	computationa can be use	I thinked to s	ing,	the a	art of u	sing con	nputers t
Unit – I	Introduction to Computer and Proble					- 1	W		9
	omputers: Types, Generations, Charact orithms - Flowcharts – Pseudo codes -								
Unit – II	Introduction to C and Control Statem		7.9 10 37 12 3	100		23.5	THE SH		9
The structure of identifiers- Basic looping stateme  Unit – III	a C program – Compiling and executing data Types – Variables – constants – Ints  Arrays and Functions:	nput / C	gram – C Tok Output statem	ens – ients –	Cha op	erato	er set in rs - de	n C — Ke cision ma	eywords aking an 
	izing and accessing arrays – operations	on arr	ave - Two d	imene	iono	Larra	WC 200	their o	0.000
Functions: Intro	duction- Using functions, function declara nctions: basic data types and arrays – sto	tion and	definition - f	unctio	n ca	II – re			
Unit – IV	Strings and Pointers:		*						9
character maniparithmetic, point	ction – operations on strings : finding I oulation functions, Arrays of strings. Poi ers and 1D arrays , pointers and strings	nters: d							
Unit – V	User-defined Data Types and File Ha								9
unions - enume	ta types: Structure: Introduction – neste erated data type. File Handling: Introduct ng file position indicator : fseek(), ftell() an	ion - op	ening and cl						
LIST OF EXPE	RIMENTS / EXERCISES:								
1 Writing a	algorithms and drawing flowcharts using Finishers  n structures	Raptor T	ool for proble	ms inv	olvi	ng se	quentia	ıl, Select	ion and
	ns for demonstrating the use of different ty	pes of	format Specif	iers	-				
3. Program operator	ns for demonstrating the use of different ty	pes of c	perators like	arithm	etic	, logic	al, rela	itional ar	nd ternar
4. Program	ns for demonstrating using decision maki	ing state	ments	ž.		*		и	
5. Program	ns for demonstrating using repetitive sta	tements	, e a						
6. Program	ns for demonstrating one-dimensional arra	ay							- \(\frac{1}{2}\)
7. Program	ns for demonstrating two-dimensional arra	ay			1	-		ie.	with process
8. Program	ns to demonstrate modular programming of	concepts	s using function	ons				=	- 6
9. Program	ns to demonstrate strings (Using built-in a	nd user-	defined funct	ions)					
10. Program	is to illustrate the use of pointers								
11. Program	ns to illustrate the use of structures and ur	nions	leafian si	dai.		7			
		nions	let's v	áai,		. 7			

<sup>\*</sup>includes Term Work(TW) & Online / Certification course hours

TEXT BO	OOK:						7 10			r V				
1.	Reema TI	nareja,	"Progra	mming i	n C ", 2ı	nd Editio	on, Oxfo	ord Unive	ersity Pr	ess, New	Delhi, 20	)18	1	
REFERE	NCES/ MA	ANUAL	/ SOFT	WARE:	Party.	into.		6 (514			1,181	47.5	4-2-1	
1.	Yashavar	t Kanet	tkar, "Le	et us C",	16th Ed	dition, B	PB Pub	lications	, 2018.			te, e pe		
2.	Sumitabh	a Das, '	"Compu	ter Fund	damenta	als and	C Progr	amming	", 1st Ed	dition, Mc	Graw Hill,	2018.		
3.	Balagurus	samy E.	., "Progi	amming	in ANS	SI C", 7t	h Editio	n, McGra	aw Hill E	ducation	, 2017.		- I	
4.	Behrouz / C", 3 <sup>rd</sup> Ed				F.Gilbe	erg, "Co	mputer	Science	A Struc	ctured Pro	grammin	g Approac	ch Using	
5.	https://ww	w.cpro	grammi	ng.com/	tutorial/	c-tutoria	ıl.html	1.	17.5	17			34.	
	E OUTCOI		urse, th	e stude	nts will	l be abl	e to			2		BT Ma (Highest		
CO1	apply pro							ons for t	he real v	world prob	olems.	Applyin Precisio		
CO2	develop s	simple (	C progra	ıms usir	ng appr	opriate l	ooping	and con	trol state	ements		Applyin Precisio	g (K3)	
СОЗ	develop s	simple (	C progra	ms usir	g the co	oncepts	of array	s and m	nodular į	orogramm	ning	Applyin Precisio		
CO4	apply the	concep	ots of po	inters a	nd deve	elop C p	rograms	s using s	strings a	nd pointe	rs	Applyin Precisio		
CO5	make use	e of use	r-define	d data t	ypes an	d file co	ncepts	to solve	real wo	rld proble	ms	Applyin Precision		
		2 6		M	anning	of COs	with Po	Os and	PSOs		P 20			
COs/PC	s PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	P011	PSO1	PSO2	
CO1	3	2	1	1			n te a V	- 1,5%	1	1	1	5, 1		
CO2	3	2	2	. 1					1	1	1			
CO3	3	2	2	1					1.	1	1			
CO4	3	2	2	1					1	1	1	-		
CO5	3	2	2	1		. ,		, .	1	1	1			
1 – Sligh	nt, 2 – Mod	erate. 3	B – Subs	stantial.	BT- Blo	om's Ta	xonomy	·		14				

Signature of the Chairman
Board of Studies - CSE

CADEMIC CELL

P. Malaivam

right

, !	24MET11 – E	NGINEE	RING DRAWI	NG					
	(Common to Civil, Mech, MTS,	Auto, Cl	hem, ECE, EE	EE, EI	E, FT	brar	iches)		*
Programme & Branch	BE / BTech – Civil, Mech, MTS, Auto, Chem, ECE, EEE, EIE, FT branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	1 / 2#	ES	30	15	0	45	90	3
Preamble	To impart knowledge on engineering surfaces, isometric projections and Auto								
Unit – I	Introduction to Engineering drawing	and Eng	ineering Cur	ves		(0	,		6+3
dimensioning. P (Eccentricity met	nstruments - BIS conventions and speci rojection of pointsin different quadrants thod). Cycloidal Curves- Cycloids and Inv	. Engine	ering Curves	: Cor	ic se				ola, Hyperbola
Unit – II	Projection of planes and Solids ygonal surface and circular lamina inclin	II	<u> </u>					1	6+3
pyrailius, cylliu	er and cone when the axis is inclined to o	ile reiere	ence plane by	Chang	ge or p	วบรเน	on mei	noa.	
Unit – III Sectioning of pri to VP - Obtaini	Sectioning of Solids and Developments sms, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to	ent of Su ole vertica t of Late	urfaces al position by eral Surfaces	cutting	g plan	es ir	clined	to HP and	
Unit – III Sectioning of pri to VP - Obtaini	Sectioning of Solids and Developments sms, pyramids, cylinder and cone in simple true shape of section. Developments	ent of Su ole vertica t of Late	urfaces al position by eral Surfaces	cutting	g plan	es ir	clined	to HP and	perpendicular
Unit – III Sectioning of pri to VP - Obtaini Pyramids, Cylinc Unit – IV Principles of ison	Sectioning of Solids and Developments, pyramids, cylinder and cone in simple of section. Development ders and Cones(Cutting planes inclined to Isometric Projection  metric projection - Isometric scale - Isometric Projection	ent of Su ble vertica t of Late HP and netric pro	arfaces al position by eral Surfaces perpendicular	cutting of Si	g plan mple only	es ir and ).	nclined trunca	to HP and	perpendicular Like Prisms 6+3
Unit – III Sectioning of pri to VP - Obtaini Pyramids, Cylinc Unit – IV Principles of iso and cylinders. Co	Sectioning of Solids and Developments, pyramids, cylinder and cone in simple of section. Development ders and Cones (Cutting planes inclined to Isometric Projection  metric projection - Isometric scale - Isomeonversion of orthographic in to isometric	ent of Su ble vertica t of Late HP and netric pro views	arfaces al position by eral Surfaces perpendicular jections of sir	cutting of Si	g plan mple only	es ir and ).	nclined trunca	to HP and	I perpendicular Like Prisms 6+3 sms, pyramids
Unit – III  Sectioning of pri to VP - Obtaini Pyramids, Cylind  Unit – IV  Principles of iso and cylinders. Co  Unit – V  Conversion of is Introduction to Co drawing with din	Sectioning of Solids and Developments, pyramids, cylinder and cone in simple of section. Development ders and Cones(Cutting planes inclined to Isometric Projection  metric projection - Isometric scale - Isometric Projection	ent of Su ble vertica t of Late o HP and netric pro- views uction to ection (Fro- design a	arfaces al position by eral Surfaces perpendicular jections of sir o AutoCAD eehand sketcl and developmercises manda	cutting of Sir to VI	g plan mple only and tru inly). f new	es ir and ).  uncat	red soli	to HP and ted Solids like pri	I perpendicular Like Prisms 6+3 Sms, pyramids 6+3 vo-dimensiona
Unit – III  Sectioning of pri to VP - Obtaini Pyramids, Cylind  Unit – IV  Principles of iso and cylinders. Co  Unit – V  Conversion of is Introduction to Co drawing with din	Sectioning of Solids and Developments, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to Isometric Projection  metric projection - Isometric scale - Isometric projection of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection into orthographic projection and Introdometric projection and	ent of Su ble vertica t of Late o HP and netric pro- views uction to ection (Fro- design a	arfaces al position by eral Surfaces perpendicular jections of sir o AutoCAD eehand sketcl and developmercises manda	cutting of Sir to VI	g plan mple only and tru inly). f new	es ir and ).  uncat	red soli	to HP and ted Solids like pri	I perpendicular Like Prisms 6+3 Sms, pyramids 6+3 vo-dimensiona
Unit – III Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit – IV Principles of iso and cylinders. Counit – V Conversion of is Introduction to Codrawing with din 3D models of va  TEXT BOOK:	Sectioning of Solids and Developments, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to Isometric Projection  metric projection - Isometric scale - Isometric projection of orthographic in to isometric orthographic Projection and Introdometric projection into orthographic projection projection into orthographic projection and Introdometric projection and	ent of Su ble vertica t of Late o HP and netric pro- views uction to ection (Fro- design a um 2 exe- ng softwa	arfaces al position by eral Surfaces perpendicular jections of sir o AutoCAD eehand sketcl and developmercises manda re. (Minimum	cutting of Sir to VI	g planmple only only. Inly). In new only only only. Introises	es ir and ). uncat proc ducti	ed soli	to HP and ted Solids  ds like pri	I perpendicular Like Prisms 6+3 Sms, pyramids 6+3 vo-dimensiona
Unit – III Sectioning of pri to VP - Obtaini Pyramids, Cylind Unit – IV Principles of iso and cylinders. Counit – V Conversion of is Introduction to Codrawing with din 3D models of va  TEXT BOOK:	Sectioning of Solids and Developments, pyramids, cylinder and cone in simple true shape of section. Development ders and Cones(Cutting planes inclined to Isometric Projection  metric projection - Isometric scale - Isometric projection - Isometric in to isometric orthographic in to isometric projection into orthographic projection and Introdometric projection into orthographic projection using suitable software (Minimulations components using suitable modelling grawal, Agrawal C.M., "Engineering Drawagrawal, Agrawal C.M.,	ent of Su ble vertica t of Late o HP and netric pro- views uction to ection (Fro- design a um 2 exe- ng softwa	arfaces al position by eral Surfaces perpendicular jections of sir o AutoCAD eehand sketcl and developmercises manda re. (Minimum	cutting of Sir to VI	g planmple only only. Inly). In new only only only. Introises	es ir and ). uncat proc ducti	ed soli	to HP and ted Solids  ds like pri	I perpendicular Like Prisms 6+3 Sms, pyramids 6+3 vo-dimensiona

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

#sem1: Cvil, Mech, MTS, Auto, Chem branches & sem 2: ECE, EEE, EIE, FT branches

	SE OUTCOMES: mpletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	interpret international standards of drawings and sketch the engineering curves	Applying (K3)
CO2	draw the projection of planes and solids	Applying (K3)
CO3	draw sectioning and developing of 3D primitive objects like prisms, pyramids, cylinders, cones	Applying (K3)
CO4	sketch the isometric projections of simple and truncated solids and convert orthographic projection in to isometric drawing	Applying (K3)
CO5	obtain multi view projections and solid models of objects using CAD tools	Applying (K3)

Mapping	of	COs	with	POs	and	DSOc
Mapping	OI	CUS	with	PUS	anu	POUS

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	1		,	2		-			3			
CO2	3	1	1	(8	2	_				3	4 mg -		
CO3	3	1	1		2		9(			3			
CO4	3	1	1		2					3	<i>z</i> .		
CO5	3	1	1		2		ps.			3			

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

<b>ASSESSME</b>	NT I	PATT	FRN.	THEORY
AGGLGGIVIL		- MII	LI/14 .	INCORT

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		-	100			-	100
CAT2	-	-	100	-	* <del>-</del>	. Class a	100
CAT3			100	-	-		100
ESE	-	_	100	-	-	2 ·	100

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

Signature of the Chairman



		- HERITAGE OF						11k ( 1p!	
	(Common to All Eng	gineering and Tec	hnology Brar	nches	)		y == 1		1 2 d to 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 tion of Tamils to	ut Tamil lang	uage,	liter	ature	, painting	gs, sculptu	ires, folk
UNIT I	Language and Literature	**************************************							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	king nridhang	massive to am, parai	erracotta , veenai
UNIT III	Folk and Martial Arts		- 3 -						3
	karagattam - villu pattu - kaniyan kooth		ourner babbe	· · · · ·	Oila		uiii vu	idii agoi	dance
sports and gam	Thinai Concept of Tamils		1,5 to 1,		15				3
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 Natatanils 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 Natatanils 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	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

<sup>\*</sup>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	k.ET	1	No.			2	3	2	2	y	3		
CO2	. 1-1					2	3	2	2		3		1 m
CO3						2	3	2	2		3		× ,
CO4						2 .	3	2	2		3		
CO5				J- 17- F		2	3	2	2		3	4 _ 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-தமி <u>ழ</u>	ந் 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, ( பற்றிய அறிவை வழங்குவதே இந்த பாடத்தில்	இந்திய	பண்பாட்டிற			_		கலைகள பங்கள்	
<mark>அ</mark> லகு <i>-</i> ।	மொழி மற்றும் இலக்கியம்								3 2117
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 - பக்	மேலான தி இல ளர்ச்சி -	ன்மைச் க்கியம் தமிழ்
அலகு - ॥	மரபு - பாறை ஓவியங்கள் முதல் நவீன ஓவி ல் நவீன சிற்பங்கள் வரை - ஐம்பொன் சிலை						=		3
தமிழர்களின் <b>அலகு</b> - III தெருக்கூத்து	பில் திருவள்ளுவர் சிலை - இசைக் கருவிகல் சமூக பொருளாதார வாழ்வில் கோவில்களின் நாட்டுப்புறக் கலைகள் மற்றும் வீர் விளையா , கரகாட்டம், வில்லுப்பாட்டு, கணியான் கூத்து ரட்டம், தமிழர்களின் விளையாட்டுகள்.	பங்கு. ட்டுக்கள்	T						3
<b>ച</b> ക്രെ - №	தமிழர்களின் திணைக் கோட்பாடுகள்		<u> </u>	-					3
தமிழகத்தின் கோட்பாடுகள் சங்ககால ந	தாவரங்களும், விலங்குகளும் - தொல்காப்பிய ர - தமிழர்கள் போற்றிய அறக்கோட்பாடு- சங் கரங்களும் துறை முகங்களும் - சங்ககாலத் சாழர்களின் வெற்றி.	<b>.</b> கக்கால	த்தில் தமிழ	ழகத்த	ြိုလ်	எழு	த்தறிவ	பும் கல்	றியும்
	இந்திய தேசிய இயக்கம் மற்றும் இந்திய பண்	TLITLIGA	குத் தமிழ	ர்களி	ன் ட	மங்க	ளிப்பு		
அலகு <i>-</i> ∨						1000	24.57.5		3
இந்திய விடு சுயமரியாதை	தலைப்போரில் தமிழர்களின் பங்கு - இந்திய ந இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல	ாவின் ப சித்த	பிறபகுதிகள் மருத்துவ <u>த</u>		_	ந் ப		.டின் தா கல்வெ	க்கம்
இந்திய விடு சுயமரியாதை	த இயக்கம் - இந்திய மருத்துவத்தில்	ாவின் ப சித்த	•		_				க்கம்
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK:	த இயக்கம் - இந்திய மருத்துவத்தில்	ாவின் ப சித்த பாறு	மருத்துவத		_				க்கம்
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK:	5 இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல ,பாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022,	ாவின் ப சித்த பாறு	மருத்துவத		_				க்கம்
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK: 1. ஆ பூ REFERENCES	5 இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல ,பாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022,	ாவின் । சித்த பாறு அலகு I,	மருத்துவ <u>த</u>	த்தின் 	L	<b>II</b> ங்கு	-	கல்வெ	க்கம் ட்டுகள்
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK: 1. ஆ பூ REFERENCES 1. தமிழ	த இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை	ாவின் । சித்த பாறு. அலகு I, ர (வெளி!	மருத்துவ <u>த</u>	த்தின் 	L	<b>II</b> ங்கு	-	கல்வெ	க்கம் ட்டுகள்
இந்திய விடு சுயமரியாதை கையெழுத்து TEXT BOOK: 1. ஆ பூ REFERENCES 1. தமிழ பணி	த இயக்கம் - இந்திய மருத்துவத்தில் ப்படிகள் - தமிழ்ப் புத்தகங்கள்களின் அச்சு வரல பாலன், தமிழர் மரபு, VRB Publishers Pvt Ltd, 2022, : க வரலாறு- மக்களும் பண்பாடும்- கே கே பிள்ளை கள் கழகம்)	ாவின் ப சித்த பாறு அலகு I, I (வெளி	மருத்துவத் II,III,IV,V. யீடு தமிழ்நா	ந்தின் ரடு பா	ட்டு	ால் ப	-	கல்வெ	க்கம் ட்டுகள்

<sup>\*</sup>includes Term Work(TW) & Online / Certification course hours

SE OUTCOMES:	BT Mapped
ப் 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 )

Signature of the Chairman
Board of Studies - S& H (Chemistry)



						×		RY FOR M	,		-					e .
Drogra	mme &			2	(Commo	n to MEC	H, MIS 8	Automob	ile brai	nches)						1
Branch		E	B.E & ME	CH, MTS	& AUTO	branche	s	Sem.	Cate	egory	L	T	Р	SL*	Total	Credi
Prereq	uisites	ı	Nil					1	E	BS	0	0	30	0	30	1
Preaml	ble		meter ex	periment:	s for the owledge	estimation on water	n of give	pts of vol n samples arameters	and t	hereby	, to	improv	e the	analy	tical skills	s. It also
LIST O				ERCISES					Y							
1.	Assess	sment ate ar	of the given of total had total had	en water ardness b	sample fo y EDTA m	or the suita nethod.	ability of o	drinking / ir	ndustri	al purp	ose t	oy estii	natin	g the c	arbonate,	, non-
2.	Estima	ition o	f type and	amount o	of alkalinity	y present	in the giv	en river/bo	ore wel	l water	sam	ple.		185		
3.	Volum	etric e	stimation	of chromi	um prese	ent in the o	given solu	ıtion using	perma	ingano	netri	ic meth	od.			
4.	Perfori	n Win	kler's me	thod for th	e determ	ination of	dissolved	l oxygen ir	n the g	ven wa	stev	ater s	ample	e.		_
5.	Detern	ninatio	n of strer	gth and a	mount of	acid in a	given sol	ution using	pH m	eter.		·			10	-
6.	Detern	ninatio	n of strer	igth and a	mount of	mixture c	of acids p	esent in th	ne give	n soluti	on u	sing C	ondu	ctivity r	neter.	
7.	Detern	ninatio	n of COD	in the giv	en water	sample.	,									
8.	Detern	ninatio	n of cond	entration	of Nickel	by Spectr	rophotom	etric metho	od.							ii
9.	Perform	ning F	Permanga	nometric	titration fo	or the dete	erminatio	n of corros	ion rat	e of iro	n in a	acidic ı	nediu	ım.		135.5
10.	Estima	ition o	f sulphur	present ir	the giver	n fuel usir	ng electro	-analytical	techni	ques.						
11.	Constr	uction	and worl	king of Zir	nc -Coppe	er Electro	chemical	Cell (Demo	onstrat	ion).						
12.	Report	prepa	aration -ba	ased on th	ne data re	eceived fro	om the ar	alysed wa	ter qua	ality par	ame	ters (E	)emo	nstratio	n).	
REFER	RENCES	/ MAN	IUAL /SO	FTWARE	:											
1.	Palanis Rajaga	samy anapat	P.N., M thy Publis	anikanda hers, Ero	n P., Ge de, 2024.	eetha A.	and Ma	njula Rar	ni K.,	"Chem	istry	Labo	ratory	/ Mani	ual", 1st	Edition
	SE OUT				21 0 00000	. 100	×								ВТ Мар	
On cor	determ	ine th	e amoun	, the stuc t of water				rdness, al	kalinity	, DO, (	COD	prese	nt in		Highest L nalyzing	
	the giv			tration of	Nickel b	y spectro	ophotome	eter and s	sulphur	by el	ectro	anal	/tical	ļ ļ	Precision analyzing	(S3)
CO2	method	d.		_				ctivity met							Precision	(S3)
CO3	chromi	um u	sing pem	nanganom	netric met	hod.	ig condu	ovity met	oi aiiu	Pri II	eter,	iron	and		nalyzing Precision	
					Ma	apping of	COs wit	h POs and	d PSO	5				V.		
COs/P	Os F	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PC	9	PO10	) F	011	PSO1	PSO2
CO	1	2	2	3	2	1	2	1								
CO2	2 /	2	2	3	2		2	1						. ,	L.	
COS	3	2	2	3	2		2	1					+			

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

Signature of the Chairman Board of Studies - Say



									AL, IOT A				0200.		
Progra Brancl		&	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
Pream									nowledge		ineerii	100.00	h hand	55050	-
LIST	FFY	PERIM		house wir		net of Th	ings and	Web Te	echnologie	S	-			7	
LIOT	, LA	LIXIII	LINIO	LALKOR		A – Elec	trical Ins	tallatio	n (30 Hou	rs)					
1.	Dete	erminat	tion of Ic	ad curren	its and se	elect suita	able comp	onents	for Protec	tion					(q)
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		d.		
4.	Crea	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		()					=
6.	Mea	asurem	ent and	analysis o	of electric	cal param	eters for l	Photovo	oltaic Sola	r Panel	×			1	
	T						ernet of	Things	(30 Hour	s)					
1.	Des	ign a S	Single la	yer PCB I	ayout des	signing		1	* 1						
2.	Fab	ricate S	Single la	yer PCB	printing							Ģ.	*	D"	
3.	Ass	emblin	g, solde	ring and c	lesolderii	ng practio	e on sing	le layer	PCB					- 200	
4.	Sen	sor an	d actuat	or interfac	ing with	internet e	nabled m	icrocon	troller						
5.	Sen	isor an	d actuat	or calibrat	tion	ř.					é	<u></u>			7
6.	Inte	gration	of micr	ocontrolle	r based s	system wi	th Cloud	platform	n						
	T				PAR	TC-We	b Techn	ologies	s (30 Hour	s)	-				
1.	Des	ign a s	imple w	eb page ι	sing bas	ic HTML	tags and (	CSS pro	perties				× .		
2.	Des	ign 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	server				ê do estado
REFE	RENC	ES/ M	ANUAL	/SOFTW	ARE:									-	
1.			/ Manua												
2.		: T.Free Reilly , 2		isabeth R	obson, "I	Head Firs	t JavaScr	ript Prog	gramming	A Brair	-Frier	idly G	iuide",	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	, 2012	2	(+)	
4.	Lyn	n Beigl	hley,"He	ad First S	QL",1st	Edition, C	Reilly,20	007.							
COUR				urse, the	studente	، مطالف	abla ta					***		BT Map Highest I	
CO1	1			viring circ				heir rec	uirement					Applying	(K3)
CO2	-													Precision Applying	
	<del> </del>			d solution:		1		- cases	<b>.</b>	,				Precision Applying	(S3)
CO3	Des	sign an	a nost a	n interact				th BOs	and DSC			_		Precision	
COs/P		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	-	
		3	3	3	2	3		1	3	2	2	-	2	-	-
CO						1								1	i





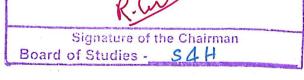


*		Y Y		24	4MNT12	- QUAI	NTITATI	VE AP	TITUDE - I			2	15		
			(C	ommo	n to all E	nginee	ring and	Techi	nology bra	anche	s)				· · · · · · · · · · · · · · · · · · ·
Program Branch	nme &	All B.	E/B.Tec	h Bran	ches	· ·	S	em.	Category	L	т	Р	SL*	Total	Credit
Prerequ	isites	Basic	Mather	matical	skills			1	МС	20	0	0	10	30	0
Preamb		T- !		61	f. 3 1-10				1 1 111						
	ie						ennance a	analytic	cal skills.						
Unit – I	eveteme				Equation		divisibilit	v _ B∩	DMAS Rul	o H	CE /	and I (	201	Dooimal	fractions
-Simplif	ication –	Problem	ıs.				•								
									linear equa	ations	with	n two v	/ariabl	es – Ap	plications
Unit - II	aneous li				nd Perce		Simple pi	robiem	S.			***************************************	- î		6
Ratio ar	nd Propo	rtion: T	hird, Fo	ourth an	d mean p	proportio			son of ratio			ound	ratio -	Duplica	
									Simple pro on populat			hlama			
Unit - II				ss, Inte		rcentag	jes – Pio	Diems	on populat	1011 —	PIO	biems	on de	preciation	on. 8
Profit ar	nd Loss:	Basic c	oncepts	S – Cost	price – S	Selling p	orice – Pr	ofit an	d Loss – S	imple	pro	blems			-
	and Com - Simple			t: Conc	epts – Pe	ercentag	e of inter	rest – D	Difference b	etwe	en s	imple	intere	st and c	ompound
TEXT B		problem	15.												
		nanwal	"Ouant	titative	Antitude 1	for Com	netitive F	Evamir	nations", R	ovisor	1 =	lition	S Cha	and and	
1.	limited, 2		Quan	illative /	Aptitude i	ioi com	ipetitive i		ialions , N	evised	<i>1</i> EC	illioi1,	S.CHa	ina ana	company
REFERI	ENCES/	MANUA	L/SOF	TWAR	E:				_	-	(i)				
1.		uha,"Qı	uantitati	ve Apti	tude for	Compet	titive Exa	aminati	on", 7 <sup>th</sup> Ed	dition,	Мо	Graw	Hill E	Education	n, India,
	2020. https://w	MAN indis	hiv cor	m/antitu	delauesti	ione and	d answer	· · · · · · · · · · · · · · · · · · ·				30		-	
2.									j.						
3.	https://w		Ksiorge	eks.org	/aptitude-	-questio	ons-and-a	answer	<u>S</u>						
	E OUTCO		nurse 1	the stu	dents wi	ll he ah	le to							BT Map lighest	
CO1					two varia		ne to				-			Applying	
CO2		*			centage		ne								<u> </u>
														Applying	
CO3	Solve p	rotit and	l loss, s	imple in		5.			roblems.			α		Applying	(K3)
			1		Mappin	g of CC	Os with F	POs an	nd PSOs	T					
COs/PO	s PO1	PO2	PO3	PO4	PO5	PO6	PO7	POS	PO9	PO	10	PO1	1 P	SO1	PSO2
CO1	2	2													0
CO2	2	2											-		
CO3	3	3											_		-
	nt, 2 – Mc	1	3 Sul	hetantia	L RT. RI	oom's T	avonomi	,							
i – Silgi	11, 2 – 1010	derate,	3 – Sui	DStaritia											
T4/5	11	Don.					PATTE				Santa Buran				
	Bloom's gory*		nember (K1) %		Underst (K2)		Apply (K3)		Analyzing (K4) %		valu (K5	ating ) %		eating K6) %	Total %
CA	T1				30	)	70								100
CA	T2				30	)	70								100
CA	AT3		-		30	)	70		1				1		100



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







	(Common to all Eng	ineering and	Technology by	ranches	s)	-			
Programme & Branch	All B.E/B.Tech Branches	Sem	Category	L	T	Р	SL*	Total	Credit
Prerequisités	Nil	2	нѕ	45	0	0	45	90	3
Preamble	This course aims at up skilling the students in practicing the language and academic contexts.	skills to acq	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, Listen	ing, Speakin	g. Reading &	Writin	a				9
to a Match Comm Etiquette – <b>Readi</b> <i>Atomic Habits</i> <b>Wr</b> i	, Compound, and Complex Sentence entary and Filling in a Table – Listen ng: Scanning a Text, Power Point P ting: Business Letters: Enquiry and C	ng to TED ta resentations omplaint	lks - <b>Speakin</b> – 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, Listen and Indirect Speech – Verbal Aptitude	ıng, Speakin	g, Reading &	Writin	g				9
Lecture and Sorti Choices and Profe Your Bad Habits: <i>I</i>	ng Information – Career Related Co essional Skills – <b>Reading:</b> Reading fo An Excerpt from <i>Atomic Habit</i> s - <b>Writ</b> i	onversation – Local and G ng: Job Appl	<ul> <li>Speaking: G lobal Compretication: Cover</li> </ul>	Group ( nension r Letter	Discus 1 – Ho	ssion w to l	<ul> <li>Spea</li> <li>Find and</li> </ul>	king about	ut Caree
Unit – III				GREEKS VERNING	0.000 T. CO. CO. CO. CO. CO. CO. CO. CO. CO. CO		iic Ott	done i ore	10110
	Grammar, Verbal Aptitude, Listen	ing, Speakin	g, Reading &	Writin	q				9
Grammar: Active	and Passive Voice - Verbal Aptitude	: Error Spottii	g, Reading & ng – Sentence	Writin	<b>g</b> /emer	nt – A	bbreviat	ions and A	9 Acronyms
– <b>Listening:</b> Liste	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News/	: Error Spottii Motivational S	ig, Reading & ng – Sentence Speeches – Si	Writin Improv	<b>g</b> /emer a: Pre	nt – Al	bbreviat	ions and A	9 Acronyms
– <b>Listening:</b> Liste Opinions about P	and Passive Voice – <b>Verbal Aptitude</b> ning to Podcast Interviews and News/ odcast – <b>Reading:</b> Reading a Proc	: Error Spottii Motivational S edure – Cros	ng, Reading & ng – Sentence Speeches – Spess Cultural Co	Writin Improv peaking	g /emer g: Pre icatio	nt – Al esentii n - H	bbreviating a Poi	ions and A	9 Acronyms / – Giving
– <b>Listening:</b> Liste Opinions about P Inevitable and Bad	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News/	: Error Spottii Motivational S edure – Cros	ng, Reading & ng – Sentence Speeches – Spess Cultural Co	Writin Improv peaking	g /emer g: Pre icatio	nt – Al esentii n - H	bbreviating a Poi	ions and A	9 Acronyms / – Giving
<ul> <li>Listening: Liste</li> <li>Opinions about P</li> <li>Inevitable and Bac</li> <li>based Essays</li> </ul>	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News/ odcast – Reading: Reading a Prod I Habits Impossible: An Excerpt from	: Error Spottii Motivational S edure – Cros Atomic Habits	ng, Reading & ng – Sentence Speeches – Spess Cultural Co s – Writing: T	Writin Improverse Deaking Ommun Types o	g /emer g: Pre icatio f Essa	nt – Al esentii n - H	bbreviating a Poi	ions and Ant of View Make Goo	9 Acronyms / – Giving od Habits d Opinior
<ul> <li>Listening: Liste</li> <li>Opinions about P</li> <li>Inevitable and Bac</li> <li>based Essays</li> <li>Unit – IV</li> </ul>	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News/ odcast – Reading: Reading a Prod I Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, Listen	: Error Spottii Motivational Sedure – Cros Atomic Habits ing, Speakin	ng, Reading & ng - Sentence Speeches - Speeches - Cultural Cos - Writing: T	Writin Improved the community of the com	g /emer g: Pre icatio f Essa	nt – Al esentii n - H ays: 7	bbreviating a Poi ow to I Argumei	ions and Ant of View Make Goo ntative and	9 Acronyms / – Giving od Habits d Opinior
<ul> <li>Listening: Liste</li> <li>Opinions about P</li> <li>Inevitable and Bac</li> <li>based Essays</li> <li>Unit – IV</li> <li>Grammar: If/Conc</li> </ul>	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News/ odcast – Reading: Reading a Prod I Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, Listen litional Clause – Modals Verbs – Con	: Error Spottii Motivational Sedure – Cros Atomic Habits ing, Speakin versational De	g, Reading & ng - Sentence Speeches - Speeches - Speeches - Speeches - Writing: Top, Reading & evices - Verba	Writin Improved the community of the com	g /emer g: Pre icatio f Essa g ude:	nt – Alesentii n - H ays: /	bbreviating a Poi ow to I Argumei	ions and Ant of View Make Goontative and	9 Acronym / – Giving od Habit d Opinion 9
<ul> <li>Listening: Liste</li> <li>Opinions about P</li> <li>Inevitable and Bac</li> <li>based Essays</li> <li>Unit – IV</li> <li>Grammar: If/Conc</li> <li>Selection – Listen</li> </ul>	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News/ odcast – Reading: Reading a Prod I Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, Listen litional Clause – Modals Verbs – Con ing: Listening and Filling a Mind Map	Error Spottin Motivational Sedure — Cros Atomic Habits ing, Speakin Versational De — Listening to	g, Reading & ng - Sentence Speeches - Speeches - Speeches - Speeches - Writing: Tog, Reading & evices - Verbate Interviews, Co.	Writin Improve the seaking of the se	g /emer g: Pre icatio f Essa g ude:	nt – Alesentii n - Hays: /	bbreviating 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
- Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte Communication: M	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News odcast – Reading: Reading a Prod Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, Listen litional Clause – Modals Verbs – Coning: Listening and Filling a Mind Maperviewing Classmates - Reading: Reading: Readings of Technology-based Communications in Particular Particu	Error Spottii Motivational Sedure – Cros Atomic Habits ing, Speakin Versational De – Listening to ading for Info ication – Hov	g, Reading & ng - Sentence Speeches - Speeches - Speeches - Writing: Tag, Reading & evices - Verbaco Interviews, Commation, Resew to Stick with	Writin Improve oeaking ommun types of the Writin of Aptitic elebrity arching of Good	yemer g: Pre- icatio f Essa g ude: ( talks) for S	nt – Alesentiin – Hays: /	bbreviating a Poi ow to I Argument nce Con eaking: rting Every Day	ions and Ant of View Make Goontative and	9 Acronyms 7 – Giving 8 d Habits 9 Sentence dvice and
<ul> <li>Listening: Liste</li> <li>Opinions about P</li> <li>Inevitable and Bace</li> <li>based Essays</li> <li>Unit – IV</li> <li>Grammar: If/Concord</li> <li>Selection – Listen</li> <li>Suggestions – Interpretation: Memory</li> </ul>	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and Newsodcast – Reading: Reading a Production of Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, Listen litional Clause – Modals Verbs – Coning: Listening and Filling a Mind Maperviewing Classmates - Reading: Reading: Reading: Dialogue Writing – Writing Reviewing: Dialogue Writing – Writing Reviewing:	Error Spottii Motivational Sedure – Cros Atomic Habits ing, Speakin versational Do – Listening to ading for Info ication – Hows: Product a	g, Reading & mg - Sentence Speeches - Speeches - Speeches - Speeches - Writing: Tag, Reading & evices - Verbaco Interviews, Commation, Resew to Stick with and Document	Writin Improved the control of the c	yemer g: Pre- icatio f Essa g ude: / talks / for S Habi	nt – Alesentiin – Hays: /	bbreviating a Poi ow to I Argument nce Con eaking: rting Every Day	ions and Ant of View Make Goontative and	9 Acronyms 7 – Giving 8 d Habits 9 Sentence dvice and
<ul> <li>Listening: Liste</li> <li>Opinions about P</li> <li>Inevitable and Back</li> <li>based Essays</li> <li>Unit – IV</li> <li>Grammar: If/Cond</li> <li>Selection – Listen</li> <li>Suggestions – Interest</li> <li>Communication: Natomic Habits Write</li> <li>Unit – V</li> </ul>	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and Newsodcast – Reading: Reading a Production of Habits Impossible: An Excerpt from Habits I	Error Spottii Motivational Sedure — Cros Atomic Habits ing, Speakin versational Do — Listening to ading for Info ication — Howes: Product a ing, Speakin	g, Reading & mg - Sentence Speeches - Speeches - Speeches - Writing: Tag, Reading & evices - Verbaco Interviews, Commation, Resew to Stick with and Document g, Reading & g, R	Writin Improvoeaking mmun ypes o Writin Il Aptit elebrity arching n Good ary film Writin	g /emer g: Pre icatio f Essa g ude: / talks / for S Habi /s/We	nt – Alesentiin – Hays: A	bbreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day	ions and Ant of View Make Goontative and Trection — Giving Addrice — An Exc	9 Acronyms 7 – Giving 8 d Opinior 9 Sentence dvice and Technica erpt from
- Listening: Liste Opinions about P Inevitable and Bac based Essays Unit - IV Grammar: If/Conc Selection - Listen Suggestions - Inte Communication: N Atomic Habits Wri Unit - V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits - Writing:	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and Newsodcast – Reading: Reading a Production of Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, Listen litional Clause – Modals Verbs – Coning: Listening and Filling a Mind Maperviewing Classmates - Reading: Reading: Reading: Dialogue Writing – Writing Reviewing: Dialogue Writing – Writing Reviewing:	Error Spottii Motivational Sedure — Cros Atomic Habits ing, Speaking Versational Do — Listening to ading for Info ication — How ws: Product at ing, Speaking eposition con W Inventions Categorizing Rule: How to	g, Reading & mg - Sentence Speeches - Speeches - Speeches - Speeches - Writing: The management of the	Writin Improved the community of the com	g //emer g: Pre icatio f Essa g ude: / talks j for S Habi is/We g Apti for a	nt – Alesentiin – Hesentiin – Hesentiin – Sentes – Speuppo ts Eventes – Seriend G	bbreviating a Poi ow to I Argumen nce Cor eaking: rting Every Day es Codingiving Penunication	ions and Ant of View Make Goontative and rection — Giving Adidence — : An Exc	9 Acronyms 7 – Giving 8 d Opinior 9 Sentence dvice and Technica erpt from 9 coding – Talking
- Listening: Liste Opinions about P Inevitable and Bace based Essays Unit - IV Grammar: If/Cond Selection - Listen Suggestions - Inte Communication: N Atomic Habits Wri Unit - V Grammar: Comm Listening: Listeni about Gadgets, In Technology-based Habits - Writing: TEXT BOOK:	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and Newslodcast – Reading: Reading a Prod Habits Impossible: An Excerpt from Habits Impossible: An Excerpt from Grammar, Verbal Aptitude, Listen litional Clause – Modals Verbs – Coning: Listening and Filling a Mind Maperviewing Classmates - Reading: Readoes of Technology-based Communiting: Dialogue Writing – Writing Review Grammar, Verbal Aptitude, Listen Ion Errors in Tenses – Verb – Preng for key points – Speeches of Neventions and Technology – Reading Communication – The Goldilocks Report Writing: IV Report and Case S	Error Spottii Motivational Sedure — Cros Atomic Habits  ing, Speaking Versational Deversational Deversational Deversational Deversation — Howas: Product a ing, Speaking Position conversions Categorizing Rule: How to sudy Report	ng, Reading & ng - Sentence Speeches - Speeches - Speeches - Speeches - Writing: Tog, Reading & evices - Verbaco Interviews, Cormation, Resew to Stick with and Documenting, Reading & nbinations - 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	bbreviating 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 Acronyms 7 – Giving 8 d Opinior 9 Sentence dvice and Technica erpt from 9 coding - Talking we use o
- Listening: Liste Opinions about P Inevitable and Bace based Essays Unit - IV Grammar: If/Cond Selection - Listen Suggestions - Inte Communication: N Atomic Habits Wri Unit - V Grammar: Communication: Listening: Listeniabout Gadgets, In Technology-based Habits - Writing: I TEXT BOOK:	and Passive Voice – Verbal Aptitude ning to Podcast Interviews and News/ odcast – Reading: Reading a Prod I Habits Impossible: An Excerpt from I Habits Impossi	Error Spottii Motivational Sedure — Cros Atomic Habits  ing, Speaking Versational Deversational Deversational Deversational Deversation — Howas: Product a ing, Speaking Position conversions Categorizing Rule: How to sudy Report	ng, Reading & ng - Sentence Speeches - Speeches - Speeches - Speeches - Writing: Tog, Reading & evices - Verbaco Interviews, Cormation, Resew to Stick with and Documenting, Reading & nbinations - 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	bbreviating 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 Acronyms 7 – Giving 8 d Habits 9 Sentence dvice and Technica erpt fron 9 coding - Talking ve use o
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- Listening: Liste Opinions about P Inevitable and Bace 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 Aptitude ning to Podcast Interviews and News/ odcast – Reading: Reading a Prod I Habits Impossible: An Excerpt from I Habits Impossi	Error Spottii Motivational Sedure — Croe Atomic Habits  ing, Speakin Versational De Listening to adding for Info ication — Hov ws: Product a ing, Speakin Position cons Versational De Versational Committee Categorizing Rule: How to addy Report Chinical Committee Canada Committee Categorizing	ng, Reading & ng - Sentence Speeches - Speeches - Speeches - Writing: To not see the services - Verbaco Interviews, Commation, Resew to Stick with and Document ng, Reading & not not not not see the services - Speaking: Information - Stay Motivate nunication, 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	bbreviating 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 Acronyme 7 – Giving 8 d Habit 9 Sentence dvice and Technica erpt fron 9 coding - Talking we use o

<sup>\*</sup> includes Term Work (TW) & Assignments, Tutorials and Case Studies

2020 20 0 0 0 0 0	SE OUTCOMES: npletion 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		- p

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	61	STATE OF S	35	100
CAT3	- 1, 1-	20	45	35	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



The second	24MAC21 - MULTIVARIABLE CAL (Common to CIVIL, MECH, MTS						1		
Programme &	B.E – CIVIL, MECH,MTS, ECE,EEE,EIE	Sem.	Category	L	T	Р	SL*	Total	Credit
Branch	& B.Tech - FT								
Prerequisites	Nil	2	BS	45	7	16	52	120	4
Preamble	To impart the knowledge of partial derivati and analytic functions to the students for so								
Unit – I	Functions of Several Variables:					- 1		11. 12.	9
Functions of two	or more variables – Partial derivatives – Tota nima – Lagrange's multiplier method.	l differentia	I – Application	ns: M	axim	a and	l minim	a – Con	strained
Unit – II	Multiple Integrals:	1844						-	9
	on in cartesian coordinates – Change of order	of integrati	on – Applicat	ion: /	Area	betwe	een two	Curves	
integration in ca	rtesian coordinates – Volume as triple integral	s.	eye, have en		• •			ou. 100	mpic
Unit – III	Vector Calculus:								9
	ative – Gradient of a scalar point function – Div								
	vectors – Vector Integration: Introduction – e above theorems and evaluation of integrals			verge	ence	theo	rems (	without	proof) -
Unit – IV	Analytic Functions:	doing thom		-					9
Functions of a	complex variable – Analytic functions – Nec	essary and	sufficient co	nditio	ns (	exclu	ding pi	roof) – (	
Riemann equation	ons (Statement only) – Properties of analytic f	unction (Sta	atement only)	– Ha	rmor	nic fur	nction -	- Constr	uction c
	- Conformal mapping: $w = z + a$ , $az$ , $1/z - Bil$	linear transf	formation.						r =
Unit – V	Complex Integration:		. 0: 1 :		01				9
	auchy's theorem (without proof) – Cauchy's int it proof) – Applications: Evaluation of definite								
1. Finding	RIMENTS / EXERCISES: ordinary and partial derivatives	5 7							£ -
	ng extreme values of function of two variables	5					U		2
3. Evaluati	ng double and triple integrals		<i>a</i> .			18	0 5 4		
4. Finding	the area between two curves								
5. Computi	ng gradient, divergence and curl of point func	tions					_	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
6. Applying	Milne-Thomson method for constructing anal	lytic function	n			-			2
7. Determin	nation of Mobius transformation for the given s	set of points	3						
8. Finding	poles and residues of an analytic function	A. S. C.							- 1
TEXT BOOK:			5.36	. 7					
	amy P., Thilagavathy K. and Gunavathy K., " 2016, S.Chand and Co., New Delhi.	Engineering	g Mathematic	s Fo	r Firs	st Yea	ar B.E/	B.Tech",	Reprin
REFERENCES/	MANUAL / SOFTWARE:	F - F	, L			6	-80		
1. Kreyszig	E, "Advanced Engineering Mathematics ", 10	)th Edition, J	lohn Wiley, N	ew D	elhi,	India	, 2016.		
2. Ramana Delhi, 20	B V, "Higher Engineering Mathematics", 1st	Edition, Ta	nta McGraw-F	Hill Pu	ublisl	hing (	Compa	ny Limit	ed, Nev
	ny C., Vengataasalam S., Arun Prakash K. India Education, New Delhi, 2018.	and Sures	sh M., "Engin	eerin	g Ma	athen	natics ·	- II", 2 <sup>nd</sup>	Edition
4. Grewal E	3.S, "Higher Engineering Mathematics" 44thE	dition, Khar	nna Publisher	s, Ne	w De	elhi, 2	018.	10	
5. Multivari	able Calculus and Complex Analysis Laborate	ory Manual.					J.		

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

tel her seriorses	SE OUTCOMES:  npletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	Compute the total derivatives and extreme values of multivariable functions.	Applying (K3) Manipulation (S2)
CO2	Apply multiple integrals to compute the area and volume of the regions.	Applying (K3) Manipulation (S2)
CO3	Apply the concepts of derivatives and line integrals of point functions in engineering problems.	Applying (K3) Manipulation (S2)
CO4	Construct analytic functions and bilinear transformations and determine the image of given region under the given conformal mapping.	Understanding (K2) Manipulation (S2)
CO5	Apply the techniques of complex integration to evaluate real and complex integrals over closed curves.	Applying (K3) Manipulation (S2)

COs/POs	PO1	DO2	DO2	DO4	DOS	DOG	DO7	DOS	POO	DO10	DO11	DCO4	DCCC
CUS/PUS	PO1	PUZ	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	3	2		3			N" <sub>10</sub>	-		1.1		11-120-
CO2	3	3	2		3		-	LI T					1.01
CO3	3	3		-	3							- 43 <sup>V</sup>	- TI
CO4	3	3			3			- = 80				Y E.	d 2 %
CO5	3	3	3		3				1.				

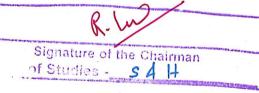
1 - Slight, 2 - Moderate, 3 - Substantial, BT- Bloom's Taxonomy

#### **ASSESSMENT PATTERN - THEORY**

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1		40	60		range L	I I I I I I I I I I I I I I I I I I I	100
CAT2	in .	40	60		free will be present take.		100
CAT3		50	50				100
ESE		30	70				100

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







	24PHT21 – APPLIE	ED PHYS	SICS						
	(Common to CIVIL, MECH, MT	S and A	UTO branch	nes)	4.71	7	d.	7 1	1.15
Programme& Branch	BE - CIVIL, MECH, MTS and AUTO branches	Sem.	Category	L	Т	Р	SL*	Total	Credi
Prerequisites	Nil	2	BS	45	0	0	45	90	3
Preamble	This course aims to impart the knowledge on c fiber optics and select materials characterial aforementioned topics in engineering.	rystal ph zation t	ysics, quanti echniques.	um ph It als	nysic so d	s, aco escrib	ustics, es the	ultrasoni applica	cs, lase
Unit – I	Crystal Physics:		7.1.	I tops		197	A Shapping	CARCO	9
U <b>nit – II</b> Blackbody radiat	e, surface and volume imperfections.  Quantum Physics and Applications: tion – Planck's theory – Compton scattering – Maine-independent and time-dependent wave equation	tter wave	es – Propert sical significa	ies – nce c	Heis	enber ve fun	g unce	rtainty pr Particle	9 rinciple in a one
Unit – III	Acoustics and Ultrasonics:					ī			9
			oration time	Gra	with	and d	occur of	cound	Cabina!
formula for rever remedies – Ulti	sound – Characteristics of sound – Reverberation ar beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Gene lerator – Non-destructive testing – Flaw detection.	coefficie	nt - Factors	affec	ting a	acoust	ics of b	uildings	and the
formula for rever remedies – Ulti Piezoelectric ger <b>Unit – IV</b>	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Genemerator – Non-destructive testing – Flaw detection.  Laser and Fiber optics:	coefficie eration of	nt – Factors f ultrasonic v	affec waves	ting a	acoust //agne	ics of b tostricti	ouildings ve gener	and the rator an
formula for rever remedies – Ultrepiezoelectric ger Unit – IV Stimulated absorinversion – Pum optical fibers badisplacement ser Unit – V Importance of m	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Genemerator – Non-destructive testing – Flaw detection.  Laser and Fiber optics:  rption – Spontaneous emission – Stimulated emission – CO <sub>2</sub> laser – Holography – Fiber optics – I ased on refractive index, modes and materials	coefficie eration of sion – E Numerica – Fiber Materials er metho	instein's coe al aperture a optic comr s: od) — Scann	affect waves afficier and ad munic	ting a second ation	nd the system	tics of b tostricti eir relat angle - em -	iouildings ve gener ions – P Classifi Tempera	9 opulation cation of ture an
formula for rever remedies — Ultre Piezoelectric ger Unit — IV Stimulated absorinversion — Pum optical fibers badisplacement ser Unit — V Importance of melectron microscadvanced materi	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection.  Laser and Fiber optics:  reption – Spontaneous emission – Stimulated emission – CO <sub>2</sub> laser – Holography – Fiber optics – I ased on refractive index, modes and materials rasors.  Characterization Techniques and Advanced I atterials characterization – X-ray diffraction (powden)	coefficie eration of sion – E Numerica – Fiber Materials er metho	instein's coe al aperture a optic comr s: od) — Scann	affect waves afficier and ad munic	ting a second ation	nd the system	tics of b tostricti eir relat angle - em -	iouildings ve gener ions – P Classifi Tempera	9 opulation cation of ture an
formula for rever remedies – Ultrepiezoelectric ger Unit – IV  Stimulated absorinversion – Pum optical fibers badisplacement ser Unit – V  Importance of melectron microsciadvanced materi	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection.  Laser and Fiber optics:  rption – Spontaneous emission – Stimulated emission – CO <sub>2</sub> laser – Holography – Fiber optics – I ased on refractive index, modes and materials rasors.  Characterization Techniques and Advanced I raterials characterization – X-ray diffraction (powdrope – UV-visible spectroscopy – Raman spectroscals – Metallic glasses – Shape memory alloys	sion – E Numerica – Fiber  Materials er methoscopy –	instein's coe al aperture a optic comr s: od) – Scann Nuclear Ma	affectives afficient and action actio	ting a second ation	nd the ance syste	croscop	iouildings ve gener ions – P Classifi Tempera	9 opulation cation of ture an
formula for rever remedies – Ultre Piezoelectric ger Unit – IV  Stimulated absorition – Pum optical fibers be displacement ser Unit – V  Importance of melectron microsorition divanced materi TEXT BOOK:  1. Katiyar A	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection.  Laser and Fiber optics:  rption – Spontaneous emission – Stimulated emission – CO <sub>2</sub> laser – Holography – Fiber optics – I ased on refractive index, modes and materials rasors.  Characterization Techniques and Advanced I staterials characterization – X-ray diffraction (powderope – UV-visible spectroscopy – Raman spectroscopy	sion – E Numerica – Fiber  Materials er methoscopy –	instein's coe al aperture a optic communication s: od) – Scann Nuclear Ma	affective services afficient and acmunic services afficient acmunic services affects a	nts acceptation	nd the sance system	eir relat angle - em -	ouildings ve gener  ions – P Classifi Tempera  e – Tran tole of p	and the rator and 9 opulation cation of ture and 9 smission hysics i
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formula for rever remedies — Ultr Piezoelectric ger Unit — IV  Stimulated absorbinversion — Pum optical fibers be displacement ser Unit — V  Importance of melectron microsorbadvanced materi TEXT BOOK:  1. Katiyar A. Tamilara 2023(Unit — IV)  REFERENCES:  1. Malik H.	beration time – Determination of sound absorption rasonics – Properties of ultrasonic waves – Generator – Non-destructive testing – Flaw detection.  Laser and Fiber optics:  Introduction – Spontaneous emission – Stimulated emission – CO <sub>2</sub> laser – Holography – Fiber optics – Nased on refractive index, modes and materials ansors.  Characterization Techniques and Advanced Interials characterization – X-ray diffraction (powdrope – UV-visible spectroscopy – Raman spectrosals – Metallic glasses – Shape memory alloys.  A.K., Pandey C.K., "Engineering Physics: Theory and asan K and Prabu K, "Physics for Engineering I"	sion – E Numerica – Fiber  Materials er metho scopy –  Practica ", 1st Ed  McGraw	instein's coe al aperture a optic common Nuclear Ma  I", 2 <sup>nd</sup> edition lition, McGra	affective waves  afficier and ac anunic  ing el gnetic , Wile aw Hi	ting : - Note that is a line of the content of the	acoust Magne and the sance system on mice sonan	eir relation angle - croscopice - Rinit I, II).	ions – Po-Classifi Tempera	and the rator an 9 opulation cation of ture an 9 asmission hysics i

\*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	analyze seven crystal systems, interplanar spacing in cubic lattice, BCC, FCC, HCP crystal systems and the types of crystal imperfections and their impacts.	Analyzing (K4)
CO2	investigate the concepts of quantum mechanics to describe Planck's theory, Compton effect and the behavior of electrons in a metal by solving Schrodinger's wave equations.	Analyzing (K4)
CO3	explore the concepts of growth and decay of sound energy in a hall to compute Sabine's formula and to recognize the requirements of acoustically good buildings and also to describe the production of ultrasonic waves and testing of materials by non-destructive method.	Analyzing (K4)
CO4	examine the concepts of stimulated emission of radiation to explain the working and the applications of laser in engineering and technology. To apply the principle of propagation of light through optical fiber to compute acceptance angle and numerical aperture and also to explain fiber optic communication system and the working of fiber optic sensors.	Analyzing (K4)
CO5	Inspect Raman effect, X-ray diffraction, matter waves, nuclear magnetic resonance, metallic glasses and shape memory alloys.	Analyzing (K4)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2				,	1	1		1		2
CO2	3	2	2				-	1	1		1		
CO3	3	2	2					1	1	. , -	1		1 =
CO4	3	2	2					1 .	1		1		
CO5	3	2	2					1	1		1		1 ,51

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) %	Tota
CAT1	100 Y	40	50	10		sa sarias in i	100
CAT2		40	50	10	***		100
CAT3		40	50	10			100
ESE		40	50	10			100

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

Signature of the Chairman

Board of Studies - S&H, Physics





	Civil, Mechanical, Mechatronics, Chemica	i, Food Tec	nnology& A	utomo	bile	Eng	neerin	g branc	hes)
Programme & Branch	B. E Civil , Mechanical, Automobile B.Tech Chemical Engineering ,Food Technology	Sem.	Category	L	T	Р	SL*	Total	Credit
Prerequisites	Programming in C	2	ES	45	0	30	45	120	4
Preamble	This course deals with core python programm python constructs and libraries.	ing. It gives	a comprehens	sive in	trodu	ction	to probl	em solvii	ng using
Unit -I	Introduction:							9	F
identifiers - da	ng strategies – program design tools – Types of ata types – input operation – comments – resentents: Introduction – conditional statement – its sein loops.	/ed words -	indentation -	Opera	ators	and I	Express	ions - D	ecision
Unit –II	Lists, Tuples and Dictionary:	×					1 2 6	9	
add and modification unit –III Strings: Conca	ons, assignments, returning multiple values, nes y, delete, sort, looping, nested, built-in methods – Strings and Regular Expressions: atenation, append, multiply on strings – Immutal	list vs tuple ole – formatti	vs dictionary.	- Built-	in str	ing m	nethods	9 and fund	tions –
findall and find	<ul> <li>functions – operators – comparing – iteratiniter functions – flag options.</li> </ul>	g – string m	iodule – Regi	ular Ex	kpres	sions	– mato	ch, searc	h, sub,
Unit –IV	Functions and Modules:	^						9	
<ul> <li>documentation</li> </ul>	oduction – definition – call – variable scope and l on strings – programming practices recursive fun	otion Modul	ırn statement	- tund	tion	argun	nents –	lambda fi	unction
function redefin	nition.	Ction- Modul	es. Modules -	- раска	ages	– sta	ndard III	orary met	nods –
Unit –V	nition. Object Orientation:							9	
Unit –V Class and Obje	nition.	constructor–	class and obje	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Obje private data me	nition.  Object Orientation:  ects: Class and objects–class methods and self–	constructor–	class and obje	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data me	nition.  Object Orientation:  ects: Class and objects–class methods and self– ember. NumPy: NumPy Arrays – Computation o	constructor–	class and obje	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data median LISTOF EXPE	nition.  Object Orientation: ects: Class and objects–class methods and self–ember. NumPy: NumPy Arrays – Computation o	constructor–	class and obje	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data median LISTOF EXPE  1. Program 2. Imp	nition.  Object Orientation:  ects: Class and objects–class methods and selfember. NumPy: NumPy Arrays – Computation of RIMENTS / EXERCISES:  grams using conditional and looping statements	constructor–	class and obje	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data median LISTOF EXPE  1. Program 2. Imp 3. Imp	nition.  Object Orientation: ects: Class and objects–class methods and self–ember. NumPy: NumPy Arrays – Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations	constructor–	class and obje	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	nition.  Object Orientation: ects: Class and objects-class methods and self-ember. NumPy: NumPy Arrays - Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations	constructor–	class and obje	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data median data median data median data median data median data data data data data data data da	nition.  Object Orientation: ects: Class and objects-class methods and self-ember. NumPy: NumPy Arrays - Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	object Orientation:  cets: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES:  grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations  regular expressions for validating inputs	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	nition.  Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and parameters.	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays — Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and partelop programs using classes and objects	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particular programs using classes and objects form computation on Numpy arrays	constructor- n NumPy Arr	class and obje ays. Matplotli	ct vari	able	s–des	tructor-	9 public an	
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs and particles programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr ameter pass	class and obje	ect vari	ables	s-des	tructor-catter P	9 public an lots	d
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr ameter pass	class and obje	ect vari	ables	s-des	tructor-catter P	9 public an lots	d
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements lementation of list and tuple operations lementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr  ameter pass	class and objetays. Matplottii	ect vari b : Line	ables e plo	s-des	tructor-catter P	9 public an lots	d
Unit –V Class and Objectivate data media in the control of the con	Object Orientation: ects: Class and objects—class methods and self—ember. NumPy: NumPy Arrays—Computation of RIMENTS / EXERCISES: grams using conditional and looping statements dementation of list and tuple operations dementation of dictionary operations form various string operations regular expressions for validating inputs monstration of different types of functions and particle programs using classes and objects form computation on Numpy arrays we different types of plots using Matplotlib	constructor— n NumPy Arr  ameter pass  vingapproac	class and objective ays. Matplottiing  h",3 <sup>rd</sup> impress  Press, New De	ion, O	ables e plo	s-des	tructor-catter P	9 public and lots	d

<sup>\*</sup>includes Term Work(TW) & Online / Certification course hours

	SE OUTCOMES: appletion of the course, the students will be able to	BT Mapped (Highest Level)
CO1	use basic python constructs to build simple programs	Applying(K3), Precision(S3)
CO2	apply list, tuple and dictionary to handle variety of data.	Applying(K3), Precision(S3)
CO3	apply strings and regular expression for searching and retrieval	Applying(K3), Precision(S3)
CO4	solve the problems using functions and modules.	Applying(K3), Precision(S3)
CO5	apply object oriented concepts and perform data science operations using python	Applying(K3), Precision(S3)

COs/Pos	P01	P02	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3	2	2	2	1				1	1	1	3	1
CO2	3	2	2	2	1	2 ×			1	1	1	3	1
CO3	3	2	2	2	1				1	1	1	3	1
CO4	3	2	2	2	1			V	1	1	1	3	1
CO5	3	2	2	2	1				1	1	- 1	3	1

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

ASSESSME	NT PATTERN	N – THEORY
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Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	v	25	75				100
CAT2		25	75	**		, , , , , , , , , , , , , , , , , , ,	100
CAT3		25	75				100
ESE		25	75		1	7	100

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

Signature of the Chairman Board of Studies - IT



_	24MET21 - ENGINEERII	NG MECH	ANICS	-					
	(Common to Mechanical & Mechatro	onics Eng	ineering bra	nche	s)		,		
Programme & Branch	B.E Mechanical Engineering, B.E Mechatronics Engineering branches	Sem.	Category	L	Т	Р	SL*	Total	Credit
Prerequisites	Nil	2	PC	45	0	0	45	90	3
Preamble	This course provides introduction to the basic co with their effects. It introduces the phenomenon learning in applied mechanics and develops probl	of friction	and its effect	ia, ce cts. It	ntroic famil	l and iarize	l mome es stud	ent of are lents to o	ea along cognitive
Unit – I	Statics of Particles		3				1.		9
Unit – II Moments: Momer Theorem – Equiv	tation of Forces – Equilibrium of a Particle in Spa Statics of Rigid Bodies  In of a Force about a Point and about an Axis – Vecalent Systems of Forces – Single Equivalent Force	torial Rep	of Supports a	and th	eir R	s and	d Coup	les – Va	9 rignon's ments o
Stable Equilibrium	n – Equilibrium of Rigid Bodies in Two Dimensions -	<ul><li>Trusses</li></ul>	: Method of	Joint	S.				
Init _ III	Properties of Surfaces and Solids	- 11				-	-		0
	Properties of Surfaces and Solids  Areas and Volumes — First Moment of Area and Volumes — Southern Surfaces (Southern Strength Moment )							- Angle	
Determination of - HollowSection f Axis Theorem - T	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section	of Plane	Areas - Par	allel A	Axis T	Theo	rem ar	n - Angle nd Perpe ertia.	Section ndicular
Determination of A - HollowSection f Axis Theorem - T Unit – IV	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles	of Plane Annon Polar	Areas — Par Moment of I	allel A	Axis T	Theo oduc	rem ar	n - Angle nd Perpe ertia.	Section ndicular
Determination of A  - HollowSection f Axis Theorem - T  Unit - IV  Friction: Surface  Friction - Belt Fri	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section	of Plane And Polar	Areas — Par Moment of I	allel Anertia	Axis - - Pr	Theo oduc	rem ar	n - Angle nd Perpe ertia. 6 riction -	Section ndicular
Determination of A  - HollowSection f Axis Theorem - T  Unit - IV  Friction: Surface  Friction - Belt Fri	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement or Motion — Projectile Motion.	of Plane And Polar	Areas — Par Moment of I	allel Anertia	Axis - - Pr	Theo oduc	rem ar	n - Angle nd Perpe ertia. 6 riction — onship —	Section ndicular  +3  Wedge Relative
Determination of a HollowSection for Axis Theorem - Tourit - IV  Friction: Surface Friction - Belt Friction - Curvilinea  Unit - V	Areas and Volumes — First Moment of Area and Orom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section  Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement or Motion — Projectile Motion.  Dynamics of Particles	of Plane Ann — Polar  n — Static t - Velocity	Areas — Par Moment of I and Kinetic	rallel Anertia	Axis 7 — Pr tion - and	Theo roduc - La their	rem ar ct of Ind dder F Relation	n - Angle nd Perpe ertia.  6 riction — onship —	Section ndicular +3 Wedge Relative +3
Determination of a HollowSection for Axis Theorem - Tourit - IV  Friction: Surface Friction - Belt Friction - Curvilinea  Unit - V	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section  Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion.  Dynamics of Particles  Ticles: Newton's Law, Work - Energy and Impure Motion — Projection in Motion — Projection — Proj	of Plane Ann — Polar  n — Static t - Velocity	Areas — Par Moment of I and Kinetic	rallel Anertia	Axis 7 — Pr tion - and	Theo roduc - La their	rem ar ct of Ind dder F Relation	n - Angle nd Perpe ertia.  6 riction — onship —	Section ndicular +3 Wedge Relative +3
Determination of Aris Theorem - T  Unit – IV  Friction: Surface Friction – Belt Friction – Curvilinea  Unit – V  Dynamics of Par  General Plane Mo	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section  Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion.  Dynamics of Particles  Ticles: Newton's Law, Work - Energy and Impure Motion — Projection in Motion — Projection — Proj	of Plane Ann — Polar  n — Static t - Velocity	Areas — Par Moment of I and Kinetic	rallel Anertia	Axis 7 — Pr tion - and	Theo roduc - La their	rem ar ct of Ind dder F Relation	n - Angle nd Perpe ertia.  6 riction — onship —	Section ndicular +3 Wedge Relative +3
Determination of Aris Theorem - Tounit - IV Friction: Surface Friction - Belt Friction - Curvilinea Unit - V Dynamics of Parageneral Plane Mo	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section  Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion.  Dynamics of Particles  Ticles: Newton's Law, Work - Energy and Impution.	of Plane and an — Polar  n — Static  t - Velocity  ulse - Mo	Areas — Par Moment of I and Kinetic and Acceler	rallel / nertia c Frict ration nciple	Axis — Pr	Theo roduce - Lac their Imp	rem ar ct of In- dder F Relation	n - Angle nd Perpe ertia.  6 riction — onship — 6 Elastic	Section ndicular  +3  Wedge Relative
Determination of Aris Theorem - TollowSection for Axis Theorem - Tollow Surface Friction: Surface Friction - Belt Friction - Curvilinea Unit - Volume I Plane Modernal Plan	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section  Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion.  Dynamics of Particles  Ticles: Newton's Law, Work - Energy and Impure Motion — Projection in Motion — Projection — Proj	of Plane and an — Polar  n — Static  t - Velocity  ulse - Mo	Areas — Par Moment of I and Kinetic and Acceler	rallel / nertia c Frict ration nciple	Axis — Pr	Theo roduce - Lac their Imp	rem ar ct of In- dder F Relation	n - Angle nd Perpe ertia.  6 riction — onship — 6 Elastic	Section ndicular  +3 Wedge Relative
Determination of Aris Theorem - Tounit - IV Friction: Surface Friction - Belt Friction - Curvilinea Unit - V Dynamics of Parageneral Plane Mo	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section  Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion.  Dynamics of Particles  Ticles: Newton's Law, Work - Energy and Impution.	of Plane and an — Polar  n — Static  t - Velocity  ulse - Mo	Areas — Par Moment of I and Kinetic and Acceler	rallel / nertia c Frict ration nciple	Axis — Pr	Theo roduce - Lac their Imp	rem ar ct of In- dder F Relation	n - Angle nd Perpe ertia.  6 riction — onship — 6 Elastic	Section ndicular  +3 Wedge Relative
Determination of Aris Theorem - To Hollow Section of Axis Theorem - To Hollow Surface of Priction - Belt From Motion - Curvilinea of Parameter of Pa	Areas and Volumes — First Moment of Area and Crom Primary Simpler Sections — Second Moment Section - I Section - Angle Section - Hollow Section  Friction and Rectilinear motion of particles  Friction — Laws of Dry Friction — Sliding Friction iction. Rectilinear Motion of Particles: Displacement of Motion — Projectile Motion.  Dynamics of Particles  Ticles: Newton's Law, Work - Energy and Impution.	of Plane of n — Polar  n — Static t - Velocity  ulse - Mo	Areas — Par Moment of I and Kinetic and Acceler mentum Pri	rallel / nertia	Axis — Pr — Pr tion - and and tion,	Fheo oduce - La - La Imp	dder F Relation	n - Angle nd Perpe ertia.  6 riction - onship -  6 f Elastic	Section ndicular +3 Wedge Relative +3 Bodies

<sup>\*</sup>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	represent the forces in vector components (both 2D and 3D) and apply equilibrium conditions	Applying (K3)
CO2	calculate the moment produced by various force systems and conclude the static equilibrium equations for rigid body system	Analyzing (K4)
CO3	compute the centroid, centre of gravity and moment of inertia of geometrical shapes and solids respectively	Applying (K3)
CO4	manipulate the effect of dry friction and its applications	Applying (K3)
CO5	apply the different principles to study the motion of a body and analyse their constitutive equations	Analyzing (K4)

Mapping of	COs	vith POs	and F	SOs
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							25						
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	3		2		-						1	-, = < 40	3
CO2	3	3	2					*			1		3
CO3	3		2		-						1		3
CO4	3	3	2		43						1		3
CO5	3		2			-	- 2				1		3

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

ASSESSMENT	DATTEDAL	THEODY
ADDEDDIVIENT	PALIFRN -	THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6)	Total %
CAT1		20	50	30			100
CAT2		20	50	30		. 11 1 2 1	100
CAT3		20	50	30			100
ESE		10	60	30		× ×	100

 $^{\star}$  ±3% may be varied (CAT 1, 2 & 3 – 50 marks & ESE – 100 marks)

Signature of the Chairman and of Studies - Mechanical





	24TAM02 - TAMILS								
	(Common to All Engineerin	ig and Techn	ology Branc	hes)				. 12 Ers	
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 knowledge.	ledge on the t	tamil culture a	nd rel	ated	techn	ology		
UNIT – I	WEAVING AND CERAMIC TECHNOLOGY					. 7			3
Weaving Industr	ry during Sangam Age – Ceramic technology – Bl	lack and Red	Ware Potterie	es (BF	RW) -	- Graf	fiti on P	otteries.	es la
UNIT – II	DESIGN AND CONSTRUCTION TECHNOLO	GY	7 3233	15-4	- 4		PWF	14.9	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 architec	ppathikaram aka Period –	<ul> <li>Sculptures</li> <li>Type study (M</li> </ul>	and T ladura	Temp ai Me	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				,	71		3
	nds, Sluice, Significance of Kumizhi Thoompu of Agro Processing – Knowledge of Sea – Fishe 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:	m = g.a. =		1 .			, r.			
1. Social Life	e of Tamils (Dr.K.K.Pillay) A joint Publication of TI	NTB & ESC a	nd 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	IJ.	9			
1 1.	வரலாறு - மக்களும் பண்பாடும் - கே ே ில் பணிகள் கழகம்), உலகத் தமிழாராய்				<b>.</b> .	ாடு ட	ாடநூ	ல் மற்ற	றும்
	ந்தமிழ் முனைவர் இல. சுந்தரம், விகட							1111	
0	வகை நதிக்கரையில் சங்ககால நகர நா	ாகரிகம்.(தெ	ால்லியல் த	துறை	) <b>ရ</b>	വണി	பீடு)		
3.   கழடி ை		ALOOM OO	ഷ്യൂസ	,					
	ந ஆற்றங்கரை நாகரிகம் (தொல்லியல்	والمرازل والم	ப்பாபடு						
4. பொருன <sub>5</sub> Historical	Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.	-		ublish	ed by	y : Inte	ernation	nal Institu	ite of
4. பொருன 5. Historical Tamil Stu 6. The Contr	Heritage of the Tamils (Dr.S.V.Subatamanian, Didies) ribution of the Tamils to Indian Culture (Dr.M.Vala	r.K.D. Thiruna	avukarasu) (Pr	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, Didies)	r.K.D. Thiruna armathi)(Pupli aigai; (Jointly	avukarasu) (Po shed by Interr Published by:	nation	al Ins	stitute	of Tam	il Studie	
4. G山爪(顶の 5. Historical Tamil Stu 6. The Contr 7. Keeladi – Tamilnadi 8. Studies in	Heritage of the Tamils (Dr.S.V.Subatamanian, Dr. 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	r.K.D. Thiruna armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.I	shed by Interr Published by: ) (K.Pillay)	nation Depa	al Ins	stitute nt of	of Tam Archae Autho	il Studie ology & r)	s).
4. G山爪(頂命 5. Historical Tamil Stur 6. The Control 7. Keeladi — Tamilnadi 8. Studies in	Heritage of the Tamils (Dr.S.V.Subatamanian, Didies) ribution of the Tamils to Indian Culture (Dr.M.Vala 'Sangam City Civilzation on the banks of river Vau Text Book and Educational Services Corporation	r.K.D. Thiruna armathi)(Pupli aigai; (Jointly on, Tamilnadu amilnadu (Dr.I	shed by Interr Published by: ) (K.Pillay)	nation Depa	al Ins	stitute nt of	of Tam Archae Autho	il 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	OAPIAII III OIGIIII OIGIII OIGII OIG	Silasiotaliang

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO1	vet vide			S. W. A. Te	-1	3		3	2	2			
CO2	เล้ากรสส	le de co		· - ×	18 7	3	in-	3	2	2		Tuest II	al section
CO3	THE THE					3		3	2	2			
CO4						3		3	2	2			
CO5						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)



1	(Common to All Engineering and	Technolog	y Branches)						
Programme & Branch	All BE/BTech Branches	Sem.	Category	L	Т	Р	SL*	тот	Cred
Prerequisites	Nil	2	HS	15	0	0	15	30	1
முன்னுரை	தமிழ் கலாச்சாரத்தோடு ஒன்றிய தொழில் [	நட்பங்க <u>ன</u>	ள பற்றிப்	எடுத்	துை	ரத்	தல்		-213
அலகு - ।	நெசவு மற்றும் பானை தொழில்நுட்பம்					348		3	7.5
சங்க காலத்த் கீறல் குறியீடு	ில் நெசவு தொழில் – பானைத் தொழில்நுட் கள்	.பம் கரு	ப்பு சிவப்பு	ЦП	<b>ன்</b> டா	ត់ស	ள் —	பாண்ட	_களி
அலகு - ॥	வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்ட	مار		l be		1	-harri	3	r. I
– சங்க கால விவரங்கள் – வழிபாட்டுத் மீனாட்சி அப்	ில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & ச த்தில் கட்டுமான பொருட்களும் நடுகல்லும் மாமல்லபுரச்சிற்பங்களும், கோவில்களும் – தலங்கள் – நாயக்கர் காலக் கோயில்கள் மமன் ஆலயம் மற்றும் திருமலை நாயக்கர்	் – சிலம் சோழர் ச –மாதிரிச மஹால்	ப்பதிகாரத்தி காலத்து டெ கட்டமைப்பு	ல் ( பருங் கள்	மே ை கோப பற்ர	ட பில் நி	அை ல்கள் அறி <sub>?</sub>	மப்பு ப மற்று தல், ப	பற்றி ம் பி மதுன
	சன்னை இந்தோ-சாரோசெனிக் கட்டிடக் கலை □ • • • • • • • • • • • • • • • • • • •								
<u>அலகு - III</u>	<b>உற்பத்தித் தொழில்நுட்பம்</b> ம் கலை – உலோகவியல் – இரும்புத் ெ							3	<u> </u>
வரலாற்றுச்ச! உருவாக்கும்	ான்றுகளாக செம்பு மற்றும் தங்க நாணய தொழிற்சாலைகள் – கல்மணிகள் – கண்ணா	பங்கள் -	- நாணயா	ឯសតា	அ	ச்சு	டித்த	လ် –	மண
– പബ്ബനപ്മയിം	<u>ன்டுகள் – தொல்லியல் சான்றுகள் – சிலப்பதி</u>	காரத்தில்	மணிகளி	ர் வ	തകക				
<b>அலகு -</b> IV அணை, ஏரி,	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் குளங்கள், மதகு – சோழர்கால குமிழித் தூ	<b>நுட்பம்</b> ம்பின் மு	<b>ு</b> மக்கியத்துவ	- شا	- கா	ள். ல்ந	டை		ரிப்பு
அலகு - IV அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் குளங்கள், மதகு – சோழர்கால குமிழித் தூ தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளாக முற்வு – மீன்வளம் – முத்து மற்றும் முத்துக்கு	<b>நுட்பம்</b> ம்பின் பு ண்மை மர	றக்கியத்துவ ற்றும் வேள	பம் - எண்	- கா மை க	ன். ல்ந	டை ந்த ெ	பராம சயல்ப	ரிப்பு iாடுக
அலகு - IV அணை, ஏரி, கால்நடைகளு – கடல்சார் ச அறிவுசார் சமூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத்	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் குளங்கள், மதகு – சோழர்கால குமிழித் தூ தக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளாவ புறிவு – மீன்வளம் – முத்து மற்றும் முத்துக்கு நகம்.	நுட்பம் ம்பின் பு ண்மை மர ளித்தல் – – தமிழ்	மக்கியத்துவ ற்றும் வேள பெருங்கட நூல்களை	பம் - எண்எ ல் கு	- கா மை ச ஹித்த	ன். ல்ந சார்! த ப	டை ந்த ெ ண்ண	பராம சயல்ப டய அ 3 தல் –	ரிப்பு ாடுக புறிவு தமி
அலகு - IV அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத்	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் குளங்கள், மதகு – சோழர்கால குமிழித் தூ க்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளா நிவு – மீன்வளம் – முத்து மற்றும் முத்துக்கு நகம்.  அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்வி கெள் சொற்குவைத் திட்டம்.	நுட்பம் ம்பின் பு ண்மை மர ளித்தல் – – தமிழ் க்கழகம்	மக்கியத்துவ ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி	பம் - எண்க ல் சூ மின்	- கா மை க ஹித்த நித்த நித்த	ல்ந சார்! த ப ப்பு	டை ந்த ெ ண்ண செய் – இ	பராம் சயல்ப டய அ 3 தல் – )ணைய	ரிப்பு ஈடுக புறிவு தமி! பத்தி
அலகு - IV அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார்ச்பூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத் TEXT BOOK:	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் குளங்கள், மதகு – சோழர்கால குமிழித் தூ கக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளா நிவு – மீன்வளம் – முத்து மற்றும் முத்துக்கு நகம். அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்வி	நுட்பம் ம்பின் பு ண்மை மர ளித்தல் – – தமிழ் க்கழகம்	மக்கியத்துவ ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி	பம் – ாண் ல் கு மின் பன் ப	- கா மை க ஹித்த நித்த நித்த	ல்ந சார்! த ப ப்பு	டை ந்த ெ ண்ண செய் – இ	பராம் சயல்ப டய அ 3 தல் – )ணைய	ரிப்பு ஈடுக புறிவு தமி! பத்தி
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அலகு - IV அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ அறிவியல் த மென்பொருட் தமிழ் அகராத் TEXT BOOK: 1. தமிழக க கல்வியி 2. கணினித் REFERENCES: 1. கீழடி-னை 2. பொருனை	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் குளங்கள், மதகு – சோழர்கால குமிழித் தூக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளாகும் – மீன்வளம் – முத்து மற்றும் முத்துக்கு நகம்.  அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்வி கெள் சொற்குவைத் திட்டம்.  வரலாறு - மக்களும் பண்பாடும் - கே கே பிள்ல் பணிகள் கழகம்), உலகத் தமிழாராய்ச்சி நித்தமிழ் முனைவர் இல. சுந்தரம், விகடன் பிரக்குமிழ் முனைவர் இல. சுந்தரம், விகடன் பிரக்குமிழ் முனைவர் இல. சுந்தரம், விகடன் பிரக்குமிழ் முனைவர் இல. சுந்தரம், விகடன் பிரக்கை நதிக்கரையில் சங்ககால நகர நாகரிகம்	நுட்பம் ம்பின் பு ண்மை மர ளித்தல் — — தமிழ் க்கழகம் இவனம், ம சுரம், 2016 (தொல்லி வெளியீ(	மக்கியத்துவ ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி எளியீடு தமி சென்னை, 2	பம் - ாண் ல் கு மின் ப ம்நா 002	- கா மை ச ந்றித்த எபதிப் நூல்	ன். ல்ந சார்! த ப ப்பு கம்	டை ந்த ெ ண்ண செய் – இ	பராம் சயல்ப டய அ 3 தல் – )ணைய	ரிப்பு ஈடுக புறிவு தமி! பத்தி
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அலகு - IV அணை, ஏரி, கால்நடைகளு – கடல்சார் அ அறிவுசார் சமூ அலகு - V அறிவியல் த மென்பொருட் தமிழ் அகராத் TEXT BOOK:  1. தமிழக கல்வியி 2. கணினித் REFERENCES: 1. கீழடி-சை 2. பொருன 3. Social Life 4. Social Life 5. Historical Studies) 6. The Contr	வேளாண்மை மற்றும் நீர்ப்பாசனத் தொழில் குளங்கள், மதகு – சோழர்கால குமிழித் தூக்காக வடிவமைக்கப்பட்ட கிணறுகள் – வேளாகும் – மீன்வளம் – முத்து மற்றும் முத்துக்குமுகம்.  அறிவியல் தமிழ் மற்றும் கணினித்தமிழ் மிழின் வளர்ச்சி – கணினிதத்தமிழ் வளர்ச்சி கள் உருவாக்கம் – தமிழ் இணையக் கல்விக்கள் சொற்குவைத் திட்டம்.  வரலாறு - மக்களும் பண்பாடும் - கே கே பிள்ல் பணிகள் கழகம்), உலகத் தமிழாராய்ச்சி நித்தமிழ் முனைவர் இல. சுந்தரம், விகடன் பிரக்குமிழ் முனைவர் இல. சுந்தரம், விகடன் பிரக்கம் ந-ஆற்றங்கரை நாகரிகம் (தொல்லியல் துறை of Tamils (Dr.K.K.Pillay) A joint Publication of TNTB & Earling of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Trebution of the Tamil to Indian Culture (Dr.M.Valarmathi) (buttion of the Tamil to Indian Culture (Dr.M.Valarmathi) (buttion of the Tamil to Indian Culture (Dr.M.Valarmathi) (	நுட்பம் rம்பின் பு ண்மை மர ளித்தல் — — தமிழ் க்கழகம் இவனம், ( சுரம், 2016 (தொல்லி வெளியீ( ESC and RN (Published I hirunavukar	aக்கியத்துவ ற்றும் வேள பெருங்கட நூல்களை – தமிழ் மி சென்னை, 2 பெல் துறை நி) ARL – (in prin by: Internation asu) (Publish	பம் - ாண்க மின் ! ழ்நா 002	- காம மை க ந்றித்த எபதிப் நூல்க பளியீ	ல்ந லந் சார்! த ப டு)	டை ந்த ெ ண்ண – இ நூல் ional I	பராம் சயல்ப டய அ 3 தல் — ஹண் மற்றுப் itudies).	ரிப்பு ாடுக புறிவு தமிழ் பத்தி
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		JTCOM		oromo iņ	тċт			=					BT Mapp	
பர்ப				மாணவர்		<u> </u>							(Highest L	.evei)
CO1	தமி! தொ			ம் மற்ற ற்றி வி	• • • • • • • • • • • • • • • • • • • •	•		த்தினு	டைய	ப நெசவு	மற்றும்	பானை	Understandi	ng (K2)
CO2		ழர்களி பும்.	ன் வடி	வமைப்ப	ு மற்ற	<b>ும்</b> கட	ட்டிடத்	த் தொழ	<u>நி</u> ல்ந	ுட்ப ஆற்	றல் பற்றி	விளக்க	Understandi	ng (K2)
CO3	தமி	ழர்களி	ன் உற்ப	<u>பத்தித்</u> ெ	தாழில்	றுட்பப்	் பற்	றி சுருச்	கமா	கக் கூற பு	<b>நடியும்</b> .	da est m	Understandi	ng (K2)
CO4		ழர்களி பும்.	ன் வே	ளாண்ை	<u>.</u> ம மர	ற்றும்	நீர்ப்ப	ாசனத்	தெ	ர <b>ழில்</b> நுட்ப	ம் பற்றி	விளக்க	Understandi	ng (K2)
CO5	தமி	ழர்களி	ன் அறி	வியல் ந	தமிழ்	மற்றுப்	் கன	ளினித் <u>த</u>	ழ்வ	பற்றி வி	ாக்க முடிய	ம்.	Understandi	ng (K2)
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COs		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO		PO10	PO11	PS01	PSO2
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	ESI	E		8 4 . 1	plan .					NA				

Signature of the Chairman
Board of Studies - 5 & H (Physics

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



					24	IPHL21	- APF	LIED P	HYSIC	S LABO	RATORY						
	- 1			×I	(Com	mon to	CIVIL,	МЕСН,	MTS a	nd AUT	O branches	5)	1				. 1
Progra Branch			BE - C	CIVIL, N	IECH, I	ITS and	d AUTC	) branc	hes	Sem.	Category	L	Т	Р	SL*	тот	Credit
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LIST O				340													
1.	Deter	rmina	tion of t	he You	ng's mo	dulus o	f the ma	aterial o	f a give	n beam	using unifor	m be	endir	ng me	thod.		
2.	Deter	rmina	tion of t	he ther	mal con	ductivity	of a b	ad cond	luctor u	sing Le	e's disc.	,				ja L	70
3.	Deter	rmina	tion of t	he freq	uency o	f alterna	ating cu	rrent us	ing ele	ctrically	vibrating tun	ing f	ork (	(Meld	e's app	paratus)	
4.	Deter	rmina	tion of t	he wav	elength	of the g	jiven se	micond	luctor la	ser.	9						*
5.	Dete	rmina	tion of t	he parti	icle size	of the	given p	owder u	sing la	ser.	=		5)				
6.	Dete	rmina	tion the	accept	ance ar	ngle and	l numer	ical ape	erture o	f the giv	en optical fib	er.					
7.	Dete	rmina	tion of t	he spec	cific res	istance	of the g	iven me	etallic w	ire usin	g Carey Fost	ter's	brid	ge.	_		
8.	Dete	rmina	tion of t	he ban	d gap o	f a giver	n semic	onducti	ng mate	erial usi	ng post-office	e box	۲.				
9.	Dete	rmina	tion of t	he thick	kness o	f a thin t	ilm usir	ng air-w	edge a	rrangem	nent.					-	-
10.	Writin	ng co	ding for	any on	e of the	above	experin	nents / c	develop	ing a pr	oject / a prod	duct.					
REFER	RENCE	S/ M	ANUAL	/SOFT	WARE	1. 6. 0			ž.								
1.	Labo	ratory	/ Manua	al					, 9								
COUR	SE OU	TCO	MES:											T	E	ВТ Мар	oed
On cor						ents wi										ghest L	
CO1					odulus ating c		terial, th	ne thern	nal con	ductivity	of a bad co	nduc	tor a	and		alyzing ecision	
CO2	deter	mine	the wa	velengt	h of a						e of a powd	er m	ater	ial,	An	alyzing ecision	(K4),
CO3	deter	mine	the sp	pecific	resistar	nce of	a meta	allic wir	re, the	band	gap of sem product.	icon	duct	ing	An	alyzing	(K4),
								f COs v									
COs/P	Os F	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	T	PO	11	PSC	01	PSO2
CO1		3	2	2	3				3	1				2			4
CO2		3	2	2	3				3	1			2	2			,
CO3	3	3	2	2	3,				3	1	5		2	2			
1 – Sliç	ght, 2 -	- Mod	erate, 3	- Sub	stantial,	BT- Blo	oom's T	axonon	ny								* 1

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

Signature of the Chairman
Board of Studies - 5 & H. (Physics)



CPC

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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	nufactu	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				w)	
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	a ·					
		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			-	_	2.1	_
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.		
		U		PA	RT C -	Roboti	cs Labo	ratory	(30 Hou	rs)				n e
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						E.	
	1			R	EFERE	NCES/	MANUA	AL /SO	FTWARE	<u>:</u> :		2		
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				T Mappe thest Lev	
CO1	develo		rototype	model	using m			ations	like weldi	ing,		Ap	plying (K ecision (S	3),
CO2	sketch	3D mo	del and	develo	p the pr	ototype	using 3	D printe	er	*			plying (K	
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	<b>S</b>		, ,		
COs/POs /PSOs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PSO <sup>2</sup>	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%

Storm

Signature of the Chairman Board of Studies - Mechanical

9



				24	MNT21	- QUAN	NTITATIV	VE AP	TITUDE - II					
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1.	Dr.R.S.A		"Quant	itative A	ptitude 1	for Com	petitive I	Exami	nations", Re	vised	Edition	, S.Ch	and and	compan
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	Abhijit G	iuha,"Qu	ıantitati	ve Aptiti	ude for		titive Exa		tion", 7 <sup>th</sup> Ed	ition, I	ИсGrа	w Hill	Education	on, India
1.	Abhijit G 2020. https://w	uha,"Qu	iantitati	ve Aptitu	ude for le/quest	ions-and		rs		ition, I	ИсGrа	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				100
CAT2		30	70			2	100
CAT3	-	30	70	-	-		100

 $^{\star}$  ±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





Prerequisites Nii 1 HS 15 0 15 0 30  Preamble Yoga or yogasanas are considered as art and science of healthy living by our ancient guru is method to bring harmony of body and mind for general wellbeing. Yoga is considered as of the greatest gifts to the world by Indians for healthy living. Students in particular benefitted by learning yoga.  Unit - I Introduction: 2  The Origins of Yoga - Definitions - Concepts - Aims and objectives of Yoga - Yoga is a Science and Art - Ri and Regulations of Asanas - Classifications of Yogasanas - Patanjall's Ashtanga Yoga - Pranayama - Muc & Bandhas - Shatkarma (Cleansing Practice) - Streams of Yoga - Modern Trends in yoga.  Unit - II Yoga and Mind: 2  The Nature of Mind - Five Elements and the Mind - Meditation and the Mind - Functions of the Mind - Rol Yoga in Psychological problems: Mood Disorders, Major Depressive Disorder, Cyclothymic Disorder.  Unit - III Yoga and Values, Diet: 2  Human Values - Social Values - Role of Yoga in Personality Integration - Concepts of Natural Diet - Naturope Diet - Eliminative Diet - Soothing Diet - Constructive Diet.  Unit - IV Asanas: 2  Prayer - Starting & Closing - Preparatory practices - Loosening Practices - Meaning, Definitions and Objecti of Asanas - Principles of Practicing Asanas. Asanas: Standing - Sitting - Prone - Supine - Suryanamaskar.  Unit - V Pranayama and Meditation: 2  Breathing Practices for awareness - Definitions and Objectives of Pranayama - Principles of Practic Pranayama. Nadi Shuddhi - Kapalabathi - Sitali - Sitkari - Bhranari - Ujjayi - Relaxa Techniques - Meditation.  EXTROOK:  Swami satyananda saraswathi, "Asana pranayama mudra bandha", Bihar school of yoga, 4 <sup>th</sup> Edition, 1969.  2. Swami mukthi Bodhanandha, "Hatha yoga pradipika", Bihar school of yoga, 4 <sup>th</sup> Edition, 1985.	Summer of the same	24VEC11 - YOGA AND VALUE	S FOR H	OLISTIC DE	VELO	OPM	ENT			
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<ol> <li>1969.</li> <li>Swami mukthi Bodhanandha, "Hatha yoga pradipika", Bihar school of yoga, 4<sup>th</sup> Edition, 1985.</li> <li>REFERENCES:</li> <li>B.K.S. Iyenkar, "Yoga the path of holistic health", DK Limited, 2<sup>nd</sup> Edition, 1969.</li> </ol>	TEXT BOOK:									
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B.K.S. Iyenkar, "Yoga the path of holistic health", DK Limited, 2 <sup>nd</sup> Edition, 1969.	2. Swami	mukthi Bodhanandha, "Hatha yoga prad	ipika", Bi	nar school c	f yoga	a, 4 <sup>th</sup>	Editi	on, 19	85.	
	REFERENCES	S:	5 ×							
	1. B.K.S.	yenkar, "Yoga the path of holistic health	", DK Lim	ited, 2 <sup>nd</sup> Ed	ition, 1	1969	·			
2. Selvarasu, "Kriya cleansing in yoga", Aruvi yoga, 3 <sup>rd</sup> Edition, 2002.	2. Selvara	ısu, "Kriya cleansing in yoga", Aruvi yoga	a, 3 <sup>rd</sup> Edit	ion, 2002.	A T				1	-

COUR: On cor	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)

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011
CO1	4 7 22 1				17 1 6	3		2	1		
CO2	1		-			3		2		Y-4	* ***
CO3	1		7			3		3	- /	Translan.	
CO4						3		2	3		
CO5	i sen				-	3		. 3			3 4

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	rele were to	2 2 2 2 2 2		- · .	r - Jeru Y		=
CAT2	, <del>-</del>		-	·			
CAT3	20	30	50	-	-	-	100
ESE		<u>-</u> 2			-	-	-

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



Unature of the Chairman
Board of Studies - SAH (modifies)

