

Sri AdichunchanagiriShikshana Trust (R)

SJB Institute of Technology

(Affiliated to Visvesvaraya Technological University, Belagavi& Approved by AICTE, New Delhi.)



Department of Mechanical Engineering

Course Outcomes and CO-PO-PSO Articulation Matrix

2015 - 2019 Batch

2015 Scheme

Semester-I/II

Subject: I	ELEMI	EMENTS OF MECHANICAL ENGINEERING Subject Code:15EME14/24 Course Outcomes Course Outcomes ecognize different sources of energy and their conversation process and different types of boilers. emonstrate the various turbines and IC engines. iscuss Metal removal process using Lathe, drilling, Milling Robotics and Automation. uir understanding of application and usage of various engineering materials. vplain the refrigeration and air-conditioning systems CO-PO-PSO Mapping POs PSOs 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 3 2 1 1 1 1 2 3 3 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													
						Cou	rse Ou	tcomes	5						
CO1	Recog	gnize d	ifferen	t sourc	es of e	nergy a	and the	ir conv	ersatio	n proce	ess and	differe	ent type	es of bo	oilers.
CO2	Demo	onstrate	the va	rious t	urbine	s and I	C engi	nes.							
CO3	Discu	ss Met	al remo	oval pr	ocess ı	using L	Lathe, d	lrilling	, Millir	ng Rob	otics a	nd Auto	omatio	n.	
CO4	Fair u	nderstanding of application and usage of various engineering materials.													
CO5	Expla	anderstanding of application and usage of various engineering materials. ain the refrigeration and air-conditioning systems													
					(СО-РО	-PSO	Mappi	ing						
Cog						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2													
CO2	2	2													
CO3	3	3													
CO4	3	2													
CO5	2	3													
Average	2.6	2.4													

Subject:	ect: COMPUTER AIDED ENGINEERING DRAWING Subject Code:15CED14/24 Course Outcomes Course Outcomes I Grasp the usage of tool bars used in CAD software, Co-ordinate system, Reference planes, BIS conventions of Engineering Drawing, Orthographic projections of points & lines. I Understand the Orthographic projections of Points in all the four quadrants and lines in first angle I Understand the Orthographic projections of plane surfaces in different positions by change of position method using first angle projections. I Understand the Orthographic projections of prisms, pyramids, regular tetrahedron ,Hexahedron, cylinders and cones in different positions using first angle projections. I Identify the Development of lateral surfaces of prisms, pyramids, cylinders and cones. I CO-PO-PSO Mapping OS PSOs I 2 3 4 5 6 7 8 9 10 11 12 1 2 3														
						Cou	rse Ou	tcome	s						
CO1	Gras	p the u	sage of	f tool l	oars us	ed in (CAD so	oftware	e, Co-o	rdinate	e syste	m, Refe	erence	planes	, BIS
COI	conv	entions	s of Eng	gineeri	ng Dra	wing, (Orthog	raphic	project	tions of	f points	s & line	es.		
CO2	Unde	erstand	the Or	thograp	phic pro	ojectio	ns of P	oints in	n all the	e four	quadra	ints and	lines	in first	angle
CO3	Unde positi	erstand ion me	the Or thod us	rthogra sing fir	phic p st angle	rojecti e proje	ons of ctions.	plane	surface	es in d	ifferer	it posit	ions b	y chan	ge of
CO4	Unde	erstand	the Or	thogra	phic pi	ojectio	ons of	prisms	, pyran	nids, re	egular	tetrahe	dron ,l	Hexahe	edron,
CO4	cylin	linders and cones in different positions using first angle projections. entify the Development of lateral surfaces of prisms, pyramids, cylinders and cones.													
	Ident	dentify the Development of lateral surfaces of prisms, pyramids, cylinders and cones.													
CO5	and I	lentify the Development of lateral surfaces of prisms, pyramids, cylinders and cones. nd Isometric projection of Polygons.													
						~ ~ ~ ~									
	1				(<u>CO-PC</u>	D-PSO	Mapp	ing						
Cos		-	-		L –	P	Os	-	L -	1		1		PSOs	-
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3														
CO2		3													
CO3			3		3							1			
CO4					3							1			
CO5					3							1			
Average	3	3	3		3							1			

Subject:	Engine	ering N	/lathem	natics-I	II					Subj	ect Co	de:15N	I AT31		
						Cou	rse Ou	tcome	5						
CO1	Know	the us	e of pe	riodic	signals	and Fo	ourier s	eries to	o analy:	ze circi	uits and	l syster	ns com	munic	ation.
CO2	Expla	in the	genera	l linear	syster	n theor	ry for c	contino	us - tir	ne sign	als and	l digita	l signa	l proce	ssing
02	using	the Fo	urier ti	ransfor	m and	z-trans	form.								
CO3	Empl	oy app	ropriat	e nume	erical n	nethod	s to sol	ve alge	ebraic a	and tra	nscede	ntal equ	uations		
CO4	Apply	Green	n's the	orem,	Diverg	ence tl	neorem	and S	Stokes	theorei	n in va	arious	applica	ations i	n the
0.04	field	of elect	tro-ma	gnetic	and gra	avitatio	nal fie	lds and	l fluid f	flow pr	oblem	s.			
	Deter	mine t	he exte	ermals	of fun	ctional	and so	olve th	e simp	le prob	olems f	for calc	ulus o	f varia	tions.
CO5	Utiliz	e the	concep	ots of	functio	onal an	d their	r varia	tions i	n the	applica	ations	of con	nmunic	ation
	system	ns, dec	cision t	heory,	synthe	sis and	l optim	ization	of dig	ital cir	cuits.				
					(CO-PO	-PSO	Mapp	ing						
COs				-	-	P	Os	-				-		PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2													
CO2	3	2													
CO3	3	2													
CO4	3	2													
CO5	3	2													
Average	3	2													

Subject: N	MATER	IALS S	CIENCE	-						Subj	ect Co	de:15M	1E32		
						Cou	rse Ou	tcome	s						
CO1	Descr	ibe the	e mech	anical	proper	ties of	metals,	their a	alloys a	ind var	ious m	odes of	failur	e.	
CO2	Unde	rstand	the mi	crostru	ctures	of ferr	ous and	l non-f	errous	materia	als to n	nechani	ical pro	operties	8
CO3	Expla	in the	proces	ses of l	heat tre	eatmen	t of var	ious al	loys.						
CO4	Unde	rstand	the pro	opertie	s and p	ootentia	alities o	of vari	ous ma	terials	availał	ole and	mater	ial sele	ection
004	proce	dures.													
CO5	Unde	rstand	the pro	opertie	s and p	ootentia	alities o	of vari	ous ma	terials	availał	ole and	mater	ial sele	ection
05	proce	dures.													
						CO-PC)-PSO	Mapp	ing						
COs			-			P	Os	-	-	-	-	-		PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3											2		
CO2	3	3											2		
CO3	3												2		
CO4	3												2		
CO5	3												2		
Average	3	3											2		

Subject: 1	BASIC THERMODYNAMICS	Subject Code:15ME33
	Course Outcomes	
CO1	Understand the thermodynamic systems, properties, Zeroth law of the	rmodynamics, temperature scales and energy
COI	interactions.	
CO2	Analyze heat, work, internal energy, enthalpy for flow & non flow process using	First and Second Law of Thermodynamics
CO3	Identify the behavior of pure substances and its applications to practical problem	IS.
CO4	Analyze and apply the basic thermodynamic concept to calculate the change in i	nternal energy, change in enthalpy and change in
0.04	entropy using TD relations for ideal gases	
CO5	Analyze and apply the knowledge of Thermodynamics properties of real gases a	t all ranges of pressure, temperatures using

modified equation of state including Vander Waals equation, Redlich Wong equation and Beattie-Bridgeman equation Recall thermodynamic.

					(CO-PO)-PSO	Mapp	ing						
COa						Р	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												2		
CO2	3	3											2		
CO3	3	2											2		
CO4	3	2											2		
CO5	3	3											2		
Average	3	2.5											2		

Subject: N	MECHA	NICS O	F MAT	ERIAL	5					Subj	ect Co	de: 15N	1E34		
						Cou	rse Ou	tcome	S						
CO1	Apply	an eng	ineerin	g know	ledge t	o demo	nstrate (the beh	avior of	materi	als				
CO2	Analy for pla	ze thin	and thi	ck cylir itions.	nders ai	nd draw	a stress	s distrił	oution c	urve, al	so to cr	eate Mo	ohrs cir	cle diag	ŗram
CO3	Deter	rmine the various forces and moments in beams uate the dimensions of mechanical elements for various applications.													
CO4	Evalu	uate the dimensions of mechanical elements for various applications.													
CO5	Comp	luate the dimensions of mechanical elements for various applications. npare different strain energy methods and theories of failures in design of machineries													
						C O-P C)-PSO	Mapp	ing						
COs						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3														
CO2	1	2											2		
CO3	1	3											2		
CO4	3	2											2		
CO5	3	2											2		
Average	2.2	2.25											2		

Subject:	METAI	L CAST	ING AN	D WEL	DING					Sub	ject Co	ode:15	ME35A	ł	
						Cou	irse O	utcom	es						
CO1	Apply	y the kr	owledg	ge of va	rious m	netal ca	sting pr	rocesse	s that a	ire usefi	ul in de	signing	system		
CO2	Unde	erstand	the cor	icept o	f variou	is meta	l castin	g meth	ods.						
CO3	Identify the Solidification process in Casting of Non-Ferrous Metals. Discuss the various principle of operations in welding techniques														
CO4	Discuss the various principle of operations in welding techniques														
CO5	Discuss the various principle of operations in welding techniques Describe the Metallurgical aspects in Welding and inspection methods for the quality assurance of components made of casting and joining process.														
						CO-P	O-PSC) Map	ping						
COs	POs							•					PSOs	5	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											3		
CO2	3	2											3		
CO3	3	2											3		
CO4	3	2											3		
CO5	3	2											3		
Average	3	2											3		

Subject:	COMP	UTER	AIDE	D MA	CHINE	EDRA	WING			Subj	ect Co	de: 15N	ME36A		
						Cou	rse Ou	tcome	S						
CO1	To re	ad and	underst	and the	orthog	raphic a	nd sect	ional vi	ews of	various	machir	ne comp	onents		
CO2	To de	evelop 3	BD mod	els usin	ıg mode	ling sot	ftware's	5							
CO3	To pr	oduce 2	2D drav	vings by	y manua	al drafti	ng and	by usin	g drafti	ng pack	ages				
CO4	To co	o construct assembly drawings, part drawings and Bill of materials as per BIS Conventions													
CO5	To ap	Fo apply limits fits and tolerance to all assemblies and part drawings													
					(CO-PC)-PSO	Mapp	ing						
COs	POs	-		_	-	-				-			PSOs		
0.05	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2												2		
CO2	2				2								2	2	
CO3	2				2								2	2	
CO4	2	2			2								2	2	
CO5	2											2	2		
Average	2	2			2							2	2	2	

Subject:	MATER	RIALS T	ESTINC	G LAB						Subj	ect Co	de: 15N	1EL37	А	
						Cou	rse Ou	tcomes	5						
CO1	Acqu	ire exp	perimer	ntation	skills i	n the fi	ield of	materia	al testii	ng.					
CO2	Deve exper	lop th riments	eoretic 3.	al und	erstand	ling of	f the r	nechar	ical p	roperti	es of	materia	als by	perfor	ming
CO3	Appl	y the k	nowled	lge of t	esting	metho	ds in re	lated a	reas.						
CO4	Appl	y the k	nowled	lge of t	esting	metho	ds in re	lated a	reas.						
CO5	Know	v how	to impr	ove str	ructure	/behav	ior of n	nateria	ls for v	arious	indust	rial app	olicatio	ns.	
						CO-PC)-PSO	Mappi	ing						
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1													
CO2	2	1	2									1	1		
CO3	1	2			2								1		
CO4	3												1		
CO5	2	1										1	1		
Average	2.4	1	2		2							1	1		

Subject:	FOUND	RY ANI	D FORC	GING LA	AB					Subj	ect Co	de: 15N	1EL38.	A
						Cou	rse Ou	tcomes	5					
CO1	Identi perme	fy the p ability)	ropertie	es of mo	oulding	sand (Fension	, compr	ression,	shear 8	zamp;			
CO2	Build	sand m	oulds u	sing ha	nd tool	s ,pattei	ms and	cores						
CO3	Estim	ate the	raw ma	terial re	equired	for cha	nge of c	cross se	ction ar	nd dime	nsions.			
CO4	Demo	nstrate	the forg	ging op	erations	5								
					(CO-PC)-PSO	Mapp	ing					
COa						P	Os							PSOs
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3		2										3	
CO2	3		2										3	
CO3	3		2										3	
CO4	3		2										3	
CO5	3		2										3	

Semester-IV

Subject:	ENGIN	EERIN	NG MA	ATHEN	MATIC	CS-IV				Subje	ect Co	de:15N	IAT41		
						Cou	rse Ou	tcome	S						
CO1	Solve	first a	nd seco	ond ord	linary o	differe	ntial ec	quation	s arisin	g in flo	ow pro	blems ı	ising s	ingle s	tep
COI	and m	nultiste	p nume	erical n	nethod	s.									
CO2	Solve	proble	ms of c	quantur	n mecl	hanics	emplo	ying B	essel's f	unctio	n relati	ing to c	yclind	rical p	olar
02	coord	inatesy	vstems	and Le	grendr	e's pol	ynomi	als rela	ting to	spheric	cal pola	ar coor	dinate	system	IS
	Unde	rstand	the ana	lyticity	y,poten	tialfiel	ds,resi	dues a	nd pole	s of co	mplex	potenti	als in	field th	eory
CO3	and e	lectron	nagneti	c theor	y Desc	cribe co	onform	nal and	bilinea	r transf	formati	ion aris	ing in	aerofo	il
	theory	y fluid	flow v	isualiza	ation a	nd ima	ge pro	cessing	5						
	Solve	Solve problems on probability distributions relating to digital signal processing, Determie joint probability distributions and stochastic matrix connected with multivariate correlation problems													
CO4	proba	Solve problems on probability distributions relating to digital signal processing, Determie joint probability distributions and stochastic matrix connected with multivariate correlation problems													
	for fe	probability distributions and stochastic matrix connected with multivariate correlation problems for feasible random events													
	Draw	the va	lidity c	of the h	ypothe	esis pro	posed	for the	given	sampli	ng dist	ribution	n in ac	cepting	g or
CO5	reject	ing the	hypot	hesis,D	Definet	ransitic	on proł	oability	matrix	of a M	Iarkov	chain a	and sol	ve	
	proble	ems rel	lated to	discre	ete para	meter	randor	n proce	ess.						
					(CO-PO)-PSO	Mapp	ing						
COs						P	Os	1	1					PSOs	1
005	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3													
CO2	3	3													
CO3	3	3													
CO4	3	3													
CO5	3	3													
Average	3	3													

Subject:	KINEM	ATICS (OF MAG	CHINER	Y					Subj	ect Co	de: 15N	1E42			
						Cour	rse Ou	tcome	5							
CO1	Identif	y the kin	nematic	link, kir	ematic j	pairs, ch	ains, me	echanisn	ns, mobi	lity, and	invers	ions.				
CO2	Determ	nine the	velociti	es and a	ccelerati	ions of li	inkages	and join	ts of me	chanism	is graphi	cal meth	nod.			
CO3	Apply crank	the Fre mechani	udenstei sm and	n's equa other ap	ation to plicatio	determin 1s.	ne the v	elocities	and acc	eleration	ns by an	alytical	method	for slide	r	
CO4	Evalua	ate the v	elocity r	atio and	torque i	in variou	is types	of gear t	rains.							
CO5	Analys	Analyse different cams and sketch the cam profiles for various motions of the follower, motion characteristics CO-PO-PSO Mapping PO-														
		Analyse different cams and sketch the cam profiles for various motions of the follower, motion characteristics CO-PO-PSO Mapping POs PSOs														
COa		POs PSOs 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3														
COS	1	2	3	12	1	2	3									
CO1	3	1 2 3 4 5 6 7 8 9 10 11 3 2 - - - - - - - - 10 11														
CO2	3	2											2			
CO3	3	2											2			
CO4	3	2											2			
CO5	3	2											3			
Average	3	2											2.6			

Subject: APPLIED THERMODYNAMICS	Subject Code:15ME43
Course Outcomes	

CO1	Recal	l therm	nodyna	imic co	ncepts	and cl	lassify	various	types	of gas	power	cycles	and va	pour p	ower	
COI								cycles.								
CO2	Under	stand th	ne work	king pri	nciple o	f Rocke	et and J	et Prop	ulsion.							
CO3	Analyz polluti	e comb on effe	ustion ct on er	of fuels nvironn	and co nent	mbusti	on proo	cesses ii	n I C en	gines in	cluding	alterna	te fuels	s and		
CO4	Under refrige	Understand the principles and applications of refrigeration systems and performance parameters of refrigeration and air-conditioning systems Discuss the operation of reciprocating compressor and functioning of steam nozzles.														
CO5	Discus	Discuss the operation of reciprocating compressor and functioning of steam nozzles.														
	Discuss the operation of reciprocating compressor and functioning of steam nozzles. CO-PO-PSO Mapping															
COs						P	Os							PSOs		
0.03	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	3												2			
CO2	3	3											2			
CO3	3	2					1						2			
CO4	3	2				1	1						2			
CO5	3	3											2			
005	5	5											-			

Subject:	FLUID	MECI	HANIC	CS						Subj	ect Co	de: 15N	1E44		
						Cou	rse Ou	tcomes	6						
CO1	Know	about	various	basic fl	luid pro	perties	and abo	out the l	behavio	r of flu	id when	n it is at	rest.		
CO2	Under	stand tl	he conc	epts rel	ated to	how a f	fluid be	haves w	vhen it i	s in mo	tion wi	th and v	without	conside	ering
002	the for	rces act	ing on	them											
CO3	Defin	e the va	rious ty	pes of	flow, a	nd can	describe	e the end	ergy los	ses that	t occurs	in pipe	es durin	g fluid	flow.
CO4	Expla	in the d	evelopi	nent of	bounda	ary laye	er and a	bout the	e basic o	concept	s of lift	and dra	ng of an	aero-fo	oil.
CO5	Identify the need of dimensional analysis and will also know about the basic concepts of compressible flow and Computational Fluid Dynamics.														
005	flow and Computational Fluid Dynamics.														
	CO-PO-PSO Mapping														
COg						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3										3		
CO2	3	3	3										3		
CO3	3	3	3										3		
CO4	3	3	3										3		
CO5	3	3	3										3		
Average	3	3	3										3		

Subject:	MACH	INE T	OOLS	AND	OPER.	ATION	IS			Subj	ect Co	de: 15N	1E45B		
						Cou	rse Ou	tcome	S						
CO1	Demo	onstrate	e the co	onstruc	tion ar	id spec	ificatio	on of m	achine	tools					
CO2	Demo workj	onstrate	e the v	arious	machi	ning p	process	es per	taining	to rela	ative m	notions	betwe	en too	l and
CO3	 Choose the right cutting tool materials and cutting fluids, also to evaluate cutting tool parameter for different machining operations Apply mechanics of machining process to evaluate machining time and to estimate/calculate the 														
CO4	for different machining operations Apply mechanics of machining process to evaluate machining time and to estimate/calculate the various forces and power requirement in metal cutting operation														
CO5	Analy	se too	lwear	mecha	nism a	nd equ	ations	to enha	ance to	ol life a	and mii	nimize	machi	ning co	ost
					(CO-PC)-PSO	Mapp	ing						
COs						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3														
CO2	3														
CO3	3	2													

CO4	3	2	1						
CO5	3	2	1						
Average	3	2	1						

Subject: 1	MECH	ANICA	L MEA	SURE	MENT	S AND	METR	OLOG	Y	Subj	ect Co	de:15N	1E46B		
						Cou	rse Ou	tcome	5						
CO1	Apply	the me	ethods a	nd proc	cesses o	of meas	uremen	ts and s	tandard	s.					
CO2	Illustr	ate the	use of i	nstrum	ents for	measu	rement	and the	ir calibi	ration.					
CO3	Carry	out line	ear and	angula	r measu	irement	s using	gauges							
CO4	Determine the pressure, force, and torque measurements using sensors and dynamometers.Determine strain, temperature, and surface roughness.														
CO5	CO Determine strain, temperature, and surface roughness.														
CO5 Determine strain, temperature, and surface roughness. CO-PO-PSO Mapping															
Cas						P	'OS							PSOs	
Cos	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2											2		
CO2	2	2											2		
CO3	2	2											2		
CO4	2	2											2		
CO5	2	2											2		
Average	2	2											2		

Subject:	MECH	ANICAI	L MEAS	SUREM	ENTS	AND M	ETROI	LOGY I	LAB	Subj	ect Co	de: 15N	AEL47	В	
						Cou	rse Ou	tcome	S						
CO1	Unde	erstand	Calibra	ation of	f press	ure gau	ige, the	ermoco	uple, L	VDT,	load ce	ell, mic	romete	er	
CO2	Appl	y conce	epts of	Measu	remen	t of ang	gle usir	ng Sine	Centre	e/ Sine	Bar/B	evel P	rotracto	or,	
02	align	ment u	sing A	utocoll	imator	/ Rolle	r set								
CO3	Dem	onstrate	e meas	uremer	nts usir	ng Opti	cal Pro	jector/	Tool m	aker n	nicrosc	ope, O	ptical f	lats an	d
005	mech	nanical	compa	rator											
CO4	Analyze Screw thread parameters using 2-Wire or 3-Wire method, gear tooth profile using gear tooth Vernier/Gear tooth micrometer														
004	tooth Vernier/Gear tooth micrometer Analyse tool forces using Lathe/Drill tool dynamometer														
CO5	Analyse tool forces using Lathe/Drill tool dynamometer														
						CO-PC)-PSO	Mapp	ing						
COs		-				P	Os							PSOs	
0.03	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											2		
CO2	3	2											2		
CO3	3	2											2		
CO4	3	2											2		
CO5	3	1											2		
Average	3	1.8											2		

Subject:	MACHINE SHOP LAB	Subject Code:15MEL48B
	Course Outcomes	
CO1	Understanding integral parts of lathe, shaping and milling attachments used thereof	g machines and various accessories and
CO2	Select cutting parameters like cutting speed, feed, depth operations like lathe, shaping, milling.	of cut and tooling for various machining
CO3	Perform cylindrical turning operations such as plain turn cutting, facing, knurling, internal thread cutting, eccentri	ing, taper turning, step turning, thread c turning and estimate cutting time

To work on shaping machine, to do the different shaping operations like plain shaping, keyway **CO4** cutting, indexing and gear cutting and to demonstrate in power hacksaw machine for specimen preparation in machine shop **CO-PO-PSO** Mapping POs **PSOs** COs CO1 CO2 CO3 **CO4** Average

Semester-V

Subject:	MANA	GEMI	ENT AI	ND EN	IGINE	ERIN	G ECO	NOMI	CS	Subj	ect Co	de:15N	1E51		
						Cou	rse Ou	tcome	5						
CO1	Explai	in the c	levelop	ment o	of man	ageme	nt and	the role	e it pla	ys at di	fferent	levels	in an o	rganiz	ation
CO2	Compr organiz	whend t zation	the proce	ess and	l role o	f effecti	ive plan	ning,or	ganizir	ng and s	taffing f	for the o	levelop	ment of	fan
CO3	Unders control	stand th in an c	e necess organiza	sity of g tion	good le	adershi	p,comn	nunicati	on and	l co-ordi	ination f	for estal	blishing	effecti	ve
CO4	Understand engineering economics demand supply and its importance in economic decision making and problem solving Calculate present worth, annual worth and IRR for different alternatives in economic decision making														
CO5	Calculate present worth, annual worth and IRR for different alternatives in economic decision making														
	CO5 Calculate present worth, annual worth and IRR for different alternatives in economic decision making CO-PO-PSO Mapping														
COs						P	Os							PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1										1					
CO2										1	1				
CO3	3														
CO4	3												1		
CO5	3												1		

Subject:	DYNA	MICS	OF M.	ACHIN	VERY					Subj	ect Co	de: 15N	AE52		
						Cou	rse Ou	tcomes	5						
CO1	Apply auton	y the conobiles	oncepts	s of sta	tic and	dynan	nic bala	ancing	of reci	procati	ng and	l rotati	ng mas	sses on	
CO2	Dete gover	rmine mors, l	static a Natural	nd dyn freque	amic f ency of	orces f differe	or four ent para	bars a ameters	nd slid s of vit	er cran oratory	k mecł systen	anism, 1, force	, stabil and m	ity of notion	
CO3	Analy auton	Analyze the stability of governors, gyroscopic effects on ships, plane disc, aero planes, automobiles													
CO4	Disti	nguish	differe	nt type	es of vi	bratory	v syster	ns							
CO5	Form	ulate n	nathem	atical	equatio	ons for	dampe	d and u	ındamp	bed vib	ratory	system	-		
					(CO-PC)-PSO	Mappi	ing				1		
COs						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

CO1	2								2	
CO2		1	3						2	
CO3		2	2						2	
CO4	2	1	2						2	
CO5		2	3					2	2	
Average	2	1.5	1.5					2	2	

Subject:	FURB	O MAC	CHINE	S						Subj	ect Co	de: 15N	1E53		
						Cou	rse Ou	tcome	S						
CO1	Recog situat	gnize ti ion and	he app l predic	propriation of the p	te turb prototy	o mac pe base	hine a ed on si	nd din imilitue	nensior de.	nless v	ariable	s for a	ı giver	n dynai	mical
CO2	Comp	rehend	the sign	nificanc	e of sta	tic and	stagnat	ion pro	perties	for turb	ines an	d compi	ressors.		
CO3	Sumr	narize	the Eul	er's eq	uation	to ana	lyze en	ergy tr	ansfer	in turb	omachi	ines.			
CO4	Apply the velocity triangles for steam turbines and hydraulic turbines to estimate various performance parameters. Perform the preliminary design of centrifugal pumps and centrifugal compressors.														
CO5	performance parameters.Perform the preliminary design of centrifugal pumps and centrifugal compressors.														
				-	(CO-PC	-PSO	Mapp	ing	-					
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3										3		
CO2	3	3	3										3		
CO3	3	3	3										3		
CO4	3	3	3										3		
CO5	3	3	3										3		
Average	3	3	3										3		

Subject:	DESIG	NOF	MACH	IINE E	LEME	ENTS -	Ι			Subj	ect Co	de: 15N	1E54			
						Cou	rse Ou	tcomes	5							
CO1	Apply	the co	ncepts o	of stres	ses for	1-d, 2-C) and 3-	D elem	ents							
CO2	Form	ulate; a	nalyze s	stresses	and st	rains in	machir	ne elem	ents, pe	ermane	nt and	tempor	ary joir	nts subje	ected	
001	to var	ious loa	ads.													
CO3	Analy	ze and	design f	or stati	c, fatig	ue and	impact	strengt	h, perm	anent	and ten	nporary	' joints			
CO4	Evalu	ate the	stresse	s in the	eleme	nts such	n as Gea	ars, cott	er and	knuckle	e joint k	eys and	l coupli	ngs		
CO5	CO-PO-PSO Mapping															
	CO-PO-PSO Mapping POs PSOs															
COa		CO-PO-PSO Mapping POs PSOs														
COS	1	POS PSOs 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3														
CO1	3	3											2			
CO2	3	3											2			
CO3	3	2	3			1							2			
CO4	3	3											2			
CO5	2	2	2			1							2			
Average													2			

Subject: NON TRADITIONAL MACHINING	Subject Code:15ME554
Course Outcomes	

C01	under and t	rstand t heir ap	the diff	erence	betwe	en tra	ditional	l and n	on-trad	litional	machi	ning pr	ocess,	, its nee	ed	
CO2	Ident: work	ify the	variabl nciple .	les inv	olved i	n wate	r jet ma	achinin	ig and a	abrasiv	e jet m	achinir	ıg, and	also it	S	
CO3	Reco mach	gnize ti ining.	he diffe	erent e	lement	s that a	affect tl	ne wor	king of	chemi	cal and	electro	o-chen	nical		
CO4	Ident	ify the	parame	eters th	nat infl	uence t	the wor	king o	f electr	ical dis	charge	machi	ning			
CO5	Analy	Identify the parameters that influence the working of electrical discharge machining Analyse the mechanism and working principle of plasma arc and laser beam machining CO-PO-PSO Mapping														
						CO-PC)-PSO	Mapp	ing							
COa						Р	Os							PSOs		
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	2	1											2			
CO2	2	1											2			
CO3	2	1											2			
CO4	2	1											2			
CO5	2	1											2			
Average	2	1											2			

Subject:	AUTO	MATIO	ON AN	D RO	BOTIC	CS				Subj	ect Co	de:15N	1E563		
						Cou	rse Ou	tcome	8						
CO1	To id	entify j	potenti	al areas	s for au	itomati	ion and	l justify	y need	for aut	tomatic	on			
CO2	To se	lect sui	itable r	najor c	ontrol	compo	onents r	require	d to au	tomate	a proc	cess or	an acti	vity	
CO3	To de	sign va	arious (types o	f robot	ts base	d on ap	plicati	on & d	etermi	ne the v	various	kinem	atics a	nd
<u> </u>	To on		the one	TOF UII	of tron	robols	a motot	iona o	ad them	forme	tions fo	, the m	ahata		
004	To analyse the operators of translations, rotations and transformations for the robotsTo propose solution to problems peculiar to Robot Programming Languages														
CO5	To propose solution to problems peculiar to Robot Programming Languages														
	CO-PO-PSO Mapping														
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												3		
CO2			2												
CO3		2	2												
CO4		2													
CO5		2											2		
Average	3	2	2										2.5		

Subject:	ct: FLUID MECHANICS & MACHINERY LAB Subject Code:15MEL57 Course Outcomes I Perform experiments to determine the coefficient of discharge of flow measuring devices. I Perform experiments on hydraulic turbines and pumps to draw characteristics. I Conduct experiments on hydraulic turbines and pumps to draw characteristics. I Test basic performance parameters of hydraulic turbines and pumps and execute the knowledge in real life situations. I Determine the energy flow pattern through the hydraulic turbines and pumps CO-PO-PSO Mapping FOs PSOs POs PSOs 1 2 3 4 5 POs PSOs 1 2 3 4 5 PSOs POs PSOs 1 2 3 1 2 3 POs PSOs 3 3 4 5														
						Cou	rse Ou	tcome	8						
CO1	Perfo	rm exp	erimer	nts to d	etermi	ne the	coeffic	ient of	discha	rge of t	flow m	easurin	g devi	ces.	
CO2	Cond	uct exp	perime	nts on l	nydrau	lic turb	oines ar	nd pum	ps to d	raw ch	aracter	istics.			
CO3	Test b know	basic p ledge i	erform n real 1	ance pa life situ	aramet ations	ers of l	nydraul	lic turb	ines an	d pum	ps and	execute	e the		
CO4	Determine the energy flow pattern through the hydraulic turbines and pumps Exhibit his competency towards preventive maintenance of hydraulic machines														
CO5	Exhibit his competency towards preventive maintenance of hydraulic machines														
						CO-PC)-PSO	Mapp	ing						
COg						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3							3				3		
CO2	3	3							3				3		
CO3	3	3							3				3		
CO4	3	3							3				3		
CO5	3	3							3				3		

Average	3	3				3		3	

Subject:	ENER	GY LA	В							Subj	ect Co	de:15N	1EL58			
						Cou	rse Ou	tcomes	5							
CO1	Perfo	rm exp	erimer	nts to d	etermi	ne the	propert	ties of l	Fuels a	nd Oils	5.					
CO2	Draw	the ch	aracter	istic di	iagram	of Val	ve Tim	ning an	d Port	openin	g in Int	ternal (Combu	stion		
	engin	e														
CO3	Cond	uct exp	perime	nts on]	Interna	l Coml	oustion	engine	es to de	etermin	e perfo	ormanc	e parar	neters	of	
005	Petro	l and D	oiesel e	ngines	•											
CO4	Evalu	Evaluate the performance of a Multi cylinder Internal combustion engine.														
CO5																
					(CO-PC)-PSO	Mappi	ing							
COa						P	Os							PSOs		
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	3												2			
CO2	3	2											2			
CO3	3	2							2				2			
CO4	3	2							2				2			
CO5																
Average	3	2							2				2			

Semester-VI

Subject:	FINITE	EELEN	MENT	ANAL	YSIS					Subj	ect Co	de: 15N	/IE61		
						Cour	rse Ou	tcomes	5						
CO1	Demoi	nstrate tl	ne basic	concept	s of Fini	te Elem	ent meth	ods with	h its pote	ential ap	plicatio	ns.			
CO2	Interpr	et the us	se of the	basic fi	nite elen	nents for	r structu	ral appli	cations	using tru	iss, bear	n, frame	e, and pla	ane elem	ents.
CO3	Derive	elemen	t matrix	equation	n by diff	erent m	ethods b	y applyi	ng basic	: laws in	mechar	nics.			
CO4	Make mecha	use of pr nics and	rofessior heat tra	nal-level nsfer.	finite e	lement s	oftware	to solve	enginee	ering pro	blems i	n Solid	mechani	cs, fluid	
CO5	Impler hand c	nent fini alculatio	ite eleme on or by	ent meth progran	ods for s nming.	simple p	oroblems	such as	beam a	nalysis a	and 1-D	heat coi	nduction	either b	у
	hand calculation or by programming. CO-PO-PSO Mapping POs PSOs														
COs	CO-PO-PSO Mapping POs PSOs														
0.03	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												2		
CO2	2												2		
СО3	1	3											2		
CO4	3	2											2		
CO5		2	3		2								2		
Average	2.25	2.33 3	3		2								2		

Subject: (COMPUTER INTEGRATED MANUFACTURING	Subject Code:15ME62
	Course Outcomes	
CO1	Interpret various automation methods and to develop mathe	matical models in production system.

CO2	Analy	vse the	design	proces	sses us	ing cor	nputer	graphi	cs soft	ware a	nd CAl	PP.			
CO3	Deve manu	lop an facturi	algoritl ng syst	hm for æm.	line ba	alancin	g to im	prove	the pro	oductiv	ity by a	adoptin	g flexi	ble	
CO4	Apply jobs c	y diffen on CNC	rent con C mach	mputer ine too	applic ols and	ations robot t	in man cechnol	ufactu logy.	ring an	d prepa	are par	t progra	ams foi	r simpl	e
CO5	Identify the modern trends in manufacturing process like additive manufacturing, Industry 4.0 and applications of IOT leading to smart manufacturing CO-PO-PSO Mapping														
					(CO-PO	-PSO	Mapp	ing						
Cos			-			P	OS			-		-		PSOs	
0.05	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2												2		
CO2	2	2											2		
CO3		2											2		
CO4	2												2		
CO5		2											2		
Average	2	2											2		

Subject: I	HEAT	TRAN	SFER							Subj	ect Coo	le: 15M	1E63		
						Cou	rse Ou	tcome	5						
CO1	Comp	orehend	l the m	odes o	f heat t	ransfe	r and a	pply ba	asic lav	vs of he	eat tran	sfer to	formu	late and	d
COI	solve	steady	state h	neat tra	nsfer p	roblen	ıs								
CO2	study	and ev	aluate	critica	l thickı	ness of	insula	tion, st	eady a	nd vari	able the	ermal c	conduc	tivity o	f
002	fins, a	and hea	it trans	fer in f	inite, s	emi in	finita a	nd fini	te solic	ls					
CO3	expla	in the p	orincip	les of r	adiatio	n heat	transfe	er and p	predict	the ten	nperatu	re disti	ributio	n using	
003	numerical approach for heat conduction problems Interpret and compute forced, free convection heat transfer.														
CO4	Interpret and compute forced, free convection heat transfer. design heat exchangers using LMTD and NTU methods and explain the concept of condensation														
CO5	Interpret and compute forced, free convection heat transfer. design heat exchangers using LMTD and NTU methods and explain the concept of condensation														
005	design heat exchangers using LMTD and NTU methods and explain the concept of condensation and boiling of liquids.														
					(СО-РО	-PSO	Mapp	ing						
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3										3		
CO2	3	3	3										3		
CO3	3	3	3										3		
CO4	3	3	3										3		
CO5	3	3	3										3		
Average	3	3	3										3		

Subject:	DESIC	N OF	MACH	IINE E	LEME	ENTS -	II			Subj	ect Co	de:15N	/IE64		
						Cou	rse Ou	tcome	s						
CO1	Unde	rstand 8	& Analy	ze the s	stresses	s in curv	ved bea	ms, cyl	inders,	and cyli	nder he	eads			
CO2	Decid	e flexib	le drive	s (belts	, ropes	, and ch	nains) re	equired	for pov	ver trar	nsmissic	on and s	springs.		
CO3	Analy	Analyze and design different types of gears for static and dynamic loads and apply in real life application Design clutches and brakes for static and dynamic loads													
CO4	Desig	Design clutches and brakes for static and dynamic loads													
CO5	Carry	out the	design	of jour	nal bea	ring by	choosi	ng the l	ubrican	t and cl	hoice of	f ball ar	nd rolle	r bearin	gs
					(CO-PO)-PSO	Mapp	ing						
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2				1							2		

CO2	2	3	2		1				1	2	
CO3	3		3		2				1	2	
CO4	3	3	3		2				1	2	
CO5	3	3	2		2	1			1	2	
Average	2.20	2.75	2.50		1.60	1.00			1.00	2	

Subject:	AUTO	MOBI	LE EN	GINE	ERING					Subj	ect Co	de: 15N	1E655			
						Cou	rse Ou	tcome	S							
COI	Apply	the ki	nowled	lge of e	enginee	ering fu	ındame	ental re	lated to	o auton	nobile	engines	s to sol	ve the		
	comp	lex eng	gineeri	ng proł	olems											
CO2	Analy	ze the	design	of eng	gine, tra	ansmis	sion ar	nd cont	rolling	system	n to dra	w the c	conclus	sion on	the	
02	basis	of eng	ineerin	g scien	ices to	addres	s the p	erform	ance pa	aramete	ers of t	he engi	nes			
CO3	Apply	the ki	nowled	lge of t	ransmi	ssion,	control	lling, a	uxiliar	y system	ns and	other s	suppor	t syster	ns	
0.05	emplo	mployed in automobile to find solution to complex engineering problems Γο incorporate the contextual knowledge of standards and norms to address the safety and legal														
CO4	To inc	'o incorporate the contextual knowledge of standards and norms to address the safety and legal ssues related to automobiles in ones professional engineering practice														
04	issues	ssues related to automobiles in ones professional engineering practice														
CO5	demo	nstrate	the kn	owledg	ge of st	tandard	ls and i	norms	toward	s auton	nobile	pollutio	on and	respec	tive	
0.05	contro	ol syste	em to a	ddress	enviro	nment	and su	stainal	oility is	sues						
					(CO-PO	-PSO	Mapp	ing							
COs						P	Os							PSOs		
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	3												1			
CO2	1	2											1			
CO3	3												1			
CO4						2										
CO5						1	2									
Average	2.33	2				1.5	2						1			

Subject: 1	INDUS	STRIA	L SAF	ETY						Subj	ect Co	de: 15N	1E662			
						Cour	rse Ou	tcomes	5							
CO1	Ident	ify the	safety	equipn	nents a	round	work e	nvironi	ment ai	nd indu	stries					
CO2	Disti	nguish	differe	nt port	able ex	tinguis	shers u	sed for	differe	ent clas	s of fir	es				
CO3	Choo	ose the	person	al prote	ective e	equipm	ent wh	ile woi	king ir	n the la	borato	ries				
CO4	Appl	y safet	y meas	ures to	adopt	for pre	venting	g electr	ical ha	zards						
CO5	Ident	ify var	various chemicals and describe prevention of chemical hazards CO-PO-PSO Mapping POs PSOs													
			y various chemicals and describe prevention of chemical hazards CO-PO-PSO Mapping POs PSOs 2 3 4 5 6 7 8 9 10 11 12 1 2 3													
COa		Provention of chemical nazards CO-PO-PSO Mapping POs POs 2 3 4 5 PSOs 2 3 4 5 PSOs 2 3 4 5 6 7 8 9 10 11 12 3 2 3 4 5 6 7 8 9 10 11 12 3														
COS	1	2	Provention of chemical hazards CO-PO-PSO Mapping POs PS(3 4 5 6 7 8 9 10 11 12 1 2 3 1 2													
CO1	2		CO-PO-PSO Mapping POs 2 3 4 5 6 7 8 9 10 11 12 3 3 1 1 1 1 1													
CO2	2					3			1			1	2			
CO3	2					3						1	2			
CO4	2					2						1	2			
CO5	2					2						1	2			
Average	2					1			1			1	2			

Subject:	HEAT	TRAN	ISFER	LAB						Subj	ect Co	de: 15N	1EL67			
						Cou	rse Ou	tcomes	5							
CO1	Perfor	m expe	riments	s to dete	ermine	the ther	mal con	nductivi	ty of a	metal r	od and	emissiv	vity of a	ı test pl	ate	
CO2	Estim	ate the	effectiv	e therm	al resis	tance in	n comp	osite sla	ibs and	efficier	ncy in p	in-fin				
CO3	Condu correl	ict expe ate with	eriment 1 theore	s to det tical va	ermine lues	convec	ctive he	at trans	fer coet	fficient	for free	e and fo	rced co	onvectio	on and	
CO4	Deterr	nine Bo	oiling o	f Liquio	d and C	ondens	ation of	f Vapou	r and E	stimate	the per	forman	ce of a	refriger	ator	
CO5	Calcu fin	late tem	peratu	e distri	bution o	of study	and tra	ansient l	neat coi	nduction	n throug	gh a plai	ne wall,	, cylind	er and	
		n CO-PO-PSO Mapping														
COg						P	Os							PSOs		
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	3	3	3			3							3			
CO2	3	3	3			3							3			
CO3	3	3	3			3							3			
CO4	3	3	3			3							3			
CO5	3	3	3			3							3			
Average	3	3	3			3							3			

Subject:	MODE	LING	AND A	ANAL	YSIS L	LAB(FI	EA)			Subj	ect Co	de:15N	1EL68		
						Cou	rse Ou	tcomes	5						
CO1	Analy	ze the	structu	ıral me	mbers	like ba	ars, trus	sses, an	nd bean	ns for c	lifferer	nt loads	5.		
CO2	Deter	mine th	he stres	sses in	plates	under j	plane s	tress co	onditio	ns.					
CO3	Solve	for ter	nperat	ure dis nsfer	tributio	on in 11	D and 2	2D mei	nbers ı	under c	onduct	tion and	d		
CO4	Analy	ze bar	s and t	eams f	for dyn	amic r	espons	e							
					(CO-PO)-PSO	Mappi	ing						
Cos						P	Os							PSOs	
Cus	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3	3		3							3	3	3	
CO2	3	3	3		3							3	3	3	
CO3	3	3	3		3							3	3	3	
CO4	3	3	3		3							3	3	3	
Average	3	3	3		3							3	3	3	

Semester-VII

Subject: ENERGY ENGINEERING S	Subject Code:15ME71
Course Outcomes	

CO1	Unde	rstand	therma	l energ	gy conv	version	system	n for re	al time	applic	ations				
CO2	Apply	y the ki	nowled	lge of p	orincipl	le of er	nergy c	onvers	ion by	diesel	and hy	del ene	rgy		
CO3	analy	ze the	solar ra	diation	n paran	neters,	workin	g of so	lar PV	and the	ermal s	systems	5.		
CO4	Interp	oret pri	nciple	of ener	gy con	versio	n from	wind a	and tida	ıl.					
CO5	Revie	Review the applications of biomass energy, fuel cell, thermoelectric conversion and MHD generators.													
05	gener	generators. CO-PO-PSO Mapping													
	generators. CO-PO-PSO Mapping POs PSOs														
Cas	CO-PO-PSO Mapping POs PSOs														
Cos	1	CO-PO-PSO Mapping POs PSOs 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3													
CO1	2												2		
CO2	2												2		
CO3	2												2		
CO4	2						1						2		
CO5	2						1						2		
Average															

Subject: l	FLUID	POW	ER SY	STEM	S					Subj	ect Co	de: 15N	1E72			
					C	Course	Outco	mes								
CO1	Unde	rstand	the bas	sic con	cepts (j	princip	les) of	workir	ng and	mainte	nance	of fluid	l powe	r		
COI	system	n with	its pot	ential a	applica	tions										
CON	Interp	oret the	constr	uction	and w	orking	of inp	it and o	output	elemen	ts of fl	uid pov	wer sys	stems		
	viz. h	ydraul	ic and	pneum	atic pu	mps, n	notors	and cyl	inders							
CO2	Demo	onstrate	e the fu	inction	ing of o	control	valves	s for ob	otaining	g desire	ed outp	ut fron	n fluid			
005	powe	ower systems. ormulate (construct) the hydraulic and pneumatic circuits for various outputs														
CO4	Form	brmulate (construct) the hydraulic and pneumatic circuits for various outputs tegrate fluid power system with electrical and logic elements, controls to maintain the														
CO5	Integr	ormulate (construct) the hydraulic and pneumatic circuits for various outputs tegrate fluid power system with electrical and logic elements, controls to maintain the														
005	seque	ntegrate fluid power system with electrical and logic elements, controls to maintain the equence of operations														
					CO	-PO-P	SO Ma	apping								
COa						P	Os						PS	Os		
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2		
CO1	3															
CO2	2	3														
CO3	3															
CO4	2				1									2		
CO5	2				1							1		2		
Average	2.4	3			1							1		2		

Subject: (CONTI	ROL E	NGINI	EERIN	G					Subj	ect Co	de: 15N	1E73		
						Cou	rse Ou	tcome	S						
CO1	Identi	fy or	Recogr	nize con	ntrol s	ystem a	and typ	es,con	trol act	ions					
CO2	Const	ruct th	e syste	m gove	erning	eqation	ns for p	physica	ıl,mech	anical,	electric	cal mod	lels		
CO3	Analy	ze the	gain o	f the sy	/stem ı	ising b	lock di	agram	and SF	FG					
CO4	Evalu	luate the stability of transfer functions in complex domain and frequency domain ploy state equations to study the controllability and observability													
CO5	Empl	ploy state equations to study the controllability and observability													
		mploy state equations to study the controllability and observability CO-PO-PSO Mapping													
COs		CO-PO-PSO Mapping PSOs POs PSOs													
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	3													
CO2	2														
CO3	3				1										
CO4	2				1									2	
CO5	2				1							1		2	
Average	2.4	3			1							1		2	

Subject.	SMAR	тма	LEBIV	1581	MEMS					Subi	ect Co	do.151	/E7/5			
Subject.					VILIVIS	Com		toomo		Subj			111743			
CO1	Dice	1100.01	aart at	miotiir	og ni	ozool	ostrio	nrono	s retion	and ch	ono n	amor	u alla			
	Disc		liant st		es, production producti production production production production production product			prope.		and sn	ape n			<u>ys</u>		
CO2	Inter	pret th	ne pro	pertie	s and	chara	cterist	tics of	electr	ro, ma	gneto	rheol	ogical	l fluid	S	
	and	fiber c	ptics	on rea	ıl time	e appli	ication	ns								
CO3	Anal	yze v	ibratic	on abs	orbers	s and	charac	cterist	ics of	Biom	imetic	s				
	Und	erstan	d intri	nsic c	harac	teristi	cs and	l prop	erties	of MI	EMS,	piezoe	electri	c sens	sing,	
CO4	and a	actuat	ion sv	stems				1 1				L			0,	
CO5	Sum	mariz	e nolv	merc	in MF	MS a	and its	0260	studie	c						
	Sum	manz	c pory	mers	<u> </u>	<u>70-PC</u>	D-PSO	Mann	ing	0						
						<u>P(-10</u>	0s	mapp	ing					PSOs		
COs	1	2 3 4 5 6 7 8 9 10 11 12 1 2 3														
CO1	3															
CO2	3															
CO3	3															
CO4	2	2											2			
CO5	3	2											2			
Average	2.8	2											2			
	L	1	L			L		1	1		1		L		<u>.</u>	
Subject:	AUTO	MOTI	VE EL	ECTRO	ONICS					Subj	ect Co	de: 15N	1 E751			
, v						Cou	rse Ou	tcome	8	. v						
CO1	Expla	in the	electro	nics sy	stems	used fo	or cont	rol of a	utomol	biles						
CO2	Selec	t senso	rs, actu	ators a	and cor	ntrol sy	stems	used in	autom	nobiles						
CO3	Diag	nose th	e faults	s in the	subsys	stems a	and sys	tems u	sed aut	omobi	le					
	-				(CO-PC)-PSO	Mapp	ing				-			
COs						P	Os							PSOs		
0.03	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	2															
CO2	2															
CO3	2															
Average	2															

Subject:	MECH	ATRO	NICS							Subj	ect Co	de: 15N	1E753		
						Cou	rse Ou	tcomes	8						
CO1	Illusti	rate va	rious c	ompon	ents of	mecha	atronic	s systei	ms						
CO2	Devel transc	lop ele lucers	ctronic micro	, hydra	ulic, p	neuma d PLC	tic and	electri	cal act	uation	circuits	s using	sensor	·s,	
CO3	Analy	ze the	variou	s hydra	aulic a	nd pne	umatic	s actua	, tion cii	cuits a	nd rect	ify the	errors		
CO4	Const	truct hy	ydrauli	c and p	neuma	atic cire	cuits fo	or a giv	en scer	nario					
CO5	Prope	ose a so	olution	for the	situati	ion rela	ated to	automa	ation sy	/stem					
					(CO-PC)-PSO	Mappi	ing						
COg						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2													2	
CO2	3														
CO3	2														
CO4					1									2	
CO5					1										
Average	2				1									2	

Subject:	DESIG	N LA	В							Subj	ect Co	de: 151	MEL76		
						Cou	rse Ou	tcome	S						
C01	Analy	ze prin	cipal st	resses, s	strains i	in mem	bers sul	bjected	to vario	ous load	ing usi	ng Stra	in Gaug	e Roset	tes
CO2	Evalu differ	ate the	parame des	ters for	single	DOF of	vibrati	onal sy	stems a	nd iden	tify cri	tical spo	eed of sl	naft for	
CO3	Estim rotati	ate the	parame ses	ters of j	ournal	bearing	, gover	nor and	apply	the know	wledge	of dyn	amics to	balanc	e the
CO4	Apply	the co	ncept of	f photo	elastici	ty for s	tress an	alysis a	nd to c	alibrate	photo	elastic 1	nodels		
CO5															
						CO-PC)-PSO	Mapp	ing						
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											2		
CO2	3	2										2	1		
CO3	3	2	2										1		
CO4	3	2											2		
Average	3	2	2									2	1.8		

Subject: (CIM L	AB								Subj	ect Co	de: 15N	/IEL77			
						Cou	rse Ou	tcomes	5							
CO1	Gener	rate CN	NC Lat	he part	progra	ams for	differ	ent turi	ning op	eratior	ıs.					
CO2	Gener	rate CN	NC Mil	l Part p	program	ns for j	point to	o point	motior	ıs &an	ıp; line	motio	ns			
CO3	Make	use of	Canne	ed Cycl	les for	Drillin	g, Pecl	k drillir	ng, Bor	ing, Ta	apping,	Turniı	ng,			
005	Facin	Facing, Taper turning Thread cutting etc Simulate Tool Path for different machining operations using CNC TRAIN software.														
CO4	Simu	late To	ol Path	n for di	fferent	machi	ning oj	peration	ns usin	g CNC	C TRAI	N soft	ware.			
					(CO-PC)-PSO	Mappi	ing							
COa						P	Os							PSOs		
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
CO1	3	2											3			
CO2			3										2			
CO3						2	2									
CO4									2	2						
Average	3	2	3			2	2		2	2			2.5			

Semester-VIII

Subject: (OPER A	ATION	S RES	EARC	Н					Subj	ect Co	de: 15N	/IE81		
						Cou	rse Ou	tcome	8						
CO1	Apply	the sig	gnificar	nce of (Operat	ions R	esearcl	h in de	cision r	naking	and id	entify	and de	velop	
COI	math	ematic	al mod	el fron	n verba	al desc	ription	of real	systen	n prob	lems				
CO2	Obtair	n the sc	lution o	of form	ulated i	real life	proble	m with	its inhe	rent re	sources	and co	onstrain	its	
CO3	Recog	nize an	d formı	ulate a t	transpo	rtation	and as	signme	nt mode	el and c	btain o	ptimal	solutio	n with a	ll the
005	variants of models. Construct network diagram and determine critical path. floats for deterministic and PERT networks														
CO4	Construct network diagram and determine critical path, floats for deterministic and PERT networks														
004	Construct network diagram and determine critical path, floats for deterministic and PERT networks including crashing of networks and waiting line problems for M/M/1 and M/M/K queuing theory														
	Solve	probler	ns on g	ame the	eory foi	r <mark>pur</mark> e a	and mix	ed stra	tegy un	der con	npetitiv	e envir	onment	t and als	50
CO5	Deteri	mine m	inimum	proces	ssing tir	nes for	sequer	ncing of	n jobs-	2 mach	ines, n j	jobs-3n	nachine	es,n jobs	s-m
	machi	nesand	2 jobs-	n mach	ines us	ing Joh	nsons a	lgorith	m						
					(CO-PO)-PSO	Mapp	ing						
COs						P	Os							PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												2		
201	5												2		

CO2	3	2	2					2	
CO3	3	2	2					2	
CO4	3	2	2					2	
CO5	3	2	2					2	
Average	3	2	2					2	

Subject:	ADDIT	IVE N	IANUI	FACTU	JRINC	j				Subj	ect Co	de:15N	1E82		
						Cou	rse Ou	tcomes	5						
CO1	Apply	the know	owledge	e of Ad	ditive N	Aanufa	cturing	and Raj	pid Prot	totyping	g techno	ologies			
CO2	Choos	e vario	us nanc	materia	al's pro	duction	technie	ques.							
CO3	Devel	op NC	machin	e progra	am										
CO4	Auton applic	nate the ation ar	proces reas	s by an	alyzing	the req	uired ty	pe of P	neuma	tic and l	nydraul	ics Syst	ems in	various	
CO5	Decide the types of Industrial controls required														
					(CO-PC)-PSO	Mappi	ing						
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3												2		
CO2		2													
CO3			2												
CO4				2											
CO5				2									2		
Average	3	2	2	2									2		

Subject: l	PROD	JCT L	IFE CY	CLE I	MANA	GEMI	ENT			Subj	ect Co	de: 15N	1E835		
						Cour	rse Ou	tcomes	8						
CO1	Point	out the	e Comp	onents	s, Phase	es, Cha	racteri	istics, a	ind Op	portuni	ties, be	enefits,	Views	,	
COI	feasit	oility, v	vision a	nd Dri	vers of	PLM.									
CON	Choo	se Con	ceptua	lizatio	1, Desi	gn, De	velopn	nent, V	alidati	on, Pro	duction	n, imple	ementa	tion of	
02	PLM	and PI	DM.												
CO 2	Calcu	late the	e Engii	neering	g protot	ype de	velopr	nent, d	esign f	or envi	ronme	nt, virtu	al test	ing,	
COS	valida	ation a	nd Crea	ation of	f anima	ation us	sing C.	AD sof	tware						
CO4	Analyze the parameterization of design, optimization of products, Digital manufacturing, virtual learning curve, production planning.														
004	learning curve, production planning. Evaluate the PLM strategy, PLM initiatives to support corporate objectives Infrastructure														
CO5	Iearning curve, production planning. Evaluate the PLM strategy, PLM initiatives to support corporate objectives Infrastructure														
005	Evaluate the PLM strategy, PLM initiatives to support corporate objectives Infrastructure assessment, assessment of current systems and applications.														
					(CO-PO	-PSO	Mapp	ing						
COa						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3					2							1		
CO2	3			3							1		1		
CO3	3	2			1								1		
CO4	3				1							2		1	
CO5	3	2										1	1		
Average	3	2		3	1	2					1	0.6	1	1	

Subject: I	NTERNSHIP			Sub	oject (Code:1	5ME84			
			Cours	e Outcomes						
CO1	Apply moder	n techniques,	resources,	engineering	and	IT t	tools	while	addressing	complex
COI	engineering pr	oblems.								

CO2	Make encou	use of intered	f conte in ind	xtual k ustries.	nowle.	dge to	access	societ	al, hea	lth, saf	ety and	l cultu	ral issu	es nor	nally													
CO3	Choos contez practi	se the xt and ce.	engine exerc	ering s ise pro	solution ofession	ns for t nal eth	he sus ics, no	tainabl orms, s	e deve tandar	lopmer ds and	nt in so respon	ocietal nsibilit	and en ies in	vironm engine	ental ering													
CO4	Identi mana	fy to v gemen	work as t, finan	s a tear ice han	n mem dling a	ber as and oth	well a er man	leader ageme	while o nt prac	lemons tices ir	trating multio	the kn discipli	owledg	ge of pi nvironi	oject nent.													
CO5	Build the knowledge of documentation, report writing, effective presentation, receiving and delivering clear instructions in the professional environment and recognize the need & have preparation ability to engage in independent &life- long learning facing the challenges of technological changes.																											
				-	(CO-PO	-PSO	Mapp	ing						technological changes.													
	CO-PO-PSO Mapping Pos PSOs																											
C	CO-PO-PSO Mapping Pos PSOs																											
Cos	1	2	3	4	5	Pos PSOs 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3																						
Cos CO1	1 2	2	3	4	5 2	P(6	os 7	8	9	10	11	12	1 2	PSOs 2 2	3													
Cos CO1 CO2	1 2	2	3	4	5 2	P6 2	os 7	8	9	10	11	12	1 2 2	PSOs 2 2	3													
Cos CO1 CO2 CO3	1 2	2	3	4	5 2	P6 2	05 7 2	8	<u>9</u>	10	11	12	1 2 2	PSOs 2 2	3													
Cos CO1 CO2 CO3 CO4	1 2	2	3	4	5 2	Po 6 2	05 7 2	8	<u>9</u>	10	11 2	12	1 2 2	PSOs 2 2	3													
Cos CO1 CO2 CO3 CO4 CO5	<u>1</u> 2	2	3	4	5 2	P6 2	05 7 2	8	9	10	11 2	12 2	1 2 2	PSOs 2 2	3													

Subject:	PROJE	CT PH	IASE I	Ι						Subj	ect Co	de:15N	1EP85		
						Cou	rse Ou	tcome	5						
	Revie	w the	researc	h litera	uture,id	entify	and an	alyze t	he com	plex e	ngineer	ring pro	oblems	, formı	ılate
CO1	the su	istainał	ole con	clusior	ns or so	olution	s using	the ba	sic prir	nciples	of app	lied ma	athema	tics,sci	ence
	and e	nginee	ring												
	Desig	n prop	er met	hodolo	gy to d	erive t	he solu	itions f	or the e	existing	g or an	ticipate	ed com	plex	
CO2	engin	eering	proble	ms in c	concerr	n with t	the issu	ues of p	oublic h	nealth,	safety	societa	l, cultu	ral and	l
	envire	onment	tal area	lS.											
	Practice and establish the professional engineering methodology for sustainable development in the society to address the complex engineering problems associated with societal and														
CO3	the society to address the complex engineering problems associated with societal and environmental factors.														
	environmental factors.														
CO4	environmental factors. Form internal & external group to work together as a team in the project under consideration														
004	under	multi	discipl	inary s	ettings	•									
CO5	Comr	nunica	te effe	ctively	addres	sing th	ne com	plex en	gineeri	ing acti	ivities	with do	ocumer	itation	
	repor	ts and p	proper	presen	tation t	cools.									
					(<u>20-P0</u>	<u>)-PSO</u>	Mapp	ing					DCO	
COs	_	•	•		_	P	Os			40		10		PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	2											2		
CO2															
CO3			3			2	2						3		
CO4									2						
CO5										3					
Average	3	2	3			2	2		2	3			2.5		

Subject:	SEMINAR	Subject Code:15MES86
	Course Outcomes	
CO1	Identify, formulate and analyze the complex engineering pastudy on basic principles of engineering sciences.	roblems through extornius literature
CO2	Evaluate, interpret, synthesize and conclude on the infor study,physical observations and experimental data.	mation so obtained through literature

CO3	Conn envire mode	ect the onment rn tool	Engine t sustai s durin	eering l nability g the p	knowle y, safet process	edge to y, lega of pre	the soo l, cultu paratio	ciety by ral etc n to the	y acces by com e cours	sing th piling e throu	e vario the kno gh self	us issu owledg f learni	ies on s ge so ac ng.	ocial h quired	nealth, using
CO4	Prese addre	nt and ssing t	l comr	nunica	te effe nginee	ectively	y with tivities	acqui	ired of	al and	l writt	en do	cumen	tation	skills
CO5	Pursue the need to Engage himself in the further learning throughout based on technological and societal changes														
					(CO-PO)-PSO	Mappi	ing						
COg						P	Os							PSOs	
COS	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1		3		3	3	3	3			3		3	3		
CO2		3		3	3	3	3			3		3	3		
CO3		3		3	3	3	3			3		3	3		
CO4		3		3	3	3	3			3		3	3		
CO5		3		3	3	3	3			3		3	3		
Average		3		3	3	3	3			3		3	3		

Coordinator

XTW HOD

Head of the Department Department of Meritanical Engineering SUS Institute of Technology Kengeri, Bengaluru-560 060