

Department of Mechatronics Engineering

Bengaluru-560107

COUNSE			-			-				-		
DEPARTME NT	M	T	SEMEST	ER	3	COURSE CODE	E	17MT32	COURSE ID	C202		
COURSE	Materia	al Scienc	e and Techn	ology					•			
				COUD								
COURSE				COURS	E (JUICOMI	ESL	AIEMEN	15			
OUTCOME												
NO	D "					r . 11 ·	1		1 0 1			
C202.1	Describ	be the m	echanism of	variou	s M	letallurgica	al pro	ocesses ar	id manufacturing proc	cesses of		
	compos	site mate	erials and wo	orking	of s	mart senso	ors.					
C202.2	understa	and the m	nechanism of	various	Me	tallurgical p	proce	ess &				
	manufac	cturing p	rocess of con	posite 1	nate	erials & wor	rking	g of smart				
	sensors,	sensors,										
C202.3	application of metallurgical process, production process of composite & working principle of smart											
	sensor f	or variou	is engineering	g solutic	ons.							
DEPARTME	M	Τ	SEMEST	ER	3	COURSE	E	17MT33	COURSE ID	C203		
NT						CODE						
COURSE	Mechar	Mechanics of Materials										
TITLE												
COURSE		COURSE OUTCOME STATEMENTS										
OUTCOME												
NO												
C203 1	Describ	Describe the concepts of stress, strain, Deformation and assumption in beams, columns and										
0203.1	shafts.											
C203.2	Apply concepts to calculate the stresses, strains and strain energy in Bars, Beams, Shafts											
	and Columns.											
C203.3	Calcula	te the st	resses and s	trains f	or r	olane stress	s con	dition and	alytically and graphic	ally for		
	structur	ral mem	bers.		1				, , , , ,	5		
C203.4	Analyse	e shear f	forces. Bend	ling mo	me	nts. bendin	ig an	d shear st	ress in beams.			
C203.5	<i>j</i> ~		,	8		,	0					
DEPARTME	М	Т	SEMEST	ER	3	COURSE	C	17MT34	COURSE ID	C204		
NT					-	CODE		-				
COURSE	CONTI	ROL SY	STEM									
TITLE												
COURSE				COURS	SE (OUTCOMI	E ST.	ATEMEN	ITS			
OUTCOME												
NO												
C204.1	Demon	strate th	e concepts o	of Cont	rol	systems an	d its	Specifica	tions for mathematic	al		
	modeli	ng, feed	back control	and st	abil	itv analysi	s in '	Time and	Frequency domains			
C204.2	Express	s and sol	lve system e	auatior	ns ir	n state-vari	iable	form (sta	te variable models). I	dentify		
	open ar	nd closed	d loon contr	ol syste	m t	o Solve Si	onal	Flow gra	nh and reduction of B	lock		
	diagran	n ciosed		or syste	/111 L		Snar	1100 510	pir and reduction of D	IOUK		
C204 3	Apply	$\frac{1}{root los}$	us and David	h U	.	tobility o		ion tooha	ique to analyze and d	nian		
0204.3	Apply	1001-100	us and Kout	II–riurv	WILZ	e stability c	mer	ion techn	ique to analyze and de	esign		
	control	systems	<u>.</u>			•		0.0	1 1 1			
C204.4	Determ	ine the t	time and free	quency	-do	main respo	onses	s of first a	nd second-order syste	ms to		
	step and	d sinuso	idal (and to	some e	xte	nt, ramp) ii	nputs	s.				
C204.5	Formul	ate mat	hematical m	nodeling	g of	physical s	syste	ms(Mech	anical and Electrical S	System)		



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DEPARTME	MT	SEMESTE	3	COURSE	17MT35	COURSE ID	C2						
NT		R		CODE			05						
COURSE	Analog	, and Digital El	ectronics										
TITLE													
COURSE		COURSE OUTCOME STATEMENTS											
OUTCOME													
NO													
C205.1	1.Have	knowledge of A	Analog &	Digital Electro	nic Circuits.								
C205.2	2.Unde	rstand the chara	cteristics & am	p; operation of	Electronic Cir	cuits.							
C205.3	3.Form	3.Formulate the relations for Voltage Gain ,Frequency of Various Electronics Circuits.											
C205.4	4.Desig	n the Electronic	s Systems for	Required Spec	ifications.								

DEPART MENT	MT	SEMESTER	3	COURSE CODE	17MT36	COURSE ID	C206					
COURSE	COMPUTER ORGAN	NISATION	1			•						
COURSE OUTCOM		COURSE	OUT	COME STATE	MENTS							
E NO			6		• • •							
C202.1	to describe of archite	ectural concepts o	of com	iputer and mac	chine instru	ctions. differe	nt addressing					
C202.2	analyze the memory subsystems, various I/O devices and interfacing circuits.											
DEPART	MT	SEMESTER	3	COURSE	15MTL3	COURSE	C207					
COURSE	MECHANICAL LAB-01											
TITLE												
COURSE		COURSE	OUT	COME STATE	MENTS							
OUTCOM												
ENO	Demonstrate how to can depath material testing emeriments. Demonstrate willing and there											
C203.1	operation.											
C203.2	Perform machining operations on lathe to produce the model. Taper turning calculation and gear											
	setting for thread cutti	ing.										
C203.3	Determine the mechan	nical properties of	given	materials such	as Young's	modulus, rigi	dity modulus,					
	Bulks modulus, ultin	mate strength by	cond	lucting tensile,	, compressi	on, torsion,	and bending					
	experiments.											
C203.4	Determine hardness, a	and toughness of g	iven n	naterial by con	ducting hard	lness and imp	act test					
C203.5						•						
DEPART	MT	SEMESTER	3	COURSE	15MTL3	COURSE	C208					
MENT	Analog And Digital E	leatropies I ab		CODE	8	ID						
TITLE	Allalog Allu Digital E	Aectronics Lab										
COURSE		COURSE	OUT	COME STATE	MENTS							
OUTCOM												
ENU	Demonstrate the opera	ation of wave shani	no net	works amplifie	rs & clampa	rs						
C203.1	Demonstrate the opera	anon or wave shape	ing not	works, ampine		10.						



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C203.2	Analyze the performance of 555 timers as monostable & astable multivibrators.
C203.3	Design the oscillator & multivibrators for desired frequency.
C203.4	construct the combinational & sequential circuits for real time applications

DEPARTMENT	МТ	- -	SEN	MESTER	4	COURSI CODE	E 15MT	42	COURSE ID	C212			
COURSE	Fluid Mec	hanics a	nd Ma	chines									
COURSE OUTCOME NO				COURSE (OUT	COME STA	ATEMENT	S					
C202.1	Describe c	oncept of	f turbo	omachines,	fluid	at statics a	nd motion	•					
C202.2	Measurem	Measurement of fluid flow through pipe and open channel.											
C202.3	Determine the properties of fluid and their effect. Determine the performance of												
	hydraulic turbines & steam turbines.												
C202.4	Analize kinematics and dynamics of fluid flow.												
C202.5	Classification of fluid types, fluid flow, and turbomachines. Dimensional analysis of												
	turbomachines.												
DEPARTMENT	МТ	- -	SEN	MESTER	4	COURSI	E 17MT	43	COURSE	C213			
COUPSE	Microcont	Microscontrollor											
TITLE	WIICFOCOIIU												
COURSE				COURSE (OUT	COME STA	TEMENT	S					
OUTCOME NO													
C203.1	Describe th organizatio	e archite n, types of	cture o of men	f 8051 Micr ory architec	ocon cture	troller, micr , Concept (oprocessor a	and 1g n	internal memore nodes and Ass	ory sembly and			
C203.2	Apply varie	ous instru s .	s. ction s	et of assemb	oly an	d C languag	e for differe	ent	software and l	nardware			
C203.3	Calculate	time del	ays ,ba	aud rates a	nd aı	nalyze Time	er. Counter	ope	ration and				
	Transmissio	on of data	seriall	y for diff	eren	t modes of	operation	1					
C203.4	Design the	hardware	interfa	ice between	micr	ocontroller,	memories o	f di	fferent sizes a	nd external			
DEPARTMENT	peripherals.		SEI	AESTED	1	COURSE	17MT	11	COURSE	C214			
	1111		SE	VIESTER	-	CODE			ID	0214			
COURSE	Manufactu	iring Tec	hnolog	gy						1			
TITLE							-						
COURSE OUTCOME NO				COURSE (OUT	COME STA	ATEMENT	S					
C204 1	Understand	the princ	rinles a	nd technique	es of	casting for	ving rolling	&	drawing				
C204.2	Apply the k	Apply the knowledge of metal working process											
C204.3	To express	the differ	ent tec	hniques of j	oinin	g processes	for metal &	noi	n metals.				
C204.4	Understand	ling and a	pplying	g knowledge	e to e	xecute CNC	machining	pro	grams.				
DEPARTMENT	MT	SEMES	STER	4	C	OURSE	15MT45		COURSE ID	C215			



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COURSE	Theory of Machines									
TITLE										
COURSE	COURSE OUTCOME STATEMENTS									
OUTCOME NO										
C205.1	Describe the concepts of Link, Kinematic pairs, Degrees of freedom, Mobility of									
	Mechanisms, Inversion, Machine, Gear terminology, law of gearing, Types of cams,									
	Types of followers, Displacement, Velocity and, Acceleration time curve for cam									
	ofiles, Effect of Gyroscopic Couple on Ship, Plane Disc, Aircraft, Stability of Two									
	Wheelers, Types of governors.									
C205.2	Determine mobility, power loss due to friction in various machine elements, balancing									
	mass and its position, stability of a governor									
C205.3	Calculate stability of a governor and effect of gyroscopic couple on plane disk, Aircraft,									
	stability of two wheelers and ship.									
C205.4	Construct of different types of cam profiles for a given data									

DEPARTMENT	МТ	SEMESTER	4	COURSE	17MT46	COURSE	C21						
				CODE	1/1/11/10	ID	021						
COURSE TITLE	Instrumentation a	and Measurements				I	1						
COURSE		COUR	SE OU	JTCOME STAT	FEMENTS								
OUTCOME NO													
C202.1	apply knowledge	of Instrumentation	n to m	easure Strain, I	Pressure, For	rce, Displacer	nent, and						
0202.1	Level.												
C202.2	Use their skill set	Use their skill set to measure resistance, Capacitance and Inductance using various bridge											
	control circuits.												
C202.3	Choose various tr	ransducers to meas	sure di	fferent physica	l quantities.								
C202.4	Analyze the Static and Dynamic Characteristics and Various Measurement instruments.												
DEPARTMENT	MT	SEMESTER	4	COURSE	15MTL47	COURSE	C21						
				CODE		ID							
COURSE TITLE	Mechanical Lab – II												
COURSE		COUR	SE OU	JTCOME STAT	FEMENTS								
OUTCOME NO			• •	0		<u> </u>							
C203.1	Select the type of	turbine required v	with re	eference to avai	lable head o	f water and d	ischarge.						
C203.2	Determine the co-	efficient of discha	rge of	flow measurin	g devices an	d performanc	e of turbi						
C203.3	Design pneumation	c circuit for variou	ıs indu	strial application	ons.								
C203.4	Apply principles	of fluid mechanics	s, mac	hines, and pneu	umatics.								
C203.5													
DEPARTMENT	MT	SEMESTER	4	COURSE	17MTL48	COURSE	C21						
				CODE		ID							
COURSE TITLE	Microcontroller I	Lab											
COURSE		COUR	SE OU	JTCOME STAT	FEMENTS								
OUTCOME NO													
C203.1	develop an interfa	ace between 8051 a	and ex	ternal peripher	als for vario	us application	s using C						
COOO A	Assembly Program	nming	C	1									
C203.2	Design microcont	roller based circuit	ts for r	eal time applica	ations								
C203.3	Develop a microco	ontroller program	for ind	iustrial applicat	lons								



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DEPARTMENT	M	Т	SEN	IESTER	5	COURS	E	15MT51	COURSE	C301	
						CODE			ID		
COURSE TITLE	Design	of mach	nine eler	nents					-		
COURSE OUTCOME NO				COURS	SE OU	JTCOME	STAT	EMENTS	5		
C311.1	Illustra	te the de	esign pl Factor	hases, sele	ection Code	of materials and Stan	als, ef	ffect of str	esses, stress pries of failur	re.	
C311.2	Determ	ine the	stress i	n the mac	hine o	elements li	ike po	wer screw	vs, shafts, ke	ys,	
6211.2	couplings, joints, gears and bearings.										
C311.3	various loading conditions.										
C311.4	Design the Keys, Couplings, Joints, Transmission shafts, Spur and helical Gears: and Journal Bearings										
C311.5	Journa	Journal Dearings.									
DEPARTMENT	М	Т	SEM	IESTER	5	COURS	E	15MT52	COURSE	C302	
COURSE TITLE											
COURSE OUTCOME				COURS	E OI	ITCOME	STAT	FMENTS			
NO				COURD	EU		JIMI				
C312.1	.Understand the structured Lab VIEW programming concepts in developing										
C312 2	Puild applications apployed in various debugging techniques, simulating and										
0112.2	analyzi	ipplicat	data ar	npioyeu i nd uso goi	n vai	nurnoso i	intorf	faco hus a	nd Sorial	ing anu	
	commi	ing the inicatio	uata ai m Intoi	rface	lerai	purpose	interi	ace bus a	ilu Sel lai		
C312.3	Create	annlica	tions t	hat use n	իսց եւ	DAO boa	rde a	nd huilt i	n analysis fi	inctions t	
0312.5	nrocos	applica s tho de	ations i	nat use p	iug ii	ו דע דע	ii us a		ii allaiysis it		
C312.4	Docign	$\frac{3}{2}$ and $\frac{3}{2}$	ata.	various ar	nlic	tions on l	Pool t	imo moni	itoring using		
	boards	anu an	lalyze v	arious ap	piica		incai i		itoring using	; DAQ	
DEPARTMENT	M	т	SEM	IFSTER	5	COURS	F	15MT53	COURSE	C313	
	171	-	DE IV.	EDIER	5	CODE		1511155	ID	0.515	
COURSE TITLE	Hydrau	lics and	l Pneun	natics							
COURSE OUTCOME NO				COURS	E OU	U TCOME	STAT	TEMENTS	;		
C313.1	have kr	nowledg	ge of H	ydraulic a	ind p	neumatic s	ysten	n			
C313.2	underst	and the	basics	of control	com	ponents of	f hydr	aulic syste	em		
C303.3	underst	and diff	ferent a	pplication	s of l	nydraulics					
C303.4	design	the hyd	raulic c	ircuits for	spec	ific applic	ations	s and analy	yze the hydra	aulic	
	circuits				-						
DEPARTMENT	MT	SEMES R	STE	5	C	OURSE	15N	AT54	COURSE ID	C304	
COURSE TITLE	Micro a	nd Sma	art Syst	ems Techn	ology	V					
COURSE OUTCOME				COURS	E OU	JTCOME	STAT	TEMENTS	5		
C304 1	Demon	strate th	10 Work	ing meth	dolo	av of smar	rt mot	eriale mi	prosvetame	lectronics	
0,007,11	circuitr	y in ME	EMS de	vices.	Ju010	gy or smal	i mal	U11a15, 1111	.103y Stell18, t	ACCHOINCS	



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C304.2	Illustrate the process of silicon wafer preparation, thin film deposition techniques
	,lithography, etching ,bulk & surface micromachining involved in MEMS fabrication.
C304.3	Examine the behaviour of piezoresistive & piezoelectric materials required to
	fabricate pressure sensor & vibration control structures.
C304.4	Measure the performance of pressure sensor & vibration control structure in real time
	applications.

DEPARTMENT	MT	SEMESTER	5	COURSE CODE	15MT55 1	COURSE ID	C305					
COURSE TITLE	Wireles	s Networks & Con	nmun	ication	_							
COURSE OUTCOME		COU	JRSE	OUTCOME	STATEMEN	TS						
NO												
C305	Analyze	e the concepts of l	Diffe	ent wireless c	communicati	on systems,	wireless					
	network	ks and technologie	es.									
C305	Explain	the working prin	ciples	of WBAN, L	LAN,WPAN	,WMAN,WW	VAN and					
	different wireless technologies.											
C305	Illustrat	Illustrate the concepts of adhoc networks, mobile adhocs, Vanets and Mesh										
	networks.											
C305	Explain Different issues in designing various Wireless networks and wireless											
	commu	nication				1						
DEPARTMENT	MT	SEMESTER	5	COURSE	15MT551	COURSE	C306					
	XX70 1	CODE ID										
COURSE IIILE	wireles	s networks	IDCE	OUTCOME		TC						
NO		COURSE OUTCOME STATEMENTS										
C306.1	Describ	Describe the architecture of wireless communication systems and network,										
	wireless switching technology, SNR, channel capacity, wireless networks and											
<u> </u>	technol	ogies.										
C306.2	Illustrat	e the concepts of	adho	c networks, m	obile ad hoc	s, Cellular ne	etworks,					
6207.2	WLL, V	VSN, Vanets and	Mesh	networks.								
C306.3	Classify	the types of wire	less 1	networks and	explain the A	Architecture of	of WBAN,					
	LAN,W	PAN,WMAN,W	WAN	and different	t wireless tec	chnologies at	nd its					
	design i	ssues and propert	ies.									
DEPARTMENT	МТ	SEMESTER	5	COURSE	15MTL57	COURSE	C307					
				CODE		ID						
COURSE TITLE		VIR	ΓUAL	INSTRUME	NTATION L	AB						
COURSE OUTCOME		COU	JRSE	OUTCOME S	STATEMEN	TS						
NO							-					
C307	Develo	p LabVIEW pro	gran	iming which	employs	simulating	and					
	analyz	ing the data for	<u>real</u>	time automa	ation							
C307	Engage	in designing, im	plem	enting, analy	zing and de	monstrating	an					
	applica	tion using tools a	availa	ible in LabVII	EW through	an open en	led					
	experir	nent.										



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C307		Design applications that use plug in DAQ boards and built in analysis								
functions to process the data.										
DEPARTMENT	MT	SEMESTER	EMESTER5COURSE15MTL58COURSEC308							
				CODE		ID				
COURSE TI	ГLE	MICRO & SMART SYSTEMS TECHNOLOGY LABORATORY								
COURSE OUTCO	OME	COURSE OUTCOME STATEMENTS								
NO										
C308		Analyse the behavior of Mechanical Components for various kinds of loads.								
C308		Analyse the be	havior of Pres	ssure Sensor fo	or various kind	s of Pressures a	pplied.			

DEPARTMENT MT SEMESTER COURSE 6 COURSE 15MT61 C311 CODE ID **COURSE TITLE** PLC AND SCADA COURSE **COURSE OUTCOME STATEMENTS OUTCOME NO** C301.1 Demonstrate the concepts of basic programming skills of PLC using logical instructions C301.2 Apply the architecture process involved in programmable logic controller and basic programming skills of PLC using logical instructions Examine the various operation involved in the PLC input/output module and SCADA system C301.3 Construct the ladder diagram for PLC using logical instructions, timer and counters, Data Handling C301.4 instructions and Build the SCADA System for Real time industrial process. DEPARTMENT SEMESTER COURSE COURSE MT 6 15MT62 C312 CODE ID **COURSE TITLE Embedded Systems (ARM)** COURSE OUTCOME STATEMENTS COURSE **OUTCOME NO** Compare the concepts of RISC/CISC processor, ARM processor, memory management, and interrupt C302.1 handlers. Classify the ARM instruction set and register functions to write and optimize the basic arithmetic and C302.2 logical programs Classify the memory organization to understand the software performance and to allocate the memory C302.3 for storing the results. Illustrate the assembly code and C code programs for bit manipulation, conditional execution and C302.4 interrupt handling. DEPARTMENT COURSE MT SEMESTER COURSE 15MT63 C313 6 CODE ID **COURSE TITLE Power Electronics COURSE OUTCOME STATEMENTS** COURSE **OUTCOME NO** C303.1 Have a knowledge of semiconductors devices, thyristors, AC voltage controllers choppers and inverters



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C303.2	Understand the characteristics and working principle of thyristors, AC voltage controllers, choppers and inverters.											
C303.3	Apply	Apply control techniques to meet desired switching objectives.										
DEPARTMENT	MT	MT SEMESTER 6 COURSE 15MT64 COURSE C314										
COURSE TITLE	Comp	Computer Aided Machine Drawing										
COURSE		COURSE OUTCOME STATEMENTS										
OUTCOME NO												
C304.1	unders	tanding the con	ncepts of sec	tions of solids	s, orthographi	c views, threa	ds,					
	fastene	ers, couplings, j	joints and as	sembly drawi	ng							
C304.2	apply t	the concepts of	sections of s	solids, orthogi	raphic views f	for developme	ent of					
	produc	ct or componen	t	-	-	-						
C304.3	Make	use of compute	r aided mod	eling tool to c	reate machine	e parts and to o	do					
	asseml	bly operation		-		-						
C304.4	design	threads, fasten	ers, coupling	gs and joints f	or engineering	g application						
C314.5				-								

DEPARTMENT	MT	SEMESTER	6	COURSE	15MT652	COURSE	C315				
	D 111			CODE		ID	L				
COURSE TITLE	Kapid Prototyping										
COURSE OUTCOME	COURSE OUTCOME STATEMENTS										
NO											
C315	Understanding of rapid prototyping techniques.										
C315	Explain advantages, techniques and construction of selective laser sintering.										
	Fusion	deposition Model	ing, S	olid Ground	Curing.		C				
C315	Explain 3D printers, rapid tooling, software tools and their errors.										
C315	Analyze the working principle of rapid prototyping and manufacturing										
	processes such as selective laser sintering Fusion deposition Modeling Solid										
	Ground	Ground Curing, 3D printers, rapid tooling and types of softwares									
C315		1									
DEPARTMENT	MT	SEMESTER	6	COURSE	15MT661	COURSE	C316				
		CODE ID									
COURSE TITLE	Robotic	Robotics and Automation									
COURSE OUTCOME		COU	JRSE	OUTCOME S	STATEMEN	TS					
NO											
C316.1	Have the	e knowledge of Joir	nts, Li	nks, Sensors, C	Control units,	Actuators. and	lelements				
	of Autor	mation									
C316.2	Describe	e motions and contr	ol sys	tem of Robots							
C316.3	Have Kı	nowledge of Basics	of Au	itomation							
C316.4	Underst	and Material Handl	ing an	d storage appli	cations in Au	tomation					
DEPARTMENT	MT	SEMESTER	6	COURSE	15MTL67	COURSE	C317				
				CODE		ID					
COURSE TITLE	PLC AND SCADA LAB										



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COURSE OUTCO NO	OME	COURSE OUTCOME STATEMENTS								
C307.1		Develop the logical instructions involved in Development of program								
		logic controller for various operations								
C307.2		Construct the	e Ladder Log	ic for various	operation us	sing PLC and S	SCADA for			
		industrial En	vironment							
C307.3		Design the SC	CADA System	for the Indu	strial Enviro	nment.				
DEPARTMENT	MT	SEMESTER	6	COURSE	15MTL68	COURSE	C308			
				CODE		ID				
COURSE TI	ГLE	Power Electro	nics Lab							
COURSE OUTCO	SE OUTCOME COURSE OUTCOME STATEMEN					INTS				
NO										
C308.1		List and describe various power semiconductor devices, power converters and its applications.								
C308.2		Explain the characteristics of power semiconductor devices and operation of various power converters for different loads.								
C308.3		Apply the concept of power electronic converters to control different loads and compute their performance parameters								

DEPARTMENT	МТ	SEMESTER	7	COURSE	15MT71	COURSE	C401
				CODE		ID	



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COURSE TITLE	Industrial Robotics									
COURSE	COURSE OUTCOME STATEMENTS									
OUTCOME NO										
C401.1	have k	nowledg	e of F	Robotics, au	itoma	ation, robot	ics motion, s	ensors and co	ntrol,	
	machir	ne vision	, robot	tic program	nming	g and roles	of robots in i	ndustry		
C401.2	unders	tand the	basics	of Kinema	atics a	and Dynam	ics of robot r	notion		
C401.3	unders	tand the	worki	ng method	ology	of robotics	s and automa	tion, motion a	ind	
	control machine vision and programming application of robots in industry									
C401.4	write the program for robot for various applications									
DEPARTMENT	MT SEMESTER 7 COURSE 15MT72 COURSE C402									
						CODE		ID		
COURSE TITLE	Therma	l Enginee	ering						•	
COURSE		_		COURSI	E OU	TCOME ST	TATEMENTS	5		
OUTCOME NO										
C402.1	Unders	tand the c	concept	ts of system	, ener	gy interactio	n, laws of the	rmodynamics,	and modes	
	of heat	transfer.								
C402.2	Applic	ations of	f laws	of thermod	lynan	nics to oper	n and closed	system and la	ws of heat	
	transfe	r to diff	ferent	shapes and	d typ	es of bour	ndary condition	ons. Determ	ine energy	
	change	e of a sys	tem, e	energy inter	actio	n in terms o	of work and h	neat between s	system and	
	surrou	nding.								
C402.4	Develop and apply thermal resistance concepts. Apply boundary conditions to solve									
	heat tra	ansfer pr	oblem	s.						
C402.4	Analyz	e the ther	modyn	amic perfor	manc	e, heat trans	fer and temper	ature distribut	on.	
	Dimens	sional ana	ılysis o	f convective	e heat	transfer and	physical sign	ificance of dim	ensional	
	number	S.								
					_	COUDCE		COUDCE	GAGO	
DEPARTMENT	IV.	11	SEN	MESTER	7	COURSE	15M173	COURSE	C403	
COURSE TITLE	Signal	Process				CODE		ID		
COURSE	Signal	1100655		COURS	FOU	TCOME ST	ATEMENT	2		
OUTCOME NO				COURSI	200	I COME DI		,		
C303.1	have k	nowledge	e of sig	nal. system.	trans	formation. f	ilter design.			
			01 018	,,	u uno		and another			
C403.2	underst	and the d	ifferen	ce between	time o	lomain, freq	uency domain	, analog and di	gital	
	filters.						-	-	-	
C403.3	transfor	m the sig	gnals fr	om one don	nain te	o another usi	ng transforma	tion technique	s.	
C403.4	design	analog a	nd digi	tal filters for	r spec	ific applicat	ions.			
DEPARTMENT	MT	SEMES	STER	7	С	OURSE	15MT743	COURSE	C404	
					C	ODE		ID		
COURSE TITLE	Real T	ime Syste	ems	~~~~				-		
COURSE				COURSI	E OU	TCOME ST	TATEMENTS	S		
OUTCOME NO	Decel		anta i C						11	
C404.1	Describe	the conce	epts of 1	f DTS and	em, ty	pes of real tir	ne system, proc	essor and contro	mers.	
C404.2	Analyze	and the advant	itages o	IKIS and ca	in appl	y in various a	pplications.			
	Underst			nethodologie	S OI O	perating syste		a ant fam	onnlight	
C404.4	Use the scheduling strategies, interrupt mechanism and memory management for various application.									



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			- 0								
DEPARTMENT	MT	SEMESTER	7	COURSE	15MT755	COURSE	C405				
COUDSE TITLE	Digital	Digital Image Processing									
COURSE IIILE COURSE OUTCOME	Digital	COURSE OUTCOME STATEMENTS									
NO											
C315	Describe of image	Describe the concept of image processing, sampling, quantization, enhancement and restoration of image.									
C415	Apply th	Apply the methods of image transforms and enhancement techniques to the image processing									
C415	Apply th	Apply the noise removal techniques for the restoration of original images.									
C415	Describe	the process of colour	r imag	e processing u	sing different re	storation technic	jues.				
C415											
DEPARTMENT	MT	SEMESTER	7	COURSE CODE	15MTL70	COURSE ID	C406				
COURSE TITLE	Robotic	s Laboratory									
COURSE OUTCOME NO		COURSE OUTCOME STATEMENTS									
C406.1	Unders	Understand the importance of Robot system in Industrial Process in Virtual									
	Enviror	Environments									
C406.2	erstand t	he importance of	Robo	t system in	Industrial Pro	cess in Virtua					
	ronment	s	10000				-				
DEPARTMENT	MT	SEMESTER	7	COURSE	15MTL77	COURSE	C407				
				CODE		ID					
COURSE TITLE	Signal I	Process Lab		•							
COURSE OUTCOME		COURSE OUTCOME STATEMENTS									
NO											
C407.1	have kr	nowledge of Scien	tific 1	Programmir	ig using Matl	ab.					
C407.2	underst	and the programm	ning i	n Matlab so	ftware and h	ardware					
C407.3	use DS	P board for real ti	me ar	oplications							
DEPARTMENT MT	SEMES	TER 7	C C	OURSE ODE	15MTL78	COURSE ID	C408				
COURSE TITLE	Project	Phase – I Seminal	r				1				
COURSE OUTCOME		CO	URSE	OUTCOM	E STATEME	NTS					
NO											
C408.1											
C408.2											
C408.3											
C408.4											



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DEPARTMENT	МТ	SEMESTER	8	COURSE	15MT81	COURSE	C411			
			Ŭ	CODE	1011101	ID	0.111			
COURSE TITLE	AUTOMOTIV	E ELECTRONIC	S AN	D HYBRID V	EHICLES					
COURSE		COURSE	E OU'	FCOME STA	TEMENTS					
OUTCOME NO										
C411.1	Understanding of Engine Parameters and a critical awareness of current problems within the									
	automotive electronics domain using Various Measurement Technology.									
C411.2	Apply the fundamental Concepts of automotive electronics on various Engine parts, Sensor,									
0.411.2	Actuator, Commu	inication and Measu	ireme	nt System.						
C411.3	Determine the ex	cent and nature of e	electro	nic circuitry in	automotive s	systems includ	ing			
C411 4	Analyze climate c	control instruments	ngine	nd radios and a	occessories in	volved in the	Automotive			
0411.4	Industry.	interior, mote uniterite			1000350110511	ivoiveu in the	Automotive			
DEPARTMENT	MT	SEMESTER	8	COURSE	15MT82	COURSE	C412			
				CODE		ID				
COURSE TITLE	Communication Systems									
COURSE	COURSE OUTCOME STATEMENTS									
OUTCOME NO										
C412.1	have Knowledge Of different modulation techniques, analog and digital modulation and									
~	demodulation, different waveform code techniques and spread spectrum.									
C412.2	understand the c	oncept of generation	on of 1	nodulated and	demodulated	d signals, enco	oding,			
	decoding and mu	altiplexing, de-mul	tiplex	ing of signals.	1 5 1 1 1 1 1 1 1 1	COUDER	G412			
DEPARTMENT	MI	SEMESTER	8	COURSE	15M183 2	ID COURSE	C413			
COURSE TITLE	Artificial Intelli	gence	1			I	1			
COURSE		COURSE	E OU'	FCOME STA	TEMENTS					
OUTCOME NO										
C413.1	Demonstrate the	effects of Orbits, 7	Ггајес	tories, Orbital	parameters &	k				
	Perturbations on	Satellites.								
C413.2	Illustrate the cha	racteristics of Eclip	oses, l	Satellite Subsys	stems, Satell	ite				
	Tracking & Eart	h stations.								
C413.5	Analyze the wor	king of Multiple A	ccess	Techniques in	Establishing	g effective				
	Communication.									
C/112 /	Analyza tha norf	formance of Satalli	tac in	the grass of co	mmunication	n Remoto				
0413.4	Sensing Naviga	tion & Weather Fo	recast	ing	minumeation					
	Sensing, reavigation & weather rorecasting.									