# **Government College of Engineering, Karad SCHEME OF INSTRUCTION & SYLLABI**

**Programme : ALL (Physics group)** 

Scheme of Instruction for First Year of B. Tech. (UG) Degree in all Programmes

Semester – I

Mandatory 03-week Induction Program in the first semester for every student.

Sr.	Course	Course	Course Title	L	Т	Р	Contact	Credits		E	XAM SCH	IEME	
No.	Category	Code					Hrs/Wk		CT1	CT2	TA/CA	ESE	TOTAL
1	BSC	FE1101	Mathematics – I	3	1	-	4	4	15	15	10	60	100
2	BSC	FE1102	Physics	3	1	-	4	4	15	15	10	60	100
3	ESC	FE1103	Programming for Problem	3	-	-	3	3	15	15	10	60	100
			Solving										
4	ESC	FE1104	Engineering Graphics and	1	-	-	1	1	-	-	50	-	50
			Design										
5	BSC	FE1105	Physics Lab	-	-	2	2	1	-	-	25	25	50
6	ESC	FE1106	Programming for Problem	-	-	4	4	2	-	-	50	50	100
			Solving Lab										
7	ESC	FE1107	Engineering Graphics and	-	-	4	4	2	-	-	50	50	100
			Design Lab										
			Total	10	02	10	22	17	45	45	205	305	600

L- Lecture **T-Tutorial** 

**P-Practical** 

TA/CA- Teacher Assessment/Continuous Assessment

CT1- Class Test 1 CT2- Class Test 2

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	HSMC (Hum., So.	BSC	ESC	PCC (Programme	PEC (Programme	OEC (Open	MCC (Mandatory	Project / Seminar /
	Sc, Mgmt.)	(Basic Sc.)	(Engg. Sc.)	Core courses)	Elective courses)	Elective courses)	Courses)	Industrial Training
Credits		9	8					
Cumulative Sum		9	8					

TOTAL CREDITS=17

#### Government College of Engineering, Karad SCHEME OF INSTRUCTION & SYLLABI Programme: (Chemistry group) Scheme of Instruction for First Year of B. Tech. (UG) Degree in all Programmes Semester – I

Sr.	Course	Course	Course Title	L	Т	Р	Contact	Credits	EXAN	A SCH	EME		
No.	Category	Code					Hrs/Wk		CT1	CT2	TA/CA	ESE	TOTAL
1	BSC	FE1201	Mathematics – II	3	1	-	4	4	15	15	10	60	100
2	BSC	FE1202	Chemistry	3	1	-	4	4	15	15	10	60	100
3	ESC	FE1203	Engineering Mechanics	3	1	-	4	4	15	15	10	60	100
4	HSMC	FE1204	Professional Communication	2	-	-	2	2	15	15	10	60	100
5	BSC	FE1205	Chemistry – I Lab	-	-	2	2	1	-	-	25	25	50
6	ESC	FE1206	Engineering Mechanics Lab	-	-	2	2	1	-	-	50	50	100
7	ESC	FE1207	Workshop Manufacturing Practices	-	-	4	4	2	-	-	50	50	100
9	HMSC	FE1208	Professional Communication Lab	-	-	2	2	1	-	-	<mark>25</mark>	<mark>25</mark>	<mark>50</mark>
10	ESC	FE1209	Basic Engineering	3	-	-	3	1	-	-	-	50	50
			Total	14	03	10	27	20	60	60	<mark>190</mark>	<mark>440</mark>	<mark>750</mark>

L-Lecture T-Tutorial P-Practical

CT1- Class Test 1 TA/CA- Teacher Assessment/Continuous Assessment CT2- Class Test 2 ESE- End

Course Category	HSMC (Hum.,	BSC	ESC	PCC	PEC (Programme	OEC (Open	MCC (Mandatory	Project / Seminar /
	So.	(Basic Sc.)	(Engg. Sc.)	(Programme	Elective courses)	Elective courses)	Courses)	Industrial Training
	Sc, Mgmt.)			Core courses)				
Credits	03	09	08					
Cumulative Sum	03	18	16					

Semester Examination (For Laboratory End Semester performance) TOTAL CREDITS=17+20=37

Government College of Engineering, Karad										
			]	First Year B.	Tech					
	~ -		<b>FE1101:</b> ]	Engineering 1	Mathematics-I					
Teachin	g Schen	ne				Examination Sch	eme			
Lectures		03 Hrs/week				$\frac{C\Gamma - I}{CT}$	15			
Tutorials	5	01 Hrs/week				CI - 2	15			
Total Cr	edits	04					10			
						ESE Duration of ESE	00	20 Min		
Course	Outcom					Duration of ESE	02 HIS	50 MIII		
Course	Outcom									
1. To und	apply o	differential and	integral calculu Gamma functions	us. Apart fror	n some other app	olications they wil	l have	a basic		
<b>2.</b> To a	apply Ro	olle's Theorem t	hat is fundamenta	al to application	of analysis to Eng	ineering problems				
<b>3.</b> To a	apply the	e Fourier series	for learning advar	nced Engineeri	ng Mathematics	01				
<b>4.</b> To	deal wit	th functions of	several variables	s those are ess	ential in most brar	ches of Engineerin	ng. To le	earn the		
esse	ential too	ol of matrices an	d linear algebra ii	n a comprehens	ive manner	Ç	0			
				<b>Course Con</b>	tents			Hours		
Unit 1	Matri Introd Orthog	<b>ces:</b> uction to rank gonal matrices;	of a matrix; Sys Eigen values and	stem of linear Eigenvectors, (	equations; Symme Cayley-Hamilton Th	tric, Skew symmet heorem, Diagonaliz	ric and ation of	(7)		
Unit 2	<b>Differ</b> Rolle' function	rential and Inte s Theorem, Mea on, Beta functio	gral Calculus: in value theorem, n and its propertie	Taylor's and Mes	faclaurin's theorem	with remainders; C	Gamma	(6)		
Unit 3	Partia Partia deriva	al <b>Differentiation</b> I derivatives, tive; Method of	<b>n:</b> Homogeneous fu Lagrange's multi	unctions and pliers, Errors a	Euler's theorem, ( nd Approximations	Composite function	n, total	(6)		
Unit 4	Fourie Fourie Series arbitra	er series: er series in the 1 for Even and ( ary Parseval's id	ange (0, 2 <i>l</i> ) <i>and</i> Odd function, Hal	<i>l</i> ( <i>-l</i> , <i>l</i> ) where an angle sine and	<i>l</i> is arbitrary, Diric ad cosine series in	chelet's conditions, the range $(0, l)$ wh	Fourier ere <b>l</b> is	(4)		
Unit 5	Vecto	r Calculus:	Childry					(7)		
cinte	Scala	r and vector poi	nt functions. Grad	lient of scalar r	oint function. Dired	ctional Derivatives.	Curl	(.)		
	and D	ivergence of vec	tor point function	ns. Solenoidal a	nd irrotational forc	e fields				
Unit 6	Comp Circu separa	<b>blex Number:</b> lar functions, H ation into real an	yperbolic and In d imaginary parts	verse Hyperbo	ic functions, logar	ithms of complex r	umber,	(6)		
Tutoria	s							(12)		
Text Bo	oks									
<b>1.</b> H.	K.DAS '	'Advance Engir	eering Mathemat	ics" S. Chand p	ublications					
<b>2.</b> De	bashis E	Datta "Textbook	of Engineering M	Iathematics" N	ew Age Internation	nal Publication				
<b>3.</b> "E	ngineeri	ng Mathematics	A Tutorial Appro	oach". Ravish I	Singh, Mukul Bh	att.Tata, McGraw H	Iill			
Reference Books										
<b>1.</b> G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002										
2. Erv	vin krey	szig, Advanced	Engineering Mat	hematics, 9th E	dition, John Wiley	& Sons,2006				
3. Ve	erarajan	T., Engineering	Mathematics for	first year, Tata	McGraw-Hill, Nev	w Delhi,2008	0			
4. Ra	mana B.	V., Higher Eng	neering Mathema	atics, Tata McC	raw Hill New Delh	1, 11th Reprint, 201	0.			
5. D.	Poole, L	Inear Algebra:	A Modern Introdu	iction, 2nd Edi	10n, Brooks/Cole, 2	2005 am 2010				
0. B.S	b. Grewa	ai, Higner Engir	eering Mathemati	ics, Knanna Pu	busners, 36th Editio	on, 2010				
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CO↓													1	2	3
CO 1															
CO 2															
CO 3															
CO 4															

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember	$\checkmark$	$\checkmark$	$\checkmark$	
Understand	$\checkmark$	$\checkmark$	$\checkmark$	
Apply	$\checkmark$	$\checkmark$	$\checkmark$	
Analyse	$\checkmark$	$\checkmark$	$\checkmark$	
Evaluate	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Create			$\checkmark$	
TOTAL	15	15	10	60

Government College of Engineering, Karad											
				Fi	rst Yea	r B. Tec	h				
				FE1102	: Engin	eering l	Physics				
Teachin	g Scher	ne			0		•	Examina	tion Sch	eme	
Lectures		03 Hrs/week						CT – 1		15	
Tutorials	3	01 Hrs/week						CT – 2		15	
Total Cr	edits	04						ТА		10	
								ESE		60	
								Duration	of ESE	02 Hrs	30 Min
Course	Outcom	nes (CO)									
<b>1.</b> To <i>I</i>	Analyze	Crystal Structu	ire and u	inderstand ba	asics of (	Quantum	Physics for E	Ingineering.			
<b>2.</b> To u	understa	nd Wave Optics	s, LASE	ER and Soun	d for app	olication	n Engineering	g Technolog	y.		
3. To l	build a f	oundation of Su	upercono	ductivity and	1 Nuclear	r Energy					
<b>4.</b> To i	impleme	ent the preface o	of Nano	and its recen	nt need ir	n Enginee	ering Technol	ogy.			
	~				Course	Contents					Hours
Unit 1	Crysta	allography:	•	a 1	р .	<b>C</b> 11	1.1	'. 11 D.'	• ,•	1	(7)
	Introd	uction (Lattice	point, S	Space lattice	e, Basıs,	Crystall	ine solid), Ur	nt cell- Pri	mitive ar	nd non-	
	primit	ive, Bravais La	ittice, Se	even crystal	systems	(Interfact	al angle, axia	l length Bra	vais Latt	ice and	
	examp	otes with diagra	am), pro	perties of un	nit cell,	Centre o	r symmetry, p	plane of syr	nmetry, <i>I</i>	AX1S OI	
	and s	eu y Symmen y ketches for diff	ferent n	lanes I aue	Method	l Bragg'	s law and B	ragg's Spec	trometer	X roy	
	diffra	ction by nowder	r method	1 Problems	wichiou	i, Diagg	s law and D	lagg s spee	uometer	, <i>X</i> -1 <i>a</i> y	
	uma	ction by powder	memor	i, i iobieilis							
Unit 2	Quan	tum Physics									(6)
	Introd	uction to Ouar	ntum m	echanics P	lank's C	Duantum	Theory Pho	toelectric F	Effect C	ompton	(0)
	Effect	with theory. W	Vave Pa	rticles Dual	itv. Matt	ter waves	Properties of	of Matter wa	ave. Heis	senberg	
	Uncer	tainty principle	for posi	ition and mo	mentum	of partic	le, Problems.			0	
		JI JI I	I I			I	-,				
Unit 3	Wave	optics and sour	nd:								(6)
	Interfe	erence of light, '	Young's	s double slit	experim	ent, New	ton's rings. F	arunhofer di	iffraction	from a	
	single	slit, Rayleigh	criterio	on; Diffract	ion grati	ings and	its theory a	and their re	esolving	power,	
	Polari	zation, optical	activit	y, Lorentz	Half sł	hade Po	arimeter, Pro	oblems, Ult	trasonic	waves,	
	Magn	etostriction osci	illator ar	nd Piezoelec	tric Osci	llator, Ap	plications				
Unit 4	LASE	<i>R</i> :				G.: 1 .	15		· .	0 1 1	(4)
	Introd	uction, Absorpt	tion, Spo	ontaneous Ei	mission,	Stimulat	ed Emission,	Population I	nversion	, Solid-	
	state	lasers (ruby), P	ropertie	es of laser b	beams: a	pplicatio	ns of lasers 1	in science, o	engineeri	ng and	
	medic	ine, Holography	у.								
Unit 5	Supar	aandustivity an	d Nucle	an an aray							(7)
Unit 5	Introd	uction Property	v of supe	erconductor	Meissne	er Effect	Type I and Ty	vne II suner	conducto	r	(I)
	Iosen	hsons Effect Ar	nnlicatio	ons Nuclear	Energy	Fusion (	P-P chain and	C-N Cycle)	Fission	r, Chain	
	React	ion. Nuclear Fis	ssion Re	actor. Nume	erical Pro	blems.	i chuin und	e it eyele)	, 1 1551011	,enum	
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Unit 6	Nano	science and Na	ano tech	nology							(6)
	Intro	duction(nano m	naterial,	nano scier	nce, nan	no techn	ology), Signi	ficance of	Nanosca	le and	(-)
	proper	rties, technique	es for	production	of nano	o materi	als (Physical	and chen	nical me	ethods),	
	Chara	cterization- sca	anning t	unneling mi	icroscopy	y and A	tomic force i	microscopy,	Applica	tion of	
	nano t	echnology, Carl	bon Nar	notube							
Tutoria	s										(12)
Text Bo	oks										
<b>1.</b> V.	Rajendr	an– Engineering	g Physic	cs- Mc. Grav	w Hills						
<b>2.</b> Vij	aya kun	nari- Engineerin	ng Physi	cs-Vikas pul	blication	~	• • -				
3. B.	K. Pand	ley and S. Chatu	urvedi- E	engineering	Physics,	Cengage	Learning-201	12			
Referen	ce Book	<b>(S</b>	• •				<u> </u>		r A	<b>r</b> , -	1
<b>1.</b>   S. (	O. Pillai	, Solid State Phy	iysics : S	structure & I	Electron	Related l	roperties, Eas	stern Ltd,, N	lew Age	Internati	onal
	Ltd.	41- T- 1 - 1		104 P		1	D-4 I (1 (oth)				
2. Ch	aries Ki	uie, introduction	on to Sol	id State Phys	sics - Wi	ney India	rvt. Ltd.(8 <sup>m</sup> )	Eation).			
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4.	Resnick Halliday, Physics Volume-I, Krane -John Wiley & Sons Pub.
5.	B. L. Theraja -Modern Physics - S. Chand & Company Ltd., Delhi.
6.	R. K. Gaur & Gupta S. L, Engineering Physics -Dhanapat Rai Publication.
7.	Sanjay D Jain, Girish G. Sahasrabuddhe - Engineering Physics, Universities Press
8.	LASERS Theory and Applications – K. Thyagarajan, A. K. Ghatak; Macmillan India Limited.
9.	Quantum Mechanics – L. J. Schiff; Mc-Graw Hill International Edition.
10.	A Text Book of Optics – N. Subramanyam & Brijlal; (Vikas Publishing House Pvt.Ltd)
Use	ful Links
1.	en.wikipedia.org/wiki/Fundamentals_of_Physics
2.	www.hyperphysics.com, www.google.com
3.	physics.info/magnetism, www.youtube.com, Nptl video

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													1	2	5
CO 1															
CO 2															
CO 3															
CO 4															

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember		$\checkmark$	$\checkmark$	$\checkmark$
Understand		$\checkmark$		$\checkmark$
Apply		$\checkmark$	$\checkmark$	$\checkmark$
Analyse		$\checkmark$	$\checkmark$	$\checkmark$
Evaluate		$\checkmark$	$\checkmark$	$\checkmark$
Create			$\checkmark$	
TOTAL	15	15	10	60

Government College of Engineering, Karad											
			First Year B. Tech								
			FE1103: Programming for Problem Solvi	ng							
Teaching	g Scheme			<b>Examination Sche</b>	eme						
Lectures	03 Hrs/	week		CT – 1	15						
Tutorials	00 Hrs/	week		CT – 2	15						
Total Cre	edits 03			ТА	10						
				ESE	60						
				Duration of ESE	02 Hrs	30 Min					
Course (	<b>Outcomes (CO)</b>										
1. Stu	dents will able to	o do an	algorithm for solving problems.								
<b>2.</b> To t	test and execute	the pro	grams and correct syntax and logical errors.								
3. Stu	dents will able to	o imple	ment the concepts of function arrays and string.								
4. Stu	dents will able to	o apply	the concepts of structure and pointers								
I			Course Contents			Hours					
Unit 1	Introduction	to Prog	ramming-			(7)					
	Introduction t	o com	oonents of a computer system. Idea of Algorithm	: steps to solve logic	cal and						
	numerical prob	olems. I	Representation of Algorithm: Flowchart/Pseudocod	e with examples							
Unit 2	Introduction	to C la	nguage –	1		(6)					
	Importance of	f 'C' La	inguage, Sample 'C' Program, Structure of 'C' Pr	ogram, Constants, va	riables						
	and data types	. Opera	ators and expressions, managing input / output of	perations, Decision n	naking,						
	branching and	loop st	atements, Storage classes, Functions, need for user	defined functions, el	ements						
	of User define	d funct	ions, defining functions, return values and their ty	pes, function calls, fu	unction						
	declaration, me	ethods (	of parameter passing,								
Unit 3	Arrays and St	tring –				(6)					
	Declaration an	nd initi	alization of arrays, one dimensional and two-d	mensional arrays, re	eading.						
	writing and m	anipula	tion of above types of arrays, multidimensional a	rrays. Recursion, De	claring						
	and initialing s	string v	ariables, reading string from terminal, writing strip	ig to screen, string ha	andling						
	functions. Pass	sing arr	ay and string to function	6 7 6	U						
Unit 4	Structure-	0	<i>.</i>			(4)					
	Defining and	declari	ng structure, accessing structure members, struc	ture initialization, a	rray of						
	structures, nest	ting of a	structure structures and functions, union and enume	eration	5						
Unit 5	Pointer-					(7)					
	Defining and d	leclarin	g pointers, accessing the address space of a variabl	e, declaring and							
	initialization p	ointer v	ariables, accessing a variable through its pointer, p	ointer as a function							
	argument, poir	nter exp	ressions, pointers to arrays, strings and structure, s	elf-referential structur	res						
	example of lin	ked list	, Dynamic memory allocation								
Unit 6	File Handling	-	· · · ·			(6)					
	File Operation	s, Char	acter I/O, String I/O, Formatted I/O, Block I/O, Rat	ndom File Operations	5						
<b>Tutorial</b>	S			-		(12)					
						/					
Text Boo	oks										
<b>1.</b> Pro	gramming in Al	NSI C 6	th edition by E. Balguruswami – Tata McGraw Hi	1							
2. Let us C by Yashvant Kanetkar- BPB publications											
3.	-		•								
Reference	ce Books										
<b>1.</b> The	e 'C' Programmi	ing Lan	guage, By B.W. Kernigghan and D. M. Ritchie. Pe	arson Education.							
2. Pro	gramming And	Probler	n Solving Using C Language, ISRD Group, McGra	w-Hill Publications							
3. Bvi	on Gottfried. Sc	chaum's	Outline of Programming with C. McGraw-Hill								
Useful L	inks										
1. httr	://cse02-iiith vl	abs.ac i	n/								
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CO↓													1	2	3
<b>CO</b> 1															
CO 2															
CO 3															
CO <sub>4</sub>															

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember		$\checkmark$	$\checkmark$	
Understand		$\checkmark$	$\checkmark$	
Apply		$\checkmark$	$\checkmark$	
Analyse		$\checkmark$	$\checkmark$	
Evaluate		$\checkmark$	$\checkmark$	
Create			$\checkmark$	
TOTAL	15	15	10	60

				Government	College of Engine	eering, Kara	ıd		
				Fi	irst Year B. Tec	h.			
				<b>FE 1104: En</b>	gineering Graph	ics & Desigr	1		
Tea	achin	g Schei	ne				<b>Examination Sch</b>	neme	
Lee	ctures		01 Hrs/week				CA/TA	50	
Tot	al Cr	edits	01						
Co	urse	Outcon	nes (CO)						
At	the er	nd of co	urse	1 ( 1 1	1	. 1.11	C	<u>(1)</u>	1 1
1.	Stuc	ents w	ill be able to t	inderstand the use	engineering draw	ing skills as	a means of accur	ately and $1^{\circ}$	clearly
2	COIII		ing ideas, infor	demonstrate the w	tions in different en	igineering disc	cipilines. (Blooms L	ever 1 &	2)
4.	Stud	entions	in engineering	drawing (Blooms 1	e of unificient typ	es of utawill	g mstruments, use	or symu	ools allu
3	Stud	ents wi	ll be able to dra	w projections of lir	ues different types	of planes Sol	ids Orthographic I	sometric	
5.	proi	ections	of simple object	ts (Blooms cogniti	ve level 2 & 3)	or planes, bor	las, ormographic, i	sometre	
4.	Stud	ents w	ill acquire req	uisite lifelong kno	wledge, technique	es and attitud	le required for ad	vanced s	tudy of
	engi	neering	drawing (Bloor	ms cognitive level 3	3)				· · · · j · · -
	0		0		,				
	Deta	ailed co	ntents						
	Trad	litional	Engineering G	raphics:					
	Prin	ciples o	f Engineering C	Graphics; Orthograp	ohic Projection; De	scriptive Geor	netry; Drawing Prin	nciples; Is	sometric
	Proj	ection;	Perspective; Re	ading a Drawing; T	rue Length, Angle	Section of so	lids.		
	Tota	1 of 10	Lecture Hours &	& 60 Hours of Lab		_			
	(Exc	ept the	basic essential	concepts, most of th	he teaching part ca	n happen conc	currently in the labo	oratory)	
••	•	<b>x</b> .			Course Contents				Hours
Un	ut I	Introd	luction to Engi	neering Drawing C	overing				(02)
		Conio	ples of Engineer	Concerning Graphics and t	neir significance, u	sage of Drawi	ing instruments, let	tering,	
		Hypor	sections (using	olute	curx method only)	, Cyclolu (exc	iuding Epicyciola,		
Ur	it 2	Ortho	granhic Project	tions Covering Por	ints & Lines				(02)
UI.	lit 2	Princi	ples of Orthogra	aphic Projections-C	Conventions: Proiec	tions of Points	s and lines inclined	to both	(02)
		planes	(line in first qu	adrant only, Traces	s theory only);			10 00th	
Un	it 3	Projec	tions of Regula	r Planes Covering	,				(02)
		Projec	tions of incline	ed Planes resting of	on HP only; (Auxi	liary planes th	heoretical only) (ex	xcluding	
		freely	suspended plan	es)					
Un	it 4	Projec	ctions of Regula	ar Solids Covering,					(02)
		Projec	tion of Prisms	, Pyramids, and c	ylinder inclined t	o both refere	nce planes, solids	in first	
		quadra	ant and resting	on HP only. (Exc	cluding frustum, te	trahedron and	l sphere) (excludin	g freely	
• •	• •	susper	nded solids)		<i>a</i> .				(0.0)
Un	ut 5	Projec	ctions of Regula	ir Sectional Solids	Covering,	aning Driam	Culindan Dunamid	Como	(02)
		Auvili	ons and Sectiona	a views of Right A	Angular Solids cov	ering, Prism,	Cylinder, Pyramid,	Cone –	
Un	it 6	Isomo	tric Projections	Covering					(02)
	ui U	Princi	ples of Isometri	c projection – Isom	etric Scale. Isomet	ric Views Co	nventions: Isometri	c Views	(04)
		of lin	es, Planes. Sim	ple and compound	d Solids: Conversi	on of Isomet	ric Views to Ortho	ographic	
		Views	and Vice-versa	for simple solids of	only;			- <del>0</del> F	
				1	ý ·				
CA	/TA	will be	based on Succe	essful submission of	of Drawing sheets	as per listed	below		
	Sh	eet No	l: Engineering	g Curves	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
	She	eet No 2	2: Projections	of Points & Lines					
	She	eet No 3	3: Projections	of Planes					
	She	eet No <sup>2</sup>	4: Projections	of Solids					
	Sh	eet No :	5: Projections	of Section of Solid	S				
	Sh	eet No (	5: Isometric Pr	rojections of Simple	e solids				
	She	eet No 7	7:   Orthographi	ic Projection of Sin	nple components (or	otional)			
	<u> </u>						1		
Te	xt Bo	oks	D 1 1 ** * *	0.1.1.0.0.000					
1.	Bha	ttt N.D.	, Panchal V.M.	& Ingle P.R., (2018	8), Engineering Dra	wing, Charota	ar Publishing House	e	
2.	Sha	n, M.B	. & Kana B.C. (1	2008), Engineering	Drawing and Com	puter Graphic	s, Pearson Education	on	

3.	Agrawal B. & Agrawal C. M. (2012), Engineering Graphics, TMH Publication									
4.	4. Dhananjay A Jolhe, Engineering Drawing with an introduction to AutoCAD, TMH Publication									
5.	5. P. S. Gill, Engineering Drawing, S. K. Katariya & sons Publication									
Ref	Reference Books									
1.	Cencil Jenson, Jay D. Helsel, D. R. Short, Engineering Drawing & Design, TMH Pub									
2.	M. L. Dabhade, Engineering Graphics, Vision Publication									
3.	Kristie Plantenberg, Engineering Graphics Essentials, University of Detroit Mercy, SDC Publication									
4.	4. AutoCAD 2016 for Engineers & Designers, 22 <sup>nd</sup> edition Vol 1 & 2; Prof. Sham Tickoo, Dreamtecl	n Press								
Use	Useful Links									
1.	1. https://nptel.ac.in/courses/112103019/									
2.	2. https://www.standardsmedia.com/IS-SP-46Engineering-Drawing-Practice-for-Schools-and-Colle	ges-4915	i-							
	book.html									
3.	http://www.engineering108.com/									

<b>PO</b> 1	<b>PO</b> 2	<b>PO 3</b>	PO 4	PO 5	PO 6	<b>PO 7</b>	<b>PO 8</b>	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
												1	2	3
$\checkmark$			$\checkmark$											
$\checkmark$	$\checkmark$													
$\checkmark$			$\checkmark$			$\checkmark$		$\checkmark$						
$\checkmark$	$\checkmark$		$\checkmark$		$\checkmark$			$\checkmark$	$\checkmark$	$\checkmark$				
	PO 1  ✓  ✓  ✓  ✓  ✓  ✓  ✓  ✓	PO 1     PO 2       ✓     ✓       ✓     ✓       ✓     ✓       ✓     ✓	PO 1     PO 2     PO 3       ✓     ✓       ✓     ✓       ✓     ✓       ✓     ✓       ✓     ✓	PO 1     PO 2     PO 3     PO 4       ✓     ✓     ✓       ✓     ✓     ✓       ✓     ✓     ✓       ✓     ✓     ✓       ✓     ✓     ✓       ✓     ✓     ✓	PO 1     PO 2     PO 3     PO 4     PO 5       ✓     ✓     ✓     ✓       ✓     ✓     ✓     ✓       ✓     ✓     ✓     ✓       ✓     ✓     ✓     ✓       ✓     ✓     ✓     ✓	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6         ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7         ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8         ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓         ✓       ✓       ✓       ✓       ✓       ✓       ✓	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8       PO 9         ✓       <	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8       PO 9       PO 10         ✓	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8       PO 9       PO 10       PO 11         ✓	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8       PO 9       PO 10       PO 11       PO 12         ✓<	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8       PO 9       PO 10       PO 11       PO 12       PSO 1         ✓ <t< td=""><td>PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8       PO 9       PO 10       PO 11       PO 12       PSO 1       PSO 1         ✓</td></t<>	PO 1       PO 2       PO 3       PO 4       PO 5       PO 6       PO 7       PO 8       PO 9       PO 10       PO 11       PO 12       PSO 1       PSO 1         ✓

Knowledge Level	CT 1	CT 2	TA	ESE
Remember			10	
Understand			10	
Apply			10	
Analyse			10	
Evaluate			-	
Create			10	
TOTAL			50	

		G	overnment (	College of E	ngineering, Karad	l		
			Fi	irst Year B.	Tech			
			<b>FE1105:</b> ]	Engineering	g Physics Lab			
Teach	ning Schem	le				<b>Examination Scl</b>	neme	
Practi	cal	02 Hrs/week				CA	25	
Total	Credits	01				ESE	25	
Cours	se Outcom	es (CO)						
	1							
1.	To Hands	on experience of cr	ystal structure	and its under	stand synthesis and o	characterization of	Nano materials	
2.	To unders	tand Relevance of U	Iltrasonic wav	es and build a	a basic foundation wi	th Solar and Wind	Energy Trainer.	
3.	To analyz	e behavior of light l	y Interference	, Diffraction	, Polarization and LA	ASER		
4.	To Verify	photoelectric effect	and Hall Effe	ct.				
				Cou	irse Contents			
Expe	riment 1	Aim: Study of Sev	en crystal stru	cture and syn	nmetry elements of c	ubic.		
Expe	riment 2	Aim: Study of Pla	nes with the he	elp of models	related Miller Indice	es.		
Expe	riment 3	Aim: Determine v	elocity of ultra	sonic waves	in liquid medium by	interferometer.		
Expe	riment 4	Aim: Find an obje	ct by Ultrason	ic waves				
Expe	riment 5	Aim: Calculation	of divergence of	of LASER be	am.			
Expe	riment 6	Aim: Determination	on of waveleng	th of LASER	using diffraction grade	ating.		
Expe	riment 7	Aim: To study int	erference patte	ern by Newto	ns ring Experiment.			
Expe	riment 8	Aim: To determin	e the specific r	otation of the	given sample with t	he help of Polarim	eter.	
Exper	iment 9	Aim: To Calculate	Resolving po	wer of Telesc	cope			
Expe	riment 10	Aim: Verification	of inverse squ	are law of int	ensity of light/Photo	electric effect.		
Expe	riment 11	Aim: Study introd	uctory Nanoki	t				
Expe	riment 12	Aim: To synthesiz	e nano partica	ls by spray Py	vrolysis/CVD metho	d		
Expe	riment 13	Aim: To study bel	avior of mater	rial with temp	erature by TGDTA.			
Expe	riment 14	Aim: Hall effect in	Semiconduct	or · ·	1 /			
Expe	riment 15	Aim: Determination	on of energy ga	ap in semicon	ductor.	<b>T</b> :		
Expe	riment 16	Aim: To study Fu	ndamental of a	Solar Energy	trainer/wind energy	Irainer		
Lister	Cubminsio	•						
LIST O	$\frac{1}{1 \text{ Total number of Experiments} = 10}$							
	1	1 otal number of E	x perments = 1	10				

$PO \rightarrow$	<b>PO</b> 1	<b>PO</b> 2	<b>PO 3</b>	PO 4	PO 5	<b>PO</b> 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
CO 1															
CO 2															
CO 3															
CO 4															

Skill Level	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	CA
	1	2	3	4	5	6	7	8	9	10	
Assembling			$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$			
Testing							$\checkmark$			$\checkmark$	
Observing				$\checkmark$		$\checkmark$	$\checkmark$				
Analyzing		$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$		
Interpreting						$\checkmark$	$\checkmark$				
Designing											
Creating											
Deducing				$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$		
conclusions											
											25

		G	vernment College of Engi	neering, Karad		
			First Year B. Te	ech		
		FE1	06: Programming for Pro	blem Solving L	ab	
Teach	ing Schem	e			<b>Examination Sch</b>	neme
Practic	cal	04 Hrs/week			CA	50
Total C	Credits	02			ESE	50
Cours	e Outcome	es (CO)				
1.	Able to in	plement basic c pro	gramming concepts			
2.	Able to A	nalyse program beh	viour and errors for different s	set of inputs		
3.	Able to so	lve various problen	statements by using c progran	nming		
			Course	e Contents		
Experi	iment 1	Introduction to var	ous components of programm	ing environment		
Experi	iment 2	Program for basic	rithmetic operations like addit	tion, subtraction,	multiplication, divi	ision and
		expressions solvin				
Experi	iment 3	Program for calcu	tor which performs basic arith	hmetic operations	like addition, subt	raction,
		multiplication, div	sion of a two number by using	g if else and switcl	h case	
Experi	iment 4	Program for Findi	g factorial of a number provid	led by the user.	· ·	
Exper	iment 5	Program for calcu	ting area of circle, triangle, re	ctangle, square by	y passing argumen	t to a functions.
Exper	iment 6	Program for findin	smallest and largest numbers	s from given 3 nu	mbers from array.	
Exper	iment 7	Program for searc	ng numbers from given numb	pers from array by	using linear and b	inary search.
Exper	iment 8	Program for perfo	ning matrix operation addition	n, subtraction usir	ng array.	
Experi	ment 9	Program for perfo	ning string operations using st	tring handling fur	ictions	
Exper	iment 10	Program for storin	and displaying Employee rec	cord using array of	f structure.	
Exper	iment 11	Program for passi	structure as an argument to a	a function	1 h	
Exper	iment 12	Program for Swap	ing of two numbers using call	by value and call	by reference	
Experi	iment 13	Program for demo	stration of dynamic memory a	file using character	arious functions.	
Experi	iment 14	Program for parfo	ring read and write operations of	on file using character	dom file operation	
List of	Submission	riogram for perio	ning read and write operations	s on the using fail	dom me operation	•
	3ubiiii3310 1	Total number of F	neriments – 15			
	1		perments – 15			

$PO \rightarrow$	<b>PO</b> 1	<b>PO 2</b>	<b>PO 3</b>	PO 4	PO 5	PO 6	<b>PO</b> 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
CO 1															
CO 2															
CO 3															
CO <sub>4</sub>															

Skill Level	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	CA
	1	2	3	4	5	6	7	8	9	10	
Assembling			$\checkmark$					$\checkmark$			
Testing		$\checkmark$			$\checkmark$	$\checkmark$				$\checkmark$	
Observing			$\checkmark$					$\checkmark$			
Analyzing								$\checkmark$			
Interpreting											
Designing											
Creating											
Deducing								$\checkmark$		$\checkmark$	
conclusions											
											50

			Government College of En	gineering, Kara	d		
			First Year B. 7	Гесh.			
			FE 1107: Engineering Grap	hics & Design L	/ab		
Teachir	ng Sche	me			<b>Examination Sche</b>	eme	
Practica	1	04 Hrs/week			CA/TA	50	
Tutorial	s	-			ESE	50	
Total Ci	redits	02					
Commo	Outcom						
At the e	nd of la	h course					
1 Stu	dent wil	l be able unders	and the basic principles of Techn	ical/Engineering I	Drawing to improve t	the visua	alization
skil	ls using	drafting softwar	e (Blooms cognitive level 1 & 2)	ical/Englicering I	nawing to improve t	une visua	inzation
2. Stu	dent wil	l be able to estal	blish the relationship between trad	litional drafting te	chnique and compute	er aided	drafting
(Blo	ooms co	gnitive level 3)	I	8	1		0
<b>3.</b> The	ability	to demonstrates	ideas and design concepts using d	lrafting software.	Blooms cognitive le	vel 2 &	3)
4. Stud	dents w	vill acquire requ	isite lifelong knowledge, techn	iques and attitud	le required for adv	anced s	tudy of
eng	ineering	g drawing by using	ng CAD software's (Blooms cogn	itive level 3)			
Det	ailed co	ontents					
Cor	nputer	Graphics:		4 1'			
Eng	ineering	g Graphics Softw	are; -Spatial Transformations; Of	thographic	loded Assembly		
Mo	del Vier	ving: Animation	, Co-ordinate Systems, Multi-vie	W Projection; Exp Modelling: Solid	Modelling: Introduc	tion to F	Quilding
Info	ormation	n Modelling (BI	Angle: intersection	wiodennig, Sond	wiodening, introduc		Jununig
IIIC	111101						
			Course Conte	ents			Hours
Unit 1	Overv	view of Compute	r Graphics covering,				(05)
	listing	g the computer	technologies that impact on	graphical comm	nunication, Demons	strating	
	know	ledge of the the	bry of CAD software [such as: The	ne Menu System,	Toolbars (Standard,	Object	
	Prope	rties, Draw, M	odify and Dimension), Drawing	Area (Backgroun	nd, Crosshairs, Coo	rdinate	
	System	m), Dialog boxe	s and windows, Shortcut menus	(Button Bars), T	he Command Line	(where	
	applic	tria Viana of lir	s Bar, Different methods of zoon	n as used in CAL	, Select and erase of	bjects.;	
Unit 2	Custo	misation & CA	Drawing	i Solius],			(05)
Unit 2	consis	sting of set up of	the drawing page and the printer	including scale se	ettings Setting up of	units	(03)
	and d	rawing limits; IS	O and ANSI standards for coordin	nate dimensioning	and tolerancing;	units	
	Ortho	ographic consti	aints, Snap to objects manually	and automatical	y; Producing drawi	ngs by	
	using	various coordin	nate input entry methods to draw	w straight lines,	Applying various w	vays of	
	drawi	ng circles;					
Unit 3	Anno	tations, layering	& other functions covering				(05)
	apply	ing dimensions	to objects, applying annotations	to drawings; Set	ing up and use of l	Layers,	
	layers	to create draw	ings, Create, edit and use custon	nized layers; Cha	nging line lengths t	hrough	
	(exter	ying existing in d/lengthen): Pri	es	e print command:			
Unit 4	Orthe	ogranhic projec	tion techniques.	e print command,			(05)
	Draw	ing sectional vie	ws of composite right regular geo	metric solids and	project the true shape	e of the	(00)
	sectio	ned surface; Dra	wing annotation		J		
Unit 5	Plana	r projection the	ory,				(05)
	incluc	ling sketching o	f isometric, multi-view, section	views. Dimension	ing guidelines, toler	rancing	
	techni	iques; dimensior	ing and scale multi views of dwel	lling;			
Unit 6	Demo	nstration of a s	mple team design project				(05)
	Geom	etry and topol	by of engineered components:	creation of engi	neering models and	d their	
	presei	ling software f	rd 2D blueprint form and as 3D	wire-frame and s	and assembly levels	i sona-	
	nlane	that include: wi	ndows doors and fixtures such as	WC hath eink e	hower <i>etc</i>	s, 11001	
	Pians	mat merude. wil	alons, doors, and fratures such as	, , , , , , , , , , , , , , , , , , ,			
List of s	submiss	ion					
Exper	iment 1	Study of capa	bilities of software for Drafting a	nd Modelling – Co	oordinate systems (al	bsolute,	relative,
· ·		polar, etc.) –	Creation of simple figures like pol	vgon and general	multi-line figures.		

Experiment 2	Drawing of a Title Block with necessary text and projection symbol									
Experiment 3	Drawing of curves like parabola, spiral, involute using B-spline or cubic spline.									
Experiment 4	brawing of front view and top view of simple solids like prism, pyramid, cylinder, etc., and									
_	dimensioning.									
Experiment 5	5 Drawing front view, top view and side view of objects from the given pictorial views ( <i>e.g.</i> simple 3D									
	Objects with hole and curves).									
Experiment 6	Drawing a plan of residential building (Two bed rooms, kitchen, hall, etc.									
Experiment 7	Drawing of a simple steel truss.									
Experiment 8	Drawing isometric projection of simple objects									
Text Books										
1. AutoCAD	2016 for Engineers & Designers, 22 <sup>nd</sup> edition Vol 1 & 2; Prof. Sham Tickoo, Dreamtech Press									
<b>Reference Book</b>	Reference Books									
1. (Correspon	ding set of) CAD Software Theory and User Manuals									

$PO \rightarrow$	<b>PO</b> 1	<b>PO</b> 2	<b>PO 3</b>	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
CO 1	$\checkmark$	$\checkmark$								$\checkmark$					
CO 2	$\checkmark$			~											
CO 3	✓						$\checkmark$			$\checkmark$	$\checkmark$				
CO 4	✓	✓		✓		✓			$\checkmark$		$\checkmark$				

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember			20	10
Understand			10	20
Apply			10	10
Analyse			10	10
Evaluate			-	-
Create			-	-
TOTAL			50	50

## **Government College of Engineering, Karad** SCHEME OF INSTRUCTION & SYLLABI

#### Programme: (Physics group) Scheme of Instruction for First Year of B. Tech. (UG) Degree in all Programmes

Semester – II

Sr.	Course	Course	Course Title	L	Т	Р	Contact	Credits		E	XAM SCH	IEME	
No.	Category	Code					Hrs/Wk		CT1	CT2	TA/CA	ESE	TOTAL
1	BSC	FE1201	Mathematics – II	3	1	-	4	4	15	15	10	60	100
2	BSC	FE1202	Chemistry	3	1	-	4	4	15	15	10	60	100
3	ESC	FE1203	Engineering Mechanics	3	1	-	4	4	15	15	10	60	100
4	HSMC	FE1204	Professional Communication	2	-	-	2	2	15	15	10	60	100
5	BSC	FE1205	Chemistry – I Lab	-	-	2	2	1	-	-	25	25	50
6	ESC	FE1206	Engineering Mechanics Lab	-	-	2	2	1	-	-	50	50	100
7	ESC	FE1207	Workshop Manufacturing	-	-	4	4	2	-	-	50	50	100
			Practices										
9	HMSC	FE1208	Professional Communication	-	-	2	2	1	-	-	<mark>25</mark>	<mark>25</mark>	<mark>50</mark>
			Lab										
10	ESC	FE1209	Basic Engineering	3	-	-	3	1	-	-	-	50	50
			Total	14	03	10	27	20	60	60	<mark>190</mark>	<mark>440</mark>	<mark>750</mark>

L-Lecture T-Tutorial P-Practical

CT1- Class Test 1 TA/CA- Teacher Assessment/Continuous Assessment

CT2- Class Test 2

ESE- End

Course Category	HSMC (Hum., So.	BSC	ESC	PCC (Programme	PEC (Programme	OEC (Open	MCC (Mandatory	Project / Seminar /
	Sc, Mgmt.)	(Basic Sc.)	(Engg. Sc.)	Core courses)	Elective courses)	Elective courses)	Courses)	Industrial Training
Credits	03	09	08					
Cumulative Sum	03	18	16					

Semester Examination (For Laboratory End Semester performance)

#### TOTAL CREDITS=17+20=37

# **Government College of Engineering, Karad** SCHEME OF INSTRUCTION & SYLLABI

Programme : ALL (Chemistry group)

Scheme of Instruction for First Year of B. Tech. (UG) Degree in all Programmes

Semester – I

Mandatory 03-week Induction Program in the first semester for every student.

Sr.	Course	Course	Course Title	L	Т	Р	Contact	Credits		E	XAM SCH	IEME	
No.	Category	Code					Hrs/Wk		CT1	CT2	TA/CA	ESE	TOTAL
1	BSC	FE1101	Mathematics – I	3	1	-	4	4	15	15	10	60	100
2	BSC	FE1102	Physics	3	1	-	4	4	15	15	10	60	100
3	ESC	FE1103	Programming for Problem Solving	3	-	-	3	3	15	15	10	60	100
4	ESC	FE1104	Engineering Graphics and Design	1	-	-	1	1	-	-	50	-	50
5	BSC	FE1105	Physics Lab	-	-	2	2	1	-	_	25	25	50
6	ESC	FE1106	Programming for Problem Solving Lab	-	-	4	4	2	-	-	50	50	100
7	ESC	FE1107	Engineering Graphics and Design Lab	-	-	4	4	2	-	-	50	50	100
			Total	10	02	10	22	17	45	45	205	305	600

L-Lecture T-Tutorial P-Practical

CT1- Class Test 1

TA/CA- Teacher Assessment/Continuous Assessment

CT2- Class Test 2

ESE- End Semester Examination (For Laboratory End Semester performance)

Course Category	HSMC (Hum., So.	BSC	ESC	PCC (Programme	PEC (Programme	OEC (Open	MCC (Mandatory	Project / Seminar /
	Sc, Mgmt.)	(Basic Sc.)	(Engg. Sc.)	Core courses)	Elective courses)	Elective courses)	Courses)	Industrial Training
Credits		9	8					
Cumulative Sum		9	8					

TOTAL CREDITS=17

First Year B. Tech         FE1201: Engineering Mathematics-II         Teaching Scheme         Lectures       03 Hr/s/weck       CT - 1       15         Tutorials       04 Hr/s/weck       CT - 2       15         Total Credits       04       TA       10         ESE       60       60       04       04         Course Outcomes (CO)       Course Outcomes (CO)       02 Hr/s 30 Min       02 Hr/s 30 Min         Course Outcomes (CO)       Course Course Course outcomes (CO)       02 Hr/s 30 Min         1       Use mathematical tools needed in evaluating multiple integrals and their usage       2         2.       Apply effective mathematical tools for the solutions of a complex variable that are used in various techniques dealing engineering polotems       16         4.       To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       17         Exact equations, integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, situations they may equations with constant coefficients:       160         1.       Linear Differential equations, with constant coefficients:       160         1.1       First Order Ordinary Differential equations, with constant coefficients;       160         1.1       Linear					Governme	nt College of	Engineering, Kara	d				
FE1201: Engineering Mathematics-II           Teaching Scheme         Examination Scheme           Lectures         03 Hrs/week         CT - 1         15           Totarials         01 Hrs/week         CT - 2         15           Total Credits         04         TA         10           Total Credits         04         TA         10           Course Outcomes (CO)         Duration of ESE         02 Hrs 30 Min           Course Outcomes (CO)         Duration of ESE         02 Hrs 30 Min           Course Outcomes (CO)         Course Outcomes (CO)         Course Outcomes (CO)           1. Use mathematical tools for the solutions of a complex variable that are used in various techniques deling engineering problems         4           1. To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.         Four exampling that for the toggrafting Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics         (7)           Unit 1         Exact of Complex Variable:         (6)           Linear Differential Equations with constant Coefficients:         (6)           Linear Differential equations, sinding harmonic conjugate; zeros of analytic functions, singularitics, Integrafting Factor, Stepatian         (4)           Solution of Ordinary differentia						<b>First Year</b>	B. Tech					
Teaching Scheme         Fearmination Scheme           Lectures         03 Hrs/week         CT - 1         15           Tutorials         01 Hrs/week         CT - 2         15           Total Credits         04         TA         10           ESR         60         Duration of ESE         02 Hrs 30 Min           Course Outcomes (CO)         Outration of ESE         02 Hrs 30 Min           2. Apply effective mathematical tools for the solutions of differential equations that model physical processes         3.           3. Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems         4.           10 learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.         (7)           Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics         (6)           Unit 12 <b>First Order Ordinary Differential equations</b> , finding harmonic conjugate; zeros of analytic functions, singularities, Integration: Cauchy Stepper Variable:         (6)           Differentiation: Cauchy S theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)         (4)           Vinit 3         Kumerical Methods:         (7)           Solution of Ordinary differential equation					FE1201	: Engineering	g Mathematics-II					
Lectures       03 Hrs/week       CT - 1       15         Totorials       04       TA       10         Total Credits       04       TA       10         Execution       ESE       60       60         Ourration of ESE       02 Hrs 30 Min       Duration of ESE       02 Hrs 30 Min         Course Outcomes (CO)       To learn fuceral calculus of the solutions of differential quations that model physical processes       3         3.       Apply effective mathematical tools for the solutions of a complex variable that are used in various techniques dealing engineering problems       4       To learn fuceral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       (7)         Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Linear bifferential Equations with Constant Coefficients: Linear differential equations with constant coefficients; Methods to find C.F. and P.I. Method to find Particular Integrat by shortcut method, method of variation of parameters, Cauchy-Euler equations, Linear bifferential Equations with constant coefficients; Linear differential equations, finding harmonic conjugate; zeros of analytic functions, analytic functions, finding harmonic conjugate; zeros of analytic functions, analytic functions, finding harmonic conjugate; zeros of analytic functions, analytic functions, Trapezoidal rule and Simpson's 1/2 rad and 38 rules       (6)         Unit 4       Mutrivariable Calculus:       (7)       (7)	Teac	ching	Schen	ne				<b>Examination Sch</b>	eme			
Tutorials       01       15         Total Credits       04       TA       10         Course Outcomes (CO)       ESE       60         Course Outcomes (CO)       02 Hrs 30 Min         Course Outcomes (CO)       02 Hrs 30 Min         Course Outcomes (CO)       02 Hrs 30 Min         Course Outcomes (CO)       03 Hrs 30 Min         Course Outcomes (CO)       04 Hrs 30 Min         Course Outcomes (CO)       04 Hrs 30 Min         Course Outcomes (CO)       10 Lyse mathematical tools needed in evaluating multiple integrals and their usage         2. Apply effective mathematical tools for the solutions of a complex variable that are used in various techniques dealing engineering problems       10 Hrs 30 Min         4. To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       10 Hors         Unit 1       First Order Ordinary Differential Equations: Applications reducible to Exact, linear and Bernoulli's equations, Applications to bright Patricula Integral by shorter method, method of variation of parameters, Cauchy-Euler equation. Legendre's Equations with Constant Coefficients:       10 (6)         Unit 3       Function of Complex Variable:       10 Hit frequentions: hyr applic Series, Picard's Method. Runge-Kura fourtions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, integration; Cauchy's Eneorem, Cauchy Integrat formula (without proof), Cauc	Lect	ures		03 Hrs/week				CT – 1	15			
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List         60           Duration of ESE         0.2 Hrs 30 Min           Course Outcomes (CO)         1.         Use mathematical tools needed in evaluating multiple integrals and their usage         2.           Apply effective mathematical tools for the solutions of differential equations that model physical processes         3.           Use tools of differential us which would enable students to find engineering solutions for given situations they may encounter in their profession.         Hours           Init 1         First Order Ordinary Differential Equations:         Hours           Init 2         Linear Differential Equations:         Hours           Init 3         First Order Ordinary Differential Equations: Applications to simple Electrical circuits, Mechanics         (6)           Unit 1         First Order Ordinary Differential Equations: duration of parameters, Cauchy-Euler equation Lagendre's Equations with constant Coefficients:         (6)           Unit 3         Function of Complex Variable:         (6)           Differentiation: Cauchus of functions of complex variable, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, analytic functions, harmonic since of complex variable, Cauchy-Riemann equations, analytic functions, harmonic since of order of double integration. Triple integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, and Pol	Tota	l Cred	its	04				ТА	10			
Duration of ESE         02 Hrs 30 Min           Course Outcomes (CO)         0           1. Use mathematical tools needed in evaluating multiple integrals and their usage         2           2. Apply effective mathematical tools for the solutions of differential equations that model physical processes         3           3. Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems         1           4. To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.         1           1. First Order Ordinary Differential Equations:         Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics         1           1. Incar differential equations with Constant Coefficients:         (6)           1. Linear differential equations with constant coefficients:         (6)           1. Bireferentiation:         (6)           2. Therein of Complex Variable:         (7)           3. Station of Ordinary differential equations: by Taylor's Series, Picard's Method, Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3rd and 38 rules         (6)           1. Integration (Cartesian and Polar coordinates). Change of order of double integration. Triple integration (Cartesian and Polar coordinates). Change of order of double integration. Triple integration (Car								ESE	60			
Course Outcomes (CO)         1.       Use mathematical tools needed in evaluating multiple integrals and their usage         2.       Apply effective mathematical tools for the solutions of afferential equations that model physical processes         3.       Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems         4.       To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       (7)         1. <b>Linear Offerential Equations:</b> Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics       (6)         1. <b>Linear Differential Equations with Constant Coefficients:</b> Linear differential equations with constant coefficients, Methods to find C.F. and P.I. Method to find Farticular Integral by shortcu method, method of variable, Cauchy-Riemann equations, analytic functions, famonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, lategration: Cauchy is Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (4)         Vunit 4       Numerical Methods:       (7)         Solution of Ordinary differential equations: by Taylor's Series, Picard's Method, Runge-Kurta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3rd and 3/8 rules       (7)         Unit 4       Muttivariable Calculus:       (7)								Duration of ESE	02 Hrs	30 Min		
1.       Use mathematical tools needed in evaluating multiple integrals and their usage         2.       Apply effective mathematical tools for the solutions of differential equations that model physical processes         3.       Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems         4.       To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       Hours         1.       First Order Ordinary Differential Equations:       Hours         1.       Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics       Hours         1.       Linear Differential Equations with constant Coefficients:       (6)         1.       Linear Differential Equations with constant Coefficients:       (6)         1.       Hunction of Complex Variable:       (6)         1.       Differentiation: Calculus of functions of complex variable, Cauchy-Riemann equations, analytic functions, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (4)         1.       Numerical Methods:       (7)         2.       Solution of Ordinary differential equations: by Taylor's Series, Picard's Method, Runge-Kuta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's	Cou	rse O	utcom	ies (CO)								
1. Use mathematical tools needed in evaluating multiple integrals and their usage         2. Apply effective mathematical tools for the solutions of differential equations that model physical processes         3. Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems         4. To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       (7)         1. To Iearn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       (7)         1. To Iearn Integral calculus which would enable students to find engineering solutions for given situations, Applications to simple Electrical circuits, Mechanics       (6)         1. Linear Differential Equations with Constant Coefficients:       (6)         1. Linear Differential equations with constant coefficients; Methods to find C.F. and P.I. Method to find Particular Integral by shortcut method, method of variation of parameters, Cauchy-Euler equation, Legendre's Equations       (6)         1. Unit 3. Function of Complex Variable:       Differential equations: finding harmonic conjugate; zeros of analytic functions, simularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (4)         1. Toticins.       Multivariable Calculus:       (7)         Double integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, spherical pola												
2. Apply effective mathematical tools for the solutions of differential equations that model physical processes         3. Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems         4. To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       Hours         10:11       First Order Ordinary Differential Equations:       First Order Ordinary Differential Equations:       (7)         Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics       (6)         Unit 2       Linear Differential Equations with constant coefficients:       (6)         Linear differential equations with constant coefficients. Methods to find C.F. and P.I. Method to find Particular Integral by shortcut method, method of variation of parameters, Cauchy-Euler equation. Legendre's Equations       (6)         Unit 3       Function of Complex Variable:       (6)         Differentiation: Calculus of functions of complex variable, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Integration (Carlesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, spherical polar, cylindrical polar coordinates)       (7)         Unit 4       Applications to Multiple Integrals       (6	1.	Use n	hathen	natical tools nee	ded in evaluation	ng multiple inte	egrals and their usage					
<ul> <li>3. Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.</li> <li>4. To learn Integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.</li> <li>4. First Order Ordinary Differential Equations:</li> <li>4. Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics</li> <li>4. Unit 1</li> <li>4. Intear Differential Equations with Constant Coefficients:</li> <li>4. Linear Differential Equations with Constant Coefficients:</li> <li>4. Linear Differential Equations with constant coefficients:</li> <li>4. Linear Differential equations with constant coefficients:</li> <li>4. Differentiation: Calculus of functions of complex variable, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof). Cauchy Residue theorem (without proof)</li> <li>4. Numerical Methods:</li> <li>4. Solution of Ordinary differential equations: by Taylor's Series, Picard's Method. Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3r and 3/8 rules</li> <li>4. Unit 5</li> <li>4. Applications to Multiple Integrals</li> <li>4. (4)</li> <li>4. Applications to Multiple Integrals</li> <li>4. (6)</li> <li>4. Text Books</li> <li>4. H.K.DAS "Advance Engineering Mathematics" S. Chand publications</li> <li>4. J. Pobasitions A Tutorial Approach", Ravish RSingh, Mukul Bhatt.Tata, McGraw Hill</li> <li>7. Text Books</li> <li>4. H.K.DAS "Advance Engineering Mathematics" New Age International Publication</li> <li>3. Tengineering Mathematics A Tutorial Approach", Ravish RSingh, Mukul Bhatt.</li></ul>	2.	Apply	effec	tive mathematic	al tools for the	solutions of di	fferential equations the	at model physical pr	rocesses			
Image: Content of the second structure of the s	3.	Use to	ools o	f differentiation	and integration	n of functions of	of a complex variable	that are used in va	rious tec	hniques		
4.       To learn integral calculus which would enable students to find engineering solutions for given situations they may encounter in their profession.       Course Contents       Hours         Unit 1       First Order Ordinary Differential Equations:       (7)         Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics       (7)         Unit 2       Linear Differential Equations with Constant Coefficients:       (6)         Linear differential equations with constant coefficients, Methods to find C.F. and P.I. Method to find Particular Integral by shortcut method, method of variation of parameters, Cauchy-Euler equation. Legendre's Equations       (6)         Unit 3       Function of Complex Variable:       (6)         Differentiation: Calculus of functions of complex variable, Cauchy-Riemann equations, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (4)         Vinit 4       Numerical Methods:       (7)         Solution of Ordinary differential equations: by Taylor's Series, Picard's Method. Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3rd and 3% rules       (7)         Unit 5       Multivariable Calculus:       (7)         Duble integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, spherical polar, cylindrical polar coordinates)       (7)     <	4	dealin	g eng	ineering problem	18 1 1 1. 1	-1-1	<b>C</b> 1					
Course Contents       Hours         Unit 1       First Order Ordinary Differential Equations: Applications to simple Electrical circuits, Mechanics       (7)         Linear Differential Equations with Constant Coefficients: Linear Differential equations of complex variable, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (6)         Unit 4       Numerical Methods: Solution of Ordinary differential equations: by Taylor's Series, Picard's Method. Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3rd and 3/8 rules       (7)         Unit 5       Multivariable Calculus: Numerical Nethods: Solution of Ordinary differential equations. Change of order of double integration. Triple integration (Cartesian, spherical polar, cylindrical polar coordinates)       (7)         Unit 6       Applications to Multiple Integrals : Area and Volume.       (12)         Text Books       (12)         1.       H.K. DAS "Advance Engineering Mathematics" S. Chand publications       (20)         2.       Debashis Datta "Textbook of Engineering Mathematics" New Age International Publication       (6)         3.       "Engineering Mathematics A Tutorial Approach", Ravish R.,Singh, Mukul Bhatt,Tata, McGraw	4.	To lea	arn Int	egral calculus w	nich would en	able students to	o find engineering sol	utions for given situ	lations tr	ney may		
Unit 1       First Order Ordinary Differential Equations:       (7)         Exact equations, Integrating Factor, Equations reducible to Exact, linear and Bernoulli's equations, Applications to simple Electrical circuits, Mechanics       (7)         Unit 2       Linear Differential Equations with Constant Coefficients:       (6)         Linear differential equations with Constant Coefficients:       (6)         Unit 3       Function of Complex Variable:       (6)         Unit 4       Numerical Methods:       (6)         Unit 5       fufferential: calculus of functions of complex variable, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (4)         Vunit 4       Numerical Methods:       (7)         Solution of Ordinary differential equations: by Taylor's Series, Picard's Method. Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's I/3rd and 3/8 rules       (7)         Double integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, spherical polar, cylindrical polar coordinates)       (7)         Duble integration (Cartesian and Polar coordinates)       (12)         Tutorials       (12)         Unit 6       Applications to Multiple Integrals : Area and Volume.       (6) <td></td> <td>encou</td> <td>mer n</td> <td>i then profession</td> <td>1.</td> <td>Course Co</td> <td>ontonto</td> <td></td> <td></td> <td>Hours</td>		encou	mer n	i then profession	1.	Course Co	ontonto			Hours		
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Applications to simple Electrical circuits, Mechanics       (6)         Unit 2       Linear Differential equations with Constant Coefficients: Linear differential equations with constant coefficients, Methods to find C.F. and P.I. Method to find Particular Integral by shortcut method, method of variation of parameters, Cauchy-Euler equation. Legendre's Equations of complex variable, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (6)         Unit 4       Numerical Methods: Solution of Ordinary differential equations: by Taylor's Series, Picard's Method. Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3rd and 3/8 rules       (7)         Unit 5       Multivariable Calculus: Double integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, spherical polar, cylindrical polar coordinates)       (6)         Tutorials       (12)         Text Books       (12)         I       H.K.DAS "Advance Engineering Mathematics" S. Chand publications         2.       Debashis Datta "Textbook of Engineering Mathematics" New Age International Publication         3.       "Engineering Mathematics," At MoGraw Hill Reference Books         1.       H.K.DAS "Advance Engineering Mathematics," At McGraw Hill Reference Books         2.       Erwin kreyszig, Advanced Engineering Mathematics, Tata McGraw Hill,		LI	r ir su v Evact	equations Inter	y Differential.	Equations redu	wible to Exact linear	and Bernoulli's equ	ations	(I)		
Unit 2       Intera Differential Equations with Constant Coefficients:       (6)         Linear Differential equations with Constant coefficients:       (6)         Linear Differential equations with constant coefficients:       (6)         Unit 3       Function of Complex Variable:       (6)         Differentiation: Calculus of functions of complex variable, Cauchy-Riemann equations, analytic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (4)         Vinit 4       Numerical Methods:       (4)         Solution of Ordinary differential equations: by Taylor's Series, Picard's Method. Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3rd and 3/8 rules       (7)         Unit 5       Multivariable Calculus:       (7)         Double integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, spherical polar, colindical polar coordinates)       (7)         Unit 6       Applications to Multiple Integrals       (6)         : Area and Volume.       (12)         Text Books       (12)         1.       H.K.DAS "Advance Engineering Mathematics" S. Chand publications       (2)         2.       Debashis Data "Textbook of Engineering Mathematics". New Age International Publication       (2) <tr< td=""><td></td><td></td><td>Δnnli</td><td>equations, integrations to simple</td><td>Flectrical circ</td><td>uits Mechanic</td><td>s</td><td>and Demount's equ</td><td>lations,</td><td></td></tr<>			Δnnli	equations, integrations to simple	Flectrical circ	uits Mechanic	s	and Demount's equ	lations,			
Clinic and inferential equations with constant coefficients, Methods to find C.F. and P.I. Method to find Particular Integral by shortcut method, method of variation of parameters, Cauchy-Euler equation. Legendre's Equations       (6)         Unit 3 Function of Complex Variable:       (6)         Differentiation: Calculus of functions of complex variable, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; zeros of analytic functions, singularities, Integration: Cauchy's Theorem, Cauchy Integral formula (without proof), Cauchy Residue theorem (without proof)       (4)         Volution of Ordinary differential equations: by Taylor's Series, Picard's Method. Runge-Kutta fourth order method for solving first order differential equations. Trapezoidal rule and Simpson's 1/3rd and 3/8 rules       (7)         Unit 5       Multivariable Calculus:       (7)         Double integration (Cartesian and Polar coordinates), Change of order of double integration. Triple integration (Cartesian, spherical polar, cylindrical polar coordinates)       (12)         Tutorials       (12)         Text Books       (12)         1       H.K.DAS "Advance Engineering Mathematics" S. Chand publications       (2)         2.       Debashis Datta "Extbook of Engineering Mathematics" New Age International Publication       (12)         3       "Engineering Mathematics" S. Chand publications       (2)         4.       Reference Books       (2)       Erwin Kreyszig, Advance Engineering Mathematics, Y New Age International Publication <td>Uni</td> <td>t 2</td> <td>I inee</td> <td>r Differential F</td> <td>austions with</td> <td>Constant Coa</td> <td>s fficients</td> <td></td> <td></td> <td>(6)</td>	Uni	t 2	I inee	r Differential F	austions with	Constant Coa	s fficients			(6)		
Image: Second			Linea	r differential eq	uations with c	onstant coeffic	ients Methods to find	d C F and P I Me	thod to	(0)		
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<ul> <li>3. Engineering Mathematics A Tutorial Approach . Kavish Kshigh, Mukur Bhatt. Fata, McOraw Hill</li> <li>Reference Books</li> <li>1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002</li> <li>2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley &amp; Sons,2006</li> <li>3. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008</li> <li>4. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.</li> <li>5. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005</li> <li>6. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010</li> <li>Useful Links</li> <li>1. <a href="http://www.nptel.iitm.ac.in">http://www.nptel.iitm.ac.in</a></li> </ul>	<u>2</u> . 2	"Eno	inoori	ng Mathamatias	A Tutorial An	proach" Pavial	h P Singh Mulaul Ph	att Tata MaGrayy U	<b>I</b> ;11			
<ol> <li>G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002</li> <li>Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley &amp; Sons,2006</li> <li>Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008</li> <li>Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.</li> <li>D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005</li> <li>B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010</li> <li>Useful Links</li> <li>http://www.nptel.iitm.ac.in</li> <li>www.ocw.mit.edu</li> </ol>	J. Pofe	3. "Engineering Mathematics A Tutorial Approach". Ravish RSingh, Mukul Bhatt. Lata, McGraw Hill										
<ol> <li>C.B. Thomas and R.E. Philey, Calculus and Analytic geometry, 5th Edition, Fearson, Reprint, 2002</li> <li>Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley &amp; Sons,2006</li> <li>Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008</li> <li>Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.</li> <li>D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005</li> <li>B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010</li> <li>Useful Links</li> <li><u>http://www.nptel.iitm.ac.in</u></li> <li>www.ocw.mit.edu</li> </ol>	1. G B Thomas and R L Finney Calculus and Analytic geometry 9th Edition Pearson Reprint 2002											
<ol> <li>Divini Micyszig, Advanced Engineering Mathematics, Juli Editori, John Wiley &amp; Bohs,2000</li> <li>Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi,2008</li> <li>Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.</li> <li>D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005</li> <li>B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010</li> <li>Useful Links</li> <li>http://www.nptel.iitm.ac.in</li> <li>www.ocw.mit.edu</li> </ol>	2	Erwi	n krev	szig Advanced	Fnoineering M	lathematics Oth	h Edition John Wiley	& Sons 2006	02			
<ul> <li>4. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.</li> <li>5. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005</li> <li>6. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010</li> <li>Useful Links</li> <li>1. <u>http://www.nptel.iitm.ac.in</u></li> <li>2. www.ocw.mit.edu</li> </ul>	3	Veer	araian	T Engineering	Mathematics 1	for first year T	ata McGraw-Hill Nev	v Delhi 2008				
<ul> <li>5. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005</li> <li>6. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010</li> <li>Useful Links</li> <li>1. <u>http://www.nptel.iitm.ac.in</u></li> <li>2. www.ocw.mit.edu</li> </ul>	<u><u></u></u>	Ram	ana R	V Higher From	neering Mathe	matics Tata M	cGraw Hill New Delh	i 11th Renrint 201	0			
<ul> <li>6. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010</li> <li>Useful Links</li> <li>1. <u>http://www.nptel.iitm.ac.in</u></li> <li>2. www.ocw.mit.edu</li> </ul>	5	D P	ole I	inear Algebra	A Modern Intro	duction 2nd F	dition Brooks/Cole	2005				
Useful Links  1. <u>http://www.nptel.iitm.ac.in</u> 2. www.ocw.mit.edu	6.	BS	Grew:	al. Higher Engin	eering Mathem	atics. Khanna	Publishers. 36th Edition	on. 2010				
1. <u>http://www.nptel.iitm.ac.in</u> 2.     www.ocw.mit.edu	Usef	ful Lir	nks		eening muunem		- considers, sour Lutte	, 2010				
2 www.ocw.mit.edu	1.	http:	//www	.nptel.iitm ac in								
	2.	WWW	.ocw	mit.edu								

$PO \rightarrow$	<b>PO</b> 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
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CO 2															
CO 3															
CO 4															

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember		$\checkmark$	$\checkmark$	
Understand		$\checkmark$	$\checkmark$	
Apply		$\checkmark$	$\checkmark$	
Analyse		$\checkmark$	$\checkmark$	$\checkmark$
Evaluate		$\checkmark$	$\checkmark$	$\checkmark$
Create			$\checkmark$	
TOTAL	15	15	10	60

			Governmen	nt College of	f Engineering, Ka	arad		
				<b>First Year</b>	B. Tech			
			<b>FE12</b>	02 Engineer	ring Chemistry			
Teachi	ng Scher	ne		U	C V	<b>Examination S</b>	cheme	
Lecture	es	03 Hrs/week				CT – 1	15	
Tutoria	ls	01 Hrs/week				CT – 2	15	
Total C	Credits	04				ТА	10	
						ESE	60	
						Duration of ESE	02 Hrs	30 Min
Course	Outcon	nes (CO)						
<b>1.</b> Stu	udent wil	ll able to know	Qualitative and	d Quantitative	e analysis of comp	ound. Students will	able to kn	ow new
an	alytical te	echniques will b	e compared with	h classical me	ethods			
2. Stu	udy of sy	nthesis of nanor	naterials and its	uses in medie	cal and engineering	fields and their use	n nonconv	rentional
en	ergy sour	ces in present co	ontext.					
3. St	udy of ph	ase rule will abl	e to student to s	tudy the effect	ct of temperature an	d pressure on chemic	al substan	ce
<b>4.</b> Stu	udents wi	ill able to know	the nanomateri	ials and their	applications by usi	ing know principles	of green cl	nemistry
i.e	. use of e	nvironmentally	benign chemistr	y				
				Course C	Contents			Hours
Unit 1	Quali	tative and Qua	ntitative metho	ods of Analys	is			(7)
	Intro	duction, Chemic	cal analysis and	d its types, r	no instrumental me	ethods- Titrimetric a	nd types,	
	Gravi	metry and its	application, I	Instrumental	Methods- Electro	magnetic spectrum	and it's	
	charac	cteristics, intera	iction of	Ele	ctromagnetic radia	itions with matter,	Principle,	
	Instru	mentation, calib	oration, working	g and applicat	ions of UV-Visible	e, Atomic Absorption	, Infrared	
TT .4 0	Spect	roscopy						
Unit 2	Phase	e <b>Kule</b> a Dhaga mula at	atomant and av	mlanation of	town involved in V	With avanual one o	magnant	(6)
	GIDD	s Phase rule- si	Poducod Phase	planation of	outoctic system i o	Ph Ag and Bi Cd D	ingrom of	
	iron c	arbon system	, Reduced Fliase	e fuie, simple	eulectic system I.e	ro-Ag allu DI-Cu, D	lagrain of	
Unit 3	Corre	osion						(6)
Onit 5	Introd	luction causes	classification	atmospheric	corrosion (oxidatio	on corrosion) electro	chemical	(0)
	corros	sion (hydrogen	evolution and	oxygen abs	sorption mechanis	n), factors affecting	rate of	
	corros	sion. Preventior	n of corrosion	by proper of	lesign and materia	al selection, Protect	ion from	
	corros	sion – Cathodic	and anodic prote	ection	e	,		
Unit 4	Nano	materials-	<b>*</b>					(4)
	Introd	luction, Nanom	aterials- prepar	ration of CN	T by different m	ethods, CNT prope	rties and	
	applic	ations, characte	rization method	d for Nano n	naterials, SEM (Sc	anning Electron Mic	croscope),	
	AFM	(Atomic Force l	Microscopy), S7	ГМ ('Scanning	g Tunneling Micros	scopy)		
Unit 5	Envir	onmental & G	reen Chemistry	V				(7)
	Air, w	ater and noise p	ollution. Optim	um levels of j	pollution. Signification	nce and determinatio	n of COD	
	and B	OD. Solid waste	e treatment of co	ollection of N	KP. Greenhouse eff	fect and global Warm	ing. e-	
	Waste	e. Radioactive po	ollution. Applica	ations of gree	n chemistry and gre	een technology. Conc	ept of	
<b>T</b> T •4 6	atom	c and molecular	economy and it	ts use in greer	i chemistry.			
Unit 6	Energ	gy Science	horostaristi	f accel front	00mnomiaan 1	on collid limit	COUG 11	(6)
	Fuel,	classification, c	and high colori	of good fuel,	comparison betwee	en solid, liquid, gase	eous fuel.	
	Value	by Domb and I	and high calori	ar fuel cell	ints of calofific val	actions. Thermal and	catorine	
	it's ty	by Dollio alla I	instrumentation	working and	l applications of the	rmo gravimetric and	uysis allu	
Tutori		pes – i meipie,	instrumentation	i, working and	applications of the	and gravinieure and	ly515.	(12)
I ULUI I	u10							(14)
Text R	ooks							
1. F	ngineerir	ng Chemistry by	Jain and Jain T	Dhannat Rai P	ublishing Company	v Ltd., New Delhi		
2. A	Textboo	k of Engineerin	g Chemistry by	S. S. Dara an	d S. S. Umare S C	hand & Company Lt	d., New D	elhi
3. A	text Boo	ok of Engineerin	g Chemistry by	Shashi Chaw	la. Dhanpat Rai& (	Co. (Pyt.) Ltd. Delhi	,	
Refere	nces		<u> </u>	Service Chaw	, =put ituitet (			
1. (	hatwal a	nd Anand. Instru	imental Method	ls of Chemica	l Analysis. Himalay	a Publishing House.	New Delh	i.
2. A	Textboo	ok of Engineerin	g Chemistry by	S. S. Dara an	d S. S. Umare. S. C	Chand & Company Lt	d., New D	elhi
3. A	text Boo	ok of Engineerin	g Chemistrv by	Shashi Chaw	la, Dhanpat Rai& (	Co. (Pvt.) Ltd. Delhi	.,	
<b>4.</b> F	nergy sce	enario bevond 2	100 by Muthukr	rishna iver	,	( , , , , , , , , , , , , , , , , , , ,		
5. A	text of E	Environmental cl	hemistry, by O.I	D.Tyagi,and I	M.Mehra			

Usef	Useful Links									
1.	NPTEL, www.nptel.ac.in									
2.	4 http://www.schandpublishing.com									

$PO \rightarrow$	<b>PO</b> 1	<b>PO 2</b>	<b>PO 3</b>	PO 4	PO 5	PO 6	<b>PO</b> 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
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CO 2															
CO 3															
CO <sub>4</sub>															

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember	$\checkmark$	$\checkmark$	$\checkmark$	
Understand	$\checkmark$	$\checkmark$	$\checkmark$	
Apply	$\checkmark$	$\checkmark$	$\checkmark$	
Analyse	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Evaluate	$\checkmark$	$\checkmark$	$\checkmark$	
Create			$\checkmark$	
TOTAL	15	15	10	60

			Government College of Engineering, Kara	nd									
			First Year B. Tech										
			FE1203: Engineering Mechanics										
Teachi	ing Scher	ne		<b>Examination Sch</b>	eme								
Lecture	es	03 Hrs/week		CT – 1	15								
Tutoria	als	01 Hrs/week		CT – 2	15								
Total C	Credits	04		ТА	10								
				ESE	60								
				Duration of ESE	02 Hrs 3	30 Min							
Course	e Outcom	nes (CO)											
<b>1.</b> To	o introduc	e student about	basic mechanics and study of basic concepts of med	chanics with its appli	ications								
<b>2.</b> To	study sta	atics including e	quilibrium of rigid bodies, friction, beams with diff	erent supports and lo	oading								
<b>3.</b> To	study ty	pes of trusses, m	nethod of Analysis, method of Joints, method of sec	tion, Analysis of sin	nple truss								
<b>4.</b> To	study k	inematics of lin	near motion, Work energy principal, De Alember	rt's principle, Impul	se - mor	nentum							
pri	inciple, C	collision of elast	ic bodies										
Course Contents Ho													
Unit 1	Basic	concepts and fu	undamental laws, force, resolution and composition	of force, system of	forces,	(7)							
	resulta	ant, Lami's theo	prem, free body diagram, two force and three forc	e members, Equilibr	rium of								
	forces, equilibrium equations, equilibrant force, Moment and couple, Varignon's theorem and law of												
	mome	ents											
Unit 2	Beam	s: Types of load	ls, types of supports, analysis of simple and compou	ind beams, virtual we	ork	(6)							
	metho	od for support re	actions.										
	Friction: Concept of friction, angle of friction, angle of repose, cone of friction, wedge blocks,												
	Conce	ept of dynamic f	riction										
Unit 3	it 3 Types of trusses, Assumption, Method of Analysis: Method of Joints, Method of section, Analysis (6)												
	of sim	ple truss with n	nax. 7 members, Introduction to space truss										
Unit 4	Centro	oid, moment o	f inertia of plane and composite figures, parall	lel and perpendicul	ar axis	(4)							
	theore	ems, moment of	inertia of standard shapes from first principle, mon	nent of inertia of con	mposite								
	figure	s, radius of gyra	ation, Concept of mass moment of inertia										
Unit 5	Kinen	natics of rectilin	ear motion, motion curves, Newton's motion Law, 1	Projectile, relative ve	elocity	(7)							
Unit 6	6 Kineti	ics: - De Alemb	ert's principle, work-energy principle, Impulse -mon	mentum principle, C	ollision	(6)							
	of ela	stic bodies; dir	ect central impact, oblique impact, coefficient of	restitution, loss of	kinetic								
	energy	у											
Tutoria	als					(12)							
Text B	ooks												
<b>1.</b> E	Engineerir	ng Mechanics, S	. S. Bhavikatti, New Age International Pvt. Ltd.										
<b>2.</b> E	Engineerir	ng Mechanics, R	R. K. Bansal and Sanjay Bansal, Jain Bros. Publisher	rs, Delhi									
<b>3.</b> T	extbook	of Applied Mec	hanics",Ramamrutham. S,DhanpatRai Publications.	, 1987 4 Engineering	5								
Ν	<b>Aechanics</b>	s(Statics and Dy	namics), Palanichamy, M. S., and Nagan, S										
Refere	ences												
1. V	ector Me	chanics for Eng	ineers VolI and II, F. P. Beer and E. R. Johnston,	Tata Mc- Graw Hill	Publicati	on							
<b>2.</b> E	Engineerir	ng Mechanics. In	rving H. Shames, Prentice Hall of India. New Delhi										
<b>3.</b> E	Engineerir	ng Mechanics. S	. N. Saluja, Satya Prakashan, New Delhi										
Useful	Links	<u> </u>	, , , , , , , , , , <u>, , , , , , , , , </u>										
1. N	IPTEL. W	ww.nptel.ac.in											
2. ht	ttp://wwv	v.schandpublish	ing.com										
<b>3.</b> S	tudv.com	/directory/categ	ory/Engineeringmechanics										

$PO \rightarrow$	<b>PO</b> 1	<b>PO 2</b>	<b>PO 3</b>	PO 4	PO 5	<b>PO</b> 6	<b>PO</b> 6	<b>PO 8</b>	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
CO 1															
CO 2															
CO 3															
CO 4															

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember	$\checkmark$	$\checkmark$	$\checkmark$	
Understand	$\checkmark$	$\checkmark$	$\checkmark$	
Apply		$\checkmark$	$\checkmark$	
Analyse		$\checkmark$	$\checkmark$	
Evaluate		$\checkmark$	$\checkmark$	
Create			$\checkmark$	
TOTAL	15	15	10	60

			Gov	ernment	College	of Eng	ineering	, Kara	d			
				F	First Ye	ear B. T	ech					
			F	<b>E1204: P</b>	rofessio	onal Co	mmunic	ation				
Teaching	g Schem								Examin	nation Sch	eme	
Lectures		02 Hrs/week							CT - 1		15	
Tutorials	1.4	00 Hrs/week							CT-2		15	
Total Cre	edits	02									10	
									ESE	n of ESE	00 02 Ura	20 Min
Course	Outcom								Duratio		02 HIS	50 WIII
Course	Juttom											
1. Use	appropri	iate vocabularv	v in each	h situation								
2. Use	variety of	of accurate sent	tence st	ructures in	each situ	uation						
<b>3.</b> Gen	erate col	herent content s	supporte	ed with rele	evant det	tails						
<b>4.</b> Use	commu	nication strateg	gies to p	articipate ir	n acaden	nic & no	n-academ	ic activ	ities			
·					Course	e Conter	nts					Hours
Unit 1	Listen	ing Skill										(7)
	Listeni	ng Stories – I (	(Listen a	and reprodu	uce [oral	])						
	Listeni	ng Discourse &	&Motiva	ational Tall	ks – II							
	(Listen	and summariz	ze [writt	ten]),								
	Listeni	ng Interviews -	– III (Li	isten and ar	nswer the	e questio	ns)					
Unit 2	Veeeb	ulaw Duilding	<i>a</i>									(6)
Unit 2	v ocab	ulary Building	g									(0)
	2 Sync	on words	vms Clo	ose Synony	ms (e a	see obs	erve stare	- olare	view et	· )		
	3. For	nal and. Inform	nal Voca	abularv	1115 (C.g.	sec, 005	start, start	, giare,	view, eu	.)		
	4. Prob	olem Words. Ho	lomonvr	ns. Homop	hones							
	5. Common Errors: Usage of - Prepositions, Tenses, Articles											
Unit 3	Speaki	ing Skills	0	•								(6)
	1. Basi	c Sentence Patt	tterns									
	2. Typ	bes of Sentence	ces: Sta	atements, I	Interroga	tive, Ex	clamatory	y, Impe	erative (	Order, Co	mmand,	
	Reques	st, Advice, Sug	ggestion	s/Proposals	s)				. ~		_	
	3. Exp	pressing Situat	tion ba	sed Emoti	ions (Fo	ormal &	Informa	l): Apo	ology, G	reetings, l	Regrets,	
	Condo.	lences, Offer, I	Invitatio	on, Compli	iments, C	Compuls	on, Perm	ussion,	Agreeme	ent, Disagr	eement,	
	A Intro	puon ducing Vourse	alf and c	others								
Unit 4	Writin	a Skills		Juleis								(4)
Omt 4	1  E-m	ail writing and	l Etiquet	ttes (Forma	l & Info	rmal)						(4)
	2. Job	Application. C	Curriculu	um Vitae or	r Resum	ne and Co	overing L	etter (E	Difference	e between	CV and	
	Resum	e, Format, effe	ective us	se of langu	uage)			(-				
	3. Essa	y Writing		U	U /							
Unit 5	Develo	ping Presenta	ation Sk	kills								(7)
	1. Gro	oup Discussion:	: Dos an	nd Don'ts (s	subject k	nowledg	e, approa	ch to a j	problem,	ability, an	alytical	
	mind, l	listening skill, c	decision	n-making ca	apacity,	critical t	ninking, le	eadersh	ip, tolera	nce, your a	attitude,	
	and co	nfidence)	•				<b>D</b> 1 1					
	2. Pres	entation Techn	nques (I	Designing/I	Effective	e delivery	//Body la	nguage	)  .:			
	3. Inter	rview Techniqu	ues (Coi	mmunicatio	on skills,	, Body L	anguage,	leaders	nip qualit	y, problem	1-	
	sorving	g capacity, team	nwork, e	elc.)								
Unit 6	Develo	ning Soft Skill	ls (Activ	vity-Rased)	)							(6)
	1. Tea	m Building (ur	inderstar	nding the c	, concept o	of team-h	uilding. c	commur	nication s	kills, goal	setting.	
	role-se	tting, a delegat	tion of ta	ask, brainst	torming.	encoura	gement, e	tc)		, <b>B</b> oul	<b>D</b> ,	
	2. Cre	eative thinking	ng (con	cept unde	erstandin	ig, open	perspec	ctive, r	eformula	ting a p	roblem,	
	brainst	orming, mind r	mapping	g, analyzing	g, etc.)	- •	- *			- 1		
	3. Stree	ss Managemen	nt (conce	ept understa	anding, i	identifyi	ng the pro	oblem, l	imiting u	innecessar	y stress,	
	accepti	ing the things y	you can	i't change, f	followin	g a healt	hy lifesty	le, con	necting to	o others, s	pending	
	time fo	or fun & relaxat	tion, exe	ercising /m	editating	g, etc.)		-	0			
	4. Emc	otional Intellige	ence (co	oncept unde	erstandin	ng, know	ing self-s	strength	s & weal	knesses, m	anaging	
	self, fe	eling empathy,	, employ	ying social	skills)							

Tex	t Books
1.	Kiranmai, Dutt P. and Rajeevan Geeta. (2013) Basic Communication Skills. N. Delhi: Foundation Books.
2.	Comfort, Jeremy, et al. (2011) Speaking Effectively: Developing Speaking Skills for Business
	English.Cambridge: Cambridge University Press. (Reprint)
3.	Krishnaswami, N. and Sriraman, T. (2000) Creative English for Communication. India: Macmillan
Refe	erence Books
1.	Rutherfoord, Andrea J. (2002). Basic Communication Skills for Technology. Delhi: Pearson Education Asia
2.	Bonamy, David. (2011). English Skills for Technical Students. Orient Blackswan.
3.	Viswamohan, Aysha. (2008) English For Technical Communication. (with CD) McGraw Hill Education
4.	Mohan, Krishna & Meera Banerji. (2009) Developing Communication Skills. (2nd ed.) India: Macmillan
5.	Maison, Margaret M. (2011) Examine your English. India: Orient Longman
6.	Krishnaswami, N. and Sriraman, T. (2000) Creative English for Communication. India: Macmillan
Use	ful Links
1.	en.wikipedia.org/wiki/Fundamentals_of_Physics
2.	www.hyperphysics.com, www.google.com
3.	physics.info/magnetism, www.youtube.com, Nptl video

$PO \rightarrow$	<b>PO</b> 1	<b>PO 2</b>	<b>PO 3</b>	PO 4	PO 5	PO 6	PO 6	<b>PO 8</b>	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
CO 1															
CO 2															
CO 3															
CO 4															

Knowledge Level	<b>CT</b> 1	CT 2	TA	ESE
Remember		$\checkmark$	$\checkmark$	$\checkmark$
Understand		$\checkmark$	$\checkmark$	
Apply		$\checkmark$	$\checkmark$	
Analyse		$\checkmark$	$\checkmark$	
Evaluate		$\checkmark$	$\checkmark$	
Create			$\checkmark$	
TOTAL	15	15	10	60

	Government College of Engineering, Karad											
			First Year	r B. Tech								
			FE1205: Engineeri	ng Chemistry Lab								
Teach	ning Schem	le			<b>Examination S</b>	cheme						
Practi	cal	02 Hrs/week			CA	25						
Total	Credits	01			ESE	25						
Cours	se Outcom	es (CO)										
	r											
1.	The stude	nt will understand the	ne precautions during ha	andling of different cher	nicals and glasswa	are						
2.	The stude	ents will able to kno	w water quality parame	ter and their permissible	limit in potable v	vater.						
3.	The student will able to know synthesis of polymer and its uses.											
4.	4. The students will able to know construction, working of bomb Calorimeter											
	Course Contents											
Expe	riment 1	Aim: To Determin	e the total hardness of v	water								
-		Objective: Studen	s should able to underst	tand the hardness of wat	er and potability of	of water						
Expe	riment 2	Aim: To Determin	e the percentage of zinc	c from brass								
		Objective: Studen	s should able to underst	tand how much zinc pre	sent in brass alloy	and its type.						
Expe	riment 3	Aim: To determin	e the calorific value of c	coal by using bomb calo	rimeter.							
		Objective: Studen	s should able to underst	tand calorific value of co	oal and its quality.							
Expe	riment 4	Aim: To determin	e the chloride content fr	rom water		1.6 1.1.1.						
		Objective: Students should able to know permissible limit of chlorine in water used for drinking										
<b>F</b>	rinn on t E	Aim Dreportion	purposes and its bad effect.									
Exper	riment 5	Objective: Propert	tion of polymor (advand	and motorial)								
		Objective. Frepara	non of polymer (advand	(eu material)								
Expe	riment 6	Aim <sup>.</sup> Preparation	of phenol formaldehyde									
Парел	mient 0	Objective: Prepara	tion of polymer (advand	ced material)								
Expe	riment 7	Aim: To Determin	e the amount of dissolv	ed oxygen in water								
L.		Objective: Studen	s should able to know a	mount of dissolved oxy	gen and its import	ance in waste						
Expe	riment 8	Aim: Determination	on of alkalinity of water		0 1							
-		Objective: Effect	of alkaline water on living	ng and non-living things	3							
Exper	iment 9	Aim: Verification	of Lambert's-Beer's law	W								
		Objective: The stu	dents will able to know	concentration of unkno	wn solution							
Expe	riment 10	Aim: Determination	on of pH of solution									
		Objective: To kno	w the PH of different so	olutions like industrial w	aste and potable v	vater						
List of	<sup>-</sup> Submissio	n										
	1	Total number of E	xperiments = 10									

$PO \rightarrow CO \downarrow$	<b>PO</b> 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1															
CO 2															
CO 3															
CO 4															

Skill Level	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	CA
	1	2	3	4	5	6	7	8	9	10	
Assembling			$\checkmark$			$\checkmark$		$\checkmark$			
Testing		$\checkmark$			$\checkmark$						
Observing			$\checkmark$			$\checkmark$		$\checkmark$			
Analyzing							$\checkmark$		$\checkmark$	$\checkmark$	
Interpreting											
Designing											
Creating											
Deducing						$\checkmark$					
conclusions											
											25

		Go	vernment College of Engir	eering, Kara	d					
			First Year B. Tee	ch						
			FE1206: Engineering Mec	hanics Lab						
Teach	ning Schem	ne			Examinatio	on Scheme				
Practi	cal	02 Hrs/week			CA	50				
Total	Credits	01			ESE	50				
Cours	se Outcom	es (CO)								
1.	To study	basic concepts and	fundamental laws, force, mome	nt and couple						
2.	2. To study Varignon's theorem and law of moments, Lami's theorem, free body diagram									
3.	<b>3.</b> To study the moment of inertia of a Flywheel.									
4.	To study	the coefficient of re	stitution for a given pair of mat	erials.						
			Course	Contents						
Expe	riment 1	To verify the poly	gon Law forces. Objective: Stu	dy basic concer	ots and fundar	nental laws, force,				
-		moment and coup	le							
Expe	riment 2	To understand the	nature of forces in the member	rs of jib crane. C	Objective: Stu	dy resolution and				
		composition of fo	rce, system of forces, resultant							
Expe	riment 3	To verify law of r	noments using Bell crank lever	Objective: Stud	ly Varignon's	theorem and law of				
		moments, Lami's	heorem, and free body diagram	n						
Expe	riment 4	To determine th	e reaction for simply suppor	rted beam. Ob	jective: Anal	lysis of simple and				
		compound beams.	virtual work method for suppo	ort reactions						
Expe	riment 5	To determine mas	s moment of inertia of Flywhee	el. Objective: To	o determine M	Ioment of inertia of a				
<b>.</b>	• • • • •	Flywheel		01.1.1.0.1	C · 1 1:	<u></u>				
Expe	riment 6	To calculate the e	ficiency of simple screw jack.	Objective: Stud	y of simple li	fting machine using				
Ermor	rimont 7	Screw Jack	machanical advantages, valagit	ventio Profficion	and of a differ	untial wheel and				
Expe	ment /	avle Objective: S	tudy of differential wheel and a	y latio deficiel	licy of a differ	lential wheel and				
Expe	riment 8	To determine the	coefficient of restitution for dif	ferent materials	Objective: T	o determine the				
Елре	ment o	coefficient of rest	tution for a given pair of mater	ials	. Objective. I	o determine the				
Exper	iment 9	Verification of Ne	wton's second law of motion b	v Fletcher's tro	llev					
				<u>,</u>	- J					
Drawi	ng Sheet N	<b>Io.1</b> To find result	ant - 3 problems							
Drawi	ing Sheet N	Io.2 To find supp	ort reactions - 3 problems							
	0									
List of	Submissio	n								
		Total number of H	Experiments – 8							
		2 Total number of	sheets $-2$							
		3 At least three pr	oblem on each unit of theory co	ourse						

$PO \rightarrow CO \downarrow$	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1															
CO 2															
CO 3															
CO 4															

Skill Level	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	CA
	1	2	3	4	5	6	7	8	9	10	
Assembling				$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$			
Testing							$\checkmark$			$\checkmark$	
Observing				$\checkmark$		$\checkmark$	$\checkmark$				
Analyzing		$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$		
Interpreting						$\checkmark$	$\checkmark$				
Designing											
Creating											
Deducing				$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$		
conclusions											
											50

Government College of Engineering, Karad													
					First Year B.	Tech.							
				ESC 1207 : W	/orkshop/Man	ufactu	ring Pract	tices					
Te	achin	g Schei	me					Examinatio	on Sch	eme			
Pra			04 Hrs/week					TA		50			
10	tal Cr	edits	02					ESE		50			
Co	urso	Outeen											
CO	uise	Outcon											
1.	Stud	lents wi	ill able to under	stand different n	nanufacturing pro	ocesses	which are	commonly en	plove	d in the	industry.		
	to fa	bricate	components usi	ing different mat	erials.			j	-rj-		j,		
2.	stud	ents wil	ll able to remem	ber use of mark	ting tools, hand to	ools, me	easuring ins	struments (me	chanic	al and el	lectrical)		
	and	to work	to prescribed d	imensions/tolera	inces								
3.	Stud	lents wi	Il able to create	good workman	ship								
4.	Stuc	lents wi	Il able apply var	rious manufactur	ring skills to engi	neering	application	ns					
	т	Maah	ina ahan		Course Cont	tents					Hours		
	1	Mach	me snop								[0]		
	π	Fitting	shon								[6]		
-		1 Ittilli	5 5110 p										
J	Π	Carpe	ntry								[6]		
]	[V	Electr	ical & Electroni	ics							[6]		
	V	Weldi	ng shop								[6]		
	71	Coatin									[6]		
	V I	Castil	ig								[0]		
T T	/11	Smith	V								[6]		
		Sinti	J										
V	III	Plastic	c moulding & G	lass Cutting							[6]		
			~										
								1			1		
Te	xt Bo	oks											
1.	Haj	ra Cho	udhury S.K., Ha	ijra Choudhury A	A.K. and Nirjhar	Roy S.I	K., "Elemer	its of Worksh	op Teo	chnology	", Vol. I		
2	200 Kal	bok Ici	v of $11 2010$ , Me	brown with the second s	a publishers priv	vate lim	ttea, Mumb	$\frac{1}{2}$	on D	oreen E	ducation		
<i>2</i> .	Ind	ipak Jai jan Edir	tion $2002$	ininiai, Manura	ictuing Enginee	ing and	u reciniolo	gy, 4th editi	ion, Pe	earson E	uucation		
3.	Gov	wri P 1	Hariharan and A	. Suresh Babu "	Manufacturing T	echnolo	ogy – I" Pea	urson Educatio	on. 200	08.			
4.	Roy	y A. Lir	ndberg, "Process	ses and Materials	s of Manufacture	", 4th e	dition, Pren	tice Hall Indi	a, 1998	8.			
5.	Rac	• P.N., '	"Manufacturing	Technology", V	ol. I and Vol. II,	Tata M	c Graw Hil	1 House, 2017	7.				
6.	Cha	apman s	series on Manuf	acturing process	,			•					

$PO \rightarrow$	<b>PO</b> 1	PO 2	<b>PO 3</b>	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
<b>CO</b> 1															
CO 2															
CO 3															
CO 4															

Skill Level	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	CA
	1	2	3	4	5	6	7	8	9	10	
Assembling						$\checkmark$		$\checkmark$			
Testing						$\checkmark$		$\checkmark$			
Observing						$\checkmark$		$\checkmark$			
Analyzing											
Interpreting											
Designing											
Creating											
Deducing			$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$			
conclusions											
											50

		Go	vernment College of	f Engineering, Kara	ıd								
			First Year	· B. Tech									
		F	E1208: Professional	communication lab	)								
Teach	ning Schem	e			Examination	on Scheme							
Practi	cals	02 Hrs/week			TA	25							
Total	Credits	01			ESE	25							
Cour	a Outcom												
Cours													
1.	1. To develop English language communication												
2.	To improve Employability Skills.												
3.	To build	To build the skillsets for aspiring career opportunities.											
4.	To achiev	uild the skillsets for aspiring career opportunities.         hieve professional grooming.											
		Course Contents											
Expe	riment 1	Aim: Listening (	Oral)										
Expe	riment 2	Aim: Listening (	Written).										
Expe	riment 3	Aim: Listening (	Answering)										
Expe	riment 4	Aim: Root Word	s (Worksheet)										
Expe	riment 5	Aim: Synonyms	& Antonyms (App b	ased Test)									
Expe	riment 6	Aim: Sentence r	naking activity										
Expe	riment 7	Aim: Expressing	situation-based emo	tions (Role Play)									
Expe	riment 8	Aim: Introducin	g yourself & others (J	(AM)									
Exper	iment 9	Aim: Email Wri	ing Practice										
Exper	iment 10	Aim: CV Writin	g and Resume on O2	application									
Exper	iment 11	Aim: Essay Wri	ing										
Exper	iment 12	Aim: Group Dis	cussion										
Exper	iment 13	Aim: Mock Inte	view										
Exper	iment 14	Aim: Activity 1-	Team Building										
Exper	iment 15	Aim: Activity 2-	Team Building										

$PO \rightarrow CO \downarrow$	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1															
CO 2															
CO 3															
CO 4															

Skill Level	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	Exp	CA
	1	2	3	4	5	6	7	8	9	10	
Assembling			$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$	
Testing			$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$	
Observing			$\checkmark$								
Analyzing			$\checkmark$								
Interpreting			$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$	
Designing											
Creating											
Deducing			$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	
conclusions											
											25

				<b>Government College</b>	e of Engineering, Kara	ad							
				First Ye	ear B. Tech								
				<b>FE 1209 Ba</b>	sic Engineering	1							
Tea	ching	g Scher	ne			Examination Sch	eme						
Lect	tures		03 Hrs/week			ESE	50						
Tuto	orials	1:40	00 Hrs/week										
Cou		Jutton											
1.	Stud	ents wi	ll be able to kno	w & Understand the wor	king of engine. Refrigera	ation system. Turbo	machine	rv					
2.	Stud	ents w	ill be able to k	now & Understand the	basic material propertie	es manufacturing p	rocesses.	Power					
	Tran	smissio	on Machine eler	nents									
3.	Stud	ents w	ill be able to d	o Building Planning an	d Byelaws & regulation	s as per SP-7 and	Compor	nents of					
	Buil	dings a	nd their function	18									
4.	Stud	ents wi	Il be able to kno	w and understand Buildi	ng Design criteria and bu	ilding materials		**					
TT	4 1	A ra Tra	tua duration to S	Cours	e Contents	rualaa Carrat Crual	a 044a	Hours					
Un	17 1	An In Cycle	Construction	and Working of C L a	ynamics, Air standard c	roke Four Stroke	e, Ollo	(7)					
		comp	resson and wate	er turbine working and	application Application	s of refrigeration	and air						
		condit	tioning, Vapor c	ompression refrigeration	system	s of temperation	una un						
Uni	it 2	Manu	facturing Pro	esses: Turning, milling,	drilling. Material prope	rties, tensile, comp	oressive	(6)					
		and sh	near strength, du	ctility, malleability, hard	ness.								
		Mech	anical Power T	ransmission: Machine e	lements: Axle, shaft, key	vs, pulleys, etc. Belt	drives,						
		gear c	lrives, chain dri	ves, Applications of the	se devices (Numerical tre	eatment on Torque,	speed,						
TT		power	for belt and ge	ar drive only)									
Un	n s	3 Introduction- Application of civil engineering in other allied fields. Principles of building planning. Bye-Laws											
		Components of Buildings. Types of loads on building. Load bearing and Framed structures.											
		Buildi	ing Materials	anigs, Types of Touce of	n ounding, Loud ocum	ig und i funica sui	<i>aetai es</i> ,						
Uni	it 4	Surve	ying & Levelli	ng:				(4)					
		Princi	ples & Classifie	cation of surveys, Types	of levelling, Contours, C	Characteristics of co	ontours,						
		Introd	uction and use	of Total Station Intro	duction to Infrastructure	e Projects: Transpo	ortation						
		Projec	ets, Water Reso	ources Systems, Supply	Chain Management Sy	stems, Water Supp	oly and						
Uni	:+ 5	Sanita	tion Systems	phase A.C. Circuits, Con	aration of single phase si	nusoidal a		(7)					
UII	n s	volta	re R M S and A	verage value form factor	r neak factor impedance	admittance R-L-	~	(I)					
		series	circuit, Introdu	ction to 3 phase supply a	nd its necessity, Generation	on of three phase A	.C.						
		voltag	ge, relation betw	een line and phase quant	ities, power in three phase	e circuits							
Uni	it 6	Elect	rical Machines					(6)					
		Single	e Phase Transfo	rmer: Construction, ope	rating principle, Types,	emf equation, volta	ige and						
		curren	it ratio, losses,	efficiency, voltage regula	ation. Electrical Motors:	Types, working pri	nciples						
Test	onial	of DC	motor, Single	bhase Induction motor, 1	nree phase induction mot	or, applications of i	notors.	(12)					
100	orials	•						(14)					
Tex	t Boo	ks											
1.	VC	Janesha	an , "Internal Co	mbustion Engine". Tata	McGraw Hill publication	2015							
2.	ER	adhakr	rishanan , "Fund	amentals of engineering	thermodynamics', Prentic	ce hall publication,	2018						
3.	Raj	put R S	S "Thermal Eng	neering', Charoter pub, 2	2012	8							
Ref	erenc	es											
1.	VI	) Kodg	ire "Material Sc	ience And Metallurgy" E	Everest Publishers								
2.	S.F	K. Haja	ra Choudhury "	Workshop Technology	/ol-I" Media Promoters a	and Publishers							
3.	G.K	. Hiras	skar (Basic Civi	Engineering by Dhanpa	t Rai Publication.								
4. Mechanical Engineering Design, J. E. Snigley, MGH New York													
5. 6	Kot	. rum haii N	na, ourveyilig, Jaorath "Rasio	Flectrical Engineering"	Tata McGraw Hill New	Delhi 3rd edition ?	009 Ko	thari					
Use	ful L	inks	ugrain, Dasie	Licentear Engineering,			007. <b>K</b> U						
1.	htt	p://ww	w.nptel.iitm.ac.i	n									
2.	ww	w.ocw	.mit.edu										

$PO \rightarrow$	<b>PO</b> 1	PO 2	<b>PO 3</b>	PO 4	PO 5	PO 6	PO 6	PO 8	PO 9	PO 10	PO 11	PO 12	PSO	PSO	PSO
CO↓													1	2	3
CO 1															
CO 2															
CO 3															
CO 4															