Semester I Professional Core (Theory)

		***			<u> </u>				
		Walc	hand College ((Government Aidea	of Engineering l Autonomous Institu	g, Sangli te)				
			AY	2023-24					
			Course l	Information					
Progr	amme		B.Tech. (All Branches)						
Class, SemesterFirst Year B. Tech., Sem ICourse Code7MA101									
Cours	e Code		7MA101						
Cours	e Name		Engineering Math	nematics- I					
Desire	ed Requisi	tes:	Mathematics cour	rse at Higher Secon	ndary Junior Colleg	je			
			•						
	Teaching	Scheme		Examination S	cheme (Marks)				
Lectu	re	3 Hrs/week	MSE	ISE	ESE	Total			
Tutor	ial	1 Hrs/week	30	20	50	100			
				Cred	its: 04				
			·						
			Course	Objectives					
1	Introduce of differe	e the basic conce ential equation.	epts required to unc	lerstand, construct,	solve and interpret	various types			
2	Improve	the Mathematic	al skill for enhanci	ng logical thinking	power of students				
3	Acquire	knowledge with	a sound foundation	n in Mathematics a	nd prepare them for	r graduate.			
4		-							
A (1	1 6 4	Course	Outcomes (CO) w	ith Bloom's Taxo	nomy Level				
At the	At the end of the course, the students will be able to,								
	Explain maticinatical concepts in engineering field. Onderstanding								
CO2	2 Solve engineering and scientific problems. Applying								
CO3	Applying the Mathematical concept in Engineering field Applying								
CO4									
						-			

Module	Module Contents	Hours
I	Matrices Rank of matrix, Homogeneous and non-homogeneous linear equations, Eigen values, Eigen vectors, Cayley Hamilton theorem, Diagonalizations of matrices.	6
П	Partial Differentiation and its application Partial derivative, chain rule for partial differentiation, Euler's theorem for homogeneous and non-homogeneous function, Jacobian, Error and approximation, maxima and minima of function of two variables	8
III	Complex Number Polar form of complex number, Argand's diagram, De Moiver's theorem, roots of complex number, Hyperbolic function, relation between circular and hyperbolic function.	7

	First order ordinary differential equation and its application	
IV	Exact, Linear, Bernoulli's equations, Euler's equations, Orthogonal trajectory,	_
	applications to simple electric circuit.	7
	Numerical Solution of Ordinary Differential Equations of first order and	
V	first degree:	<i>.</i>
v	Numerical Solution by (i) Taylor's series method (ii) Euler's method (iii)	6
	Modified Euler's method (iv) Runge- Kutta fourth order method	
	Calculus	
VI	Rolle's theorem, Mean value theorem, Taylor's and Maclaurin's theorem with	=
	remainders	5
	Textbooks	
1	P. N. and J. N. Wartikar "A Text Book of Applied Mathematics, Vol I and II	, Vidyarthi Griha
-	Prakashan, Pune, 2006.	
2	B.S. Grewal "Higher Engineering Mathematics", Khanna Publication, 44th	Edition, 2017.
3		
4		
	References	
1	Erwin Kreyszig, "Advanced Engineering Mathematics", , Wiley Eastern Lin 10 th Edition, 2015.	nited Publication,
2	Wylie C.R " <i>Advanced Engineering Mathematics</i> ",., Tata McGraw Hill Public 1999.	ation, 8th Edition
3	H. K. Dass, "Advanced Engineering Mathematics", S. Chand & Company Ltd.,	1 st Edition, 2014.
4	B.V.Ramana, "Higher Engineering Mathematics", The McGraw Hill compani	es, 2006.
	Useful Links	
1	https://nptel.ac.in/courses/111105121	
$\frac{2}{2}$		
5		
4	<u> </u>	

CO-PO Mapping															
		Programme Outcomes (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	2			1											
CO2	2			1											
CO3	2			1											
CO4															
The strength of mapping is to be written as 1: Low, 2: Medium, 3: High															
Each CO of the course must map to at least one PO.															

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

	W	alchand College of Engineering, S (Government Aided Autonomous Institute)	angli					
		AY 2023-24						
		Course Information						
Programme		B.Tech. (Elect / ELN)						
Class, Semes	ter	First Year B.Tech., Sem I / II						
Course Code	•	7PH102						
Course Nam	e	Engineering Physics (Elect / ELN)						
Desired Requ	uisites:	Students are expected to know the basic con-	cept in Phys	sics.				
Teachin	g Scheme	Examination Schem	e (Marks)					
Lecture	03Hrs/week	MSE ISE ES	SE	Total				
Tutorial	0 Hrs/week	30 20 5	0	100				
		Credits: 3						
	<u> </u>							
		Course Objectives						
1	To provide ba	sic concepts to solve many engineering and te	chnical issu	es.				
2	To give deep insights into the understanding of engineering courses.							
3	To encourage	nt.						
Course Outcomes (CO) with Bloom's Taxonomy Level								
At the end of	the course, the	students will be able to,						
СО		Bloom's Taxonomy Descriptor						
CO1	Exhibit memo ling facts, tern Physics and Semiconducto Microchip Des	1	Remembering					
CO2	Demonstrate u comparing, int	inderstanding of facts and ideas by recalling, terpreting for all terms in these modules.	2	Understanding				
C03	Solve problem knowledge, fai in a different v	as to new situations by applying acquired cts, techniques and rules for various concepts way.	3	Applying				
Module		Module Contents		Hours				
Ι	Wave optics: Fresnel's diff diffraction at a to single slit, I	n's rings, plate and action due n grating.	6					
П	to single slit, Diffraction due to double slits, Plane diffraction grating. Modern Physics and Quantum mechanics: Introduction, black body radiation, Planck's quantum theory, Wien's displacement law and Rayleigh – Jeans law, phase velocity, group velocity and particle velocity, de-Broglie's hypothesis, Photoelectric effect, Compton effect, Heisenberg's uncertainty principle and applications, wave function and physical significance, Schrödinger's wave equation: time dependent and time independent, Eigen value and Eigen function.							
III	Ultrasonic: (Magnetostric: waves by Kun velocity of u waves in scier	Introduction, generation of ultrasonic tion and Piezoelectric method), detection of dt's tube, thermal detection and sensitive flam ltrasonic waves in liquid, applications of ntific and engineering field.	e waves ultrasonic ne method, ultrasonic	6				

IV	Sem class dens leve sem	sification sification sity of s l with icondu	uctors: on of so states, I n temp ctor, H	Introllid on Fermi-I Derature all effe	roductio basis o Dirac st e, eleo ect, basi	on, f of band tatistics ctrical ic conce	ormatic theory, , Fermi condu ept of p	on of numbe level, v ctivity o-n junc	energy r levels variation of r tion.	y bar s in a ba on of Fe netal	nds, and, rmi and		7	
V	Inst mea tran tran tran opti	surement surement sducers sducers sducers cal trar	tation ent sy s, sens s, sel s, strai asducer	and 7 stem, sors, cl ection n gaug s and a	Fransd contro lassifica criter ge, pre actuator	ucers: l syste ation of rion f ssure t	Introducem, T em, T f transco for transduce ransduce	uction, ransduc lucers, ansduce cers, f	instrur cer an charac ers, te orce tr	nentation d Sent teristics emperate ransduc	ons, sor: s of ture ers,		6	
VI	Mic proc com in ir	erochip cess, t ponent ntegrate	Desig ypes of ts (diod ed circu	n: Intr of inte e, tran iit.	oduction grated sistor, n	on, Cry circuit resistor	stal gro t, Dev and ca	owth, E elopme pacitor	pitaxia nt of), Imple	l diffus integra ementat	sion ated tion		6	
1	M. Pub	N. Ava	Idhanul	u and	P. G. I	Text Kshirsa	books gar, "A	. Text ł	book of	f Engin	eering	Physic	s", S.C	hand
2	R. 1	K. Gaur	and S.	L. Gu	pta "Er	ngineeri	ng Phy	sics", I	Dhanpa	t Rai Pı	ublicati	ons, 20	11	
				4		Refe	rences							
1	Hall	Halliday, Resnic and Walker, "Fundamentals of Physics", John Wiley, 9th edition 2011.												
2	A. E	A. Beiser, "Concepts of Modern Physics", McGraw Hill International, 5th edition, 2003.												
3	Ajo Lali	AJOY GRATAK, "Uptics", Lata McGraw Hill 5th edition, 2012.												
4	Pres	x 2018	, John v		USICI I	vicasui	ement,	mstrun	lemanc	ni, anu	Selisoi	s manu	UUUK	CKC
5	5 Yaguang Lian "Semiconductor Microchips and Fabrication: A Practical Guide to Theory and Manufacturing" Wiley 2022													
						Usefu	l Links							
1	For	optics	https:/	/nptel	.ac.in/c	ourses	/122/1	07/122	107035	<u>5/</u>				
2	For	Quantı	ım Phy	sics <u>h</u>	ttps://r	nptel.ac	<u>.in/cou</u>	irses/12	22/106	/12210	<u>6034/</u>			
3	For	Ultrase	onic <u>ht</u>	tps://f	reevide	olectu	res.com	<u>n/cours</u>	e/3531	/engin	eering-	physics	<u>-i/8</u>	
4	For	Solid S	State Pl	iysics	https:/	/nptel.a	ac.in/co	ourses/	<u>115/10</u>	5/1151	.05099	<u>/</u>		
5	For	Instrum	nentatio	on and	Transd	lucers	https://	youtu.k	e/1uP	FyjxZzyc	2			
6	For	Microc	chip De	sign <u>h</u>	ttps://	<u>youtu.t</u>	<u>be/Hdcl</u>	<u>_RMv3l</u>	<u>)3g</u>					
	1				Ducan	0-P0		ng))				DC	0
	1	2	2	Δ					رر 0	10	11	12	1 rs	∪
<u> </u>	2		5				/	0	, ,	10	11	12	1	
	2													
	2													
The strength a	$\frac{1}{1}$	nningi	s to be	writter	 1 ac 1 · 1	 [0 ¹¹⁷ ?·	Mediu	 m 3. Ц	l ligh					
Fach CO of the	ne cor	ree mi	ist man	to at 1	east on	∟0 w, ∠. e P∩	wiediu	,1.	ugu					
		11 SC 1111	ist map	io ai I	cast OII		smont							
The assessme	nt ie k	nased o	n MSE	ISE a	nd ESI	E	Smellt							
MSF shall be	typic	ally on	modul	es 1 to	3	_ .								
ISE shall be t	aken	through	1011t the	e seme	ster in t	he form	n of tea	cher's	Issessn	nent. M	ode of	assessi	nent ca	n be
Tests assign	nents	orals	eminar	etc ar	nd is ex	nected	to man	at least	one hi	oher or	der PO		lioni oa	
ESE shall be	on all	modul	es with	aroun	d 30 - 4	40% we	eightag	e on mo	dules	to 3 a	nd 60 -	70% u	veightag	Je
on modules 4	to 6	mouu		. ui Uuii			-1511ug					, 070 W	215111d	~
For passing a	theor	v cours	se. Min	. 40%	marks i	in (MSI	E+ISE+	-ESE) a	re need	led and	Min 4	0% ms	urks in 1	ESE
are needed. (I	ESE s	hall be	a sepa	ate he	ad of pa	assing)		,						

		Walc	hand College (Government Aide	of Engineering, Sa ed Autonomous Institute)	ngli	
			AY	2023-24		
			Course	Information	1.1.1	
Progr	amme		B.Tech. (CSE, I	T, Electrical, Electronics)	
Class,	Semester	•	First Year B. Te	ch., Sem I/II		
Cours	e Code		7AM102			
Cours	e Name		Engineering Me	chanics		
Desire	ed Requisi	ites:	Physics			
	Teaching	Scheme		Examination Schem	e (Marks)	
Lectu	re	2 Hrs/week	MSE	ISE	ESE	Total
Tutor	ial	2 1113/1100	30	20	50	100
- utor			50	Credits: 2	50	100
				Circuitar		
			Course	e Objectives		
1	To impa	rt knowledge on	fundamentals of n	nechanics		
2	To provi	de knowledge of	f basic concepts ar	nd system of forces in stat	tics and dynam	ics
3	To illust	rate the principle	es of mechanics in	engineering applications		
		Course	Outcomes (CO) v	with Bloom's Taxonomy	Level	
At the	end of the	course, the stud	ents will be able to	0,	Discut	Discolo
CO Cour		Course	Outcome Stater	nont/c	Bloom's	Bloom's Texonomy
co		Course	e Outcome Staten	nent/s	Level	Description
COI	Explain	fundamental con	cepts in statics and	d dynamics	II	Understandir
CO2 Apply fundamental concepts of mechanics to solve problems on					ш	Applying
static systems			ninč.			Applying
CO3	Use New	vton's laws of	motion, D'Alem	berts and work energy	Ш	Applying
	principle	s to solve proble	ems related to dyna	amic systems		117 8
Modu	le		Module (Contents		Hours
mout	Fore	e System:	Module	contents		mours
1.44	Fund	amentals. System	ms. Composition	and Resolution. Resulta	ant of planar	
1	force	systems. Free	Body Diagram, L	aws of Forces, Varignor	n's Theorem,	5
	Lami	's Theorem				
	Equi	librium:		100 100001 10 11210		
11	Conc	epts of determin	acy and indetermine	nacy, Equilibrium of bear	ns, Supports,	4
	to sta	s, Equinorium, r	te beams	le of virtual work and its	applications	
	Cent	roid and Mome	nt of Inertia			
Ш	Centr	e of gravity and	Centroid, Momen	t of Inertia of Plane figur	e, Composite	5
Sections, Radius of gyration, Mass-Moment of Inertia.		2018				
	Kine	matics of Partic	les			
IV	IV Rectilinear motion o		f particle, Equation	ons of motion, Motion u	nder gravity,	5
	Proie	tile	ation between lin	ear and angular motion,	Motion of a	-
	Kine	tics of Particles				
	Fricti	on: Laws of fri	ction, application	of laws of friction, we	dge friction.	
v	Newt	on's laws of m	otion, D'Alembe	erts principle, Applicatio	ns to rough	4
	inclin	ed plane, lift, ar	nd connected bodi	es, Circular motion, Rota	ation of rigid	
	bodie	s a d		/		1
-	bodie	ken	1/		1	1 m.
R	bodie	khor	AG		- 	ļ.,,

Course Contents for BTech Programme, Applied Mechanics Department, AY2023-24



VI	Work Work of En Collin Kine	k Energy ergy, 1 sions: tic Ene	gy and y Prine mpulse Impact rgy due	Impac ciple, P Mome , Collis to Imp	et otentia intum 1 sion of pact	I and K Method bodies	Cinetic , Coef	Energy ficient	, Law of Res	of Con	nservatio 1, Loss c	on of	5	
									_					
	1		-	urr .		Tex	tbook	s			D ! D		C	
1	Limit	ted, 20	am., S 08.	. "Text	lbook	of App	hed N	lechani	cs", L	manpat	Kai Pu	DIISNII	ng Co	mpany
2	Bhav	ikatti., nationa	S. S I Publi	and shers, 2	Rajas 015, 5	hekarap ^h Editio	pa., l n.	K. G.	"Engi	neering	Mecha	inics",	New	Age
3	Beer, Com	F. P. a pany P	and Jol ublicati	ion, 201	E. R. 1	Vector Edition.	Mech	anics fo	or Engi	neers V	ol. I and	H II", I	McGra	w Hill
						Ref	erence	S						
1	Singe	er, F. L	. "Engi	neering	, Mech	anics St	tatics &	& Dyna	mics",	B. S. P	ublicatio	ns, 20	11.	
2	Time 4 th Ec	shenko lition.	o, S. an	d Your	ng, D.	H. "Eng	gineeri	ng Mec	hanics	", McG	raw Hill	Com	panies,	2008,
3	Meria 6 th Ec	am, L. lition.	and L.(G. Krai	ge, "Er	ngineeri	ng Me	chanics	– Dyn	amics"	, John W	'iley &	c Sons,	, 2002,
						Usef	ul Lin	ks	and a			15	1.1	2010
1	https:	//nptel	.ac.in/c	ourses/	11210	6286				_				
2	https	://www	youtu.	be.com	/watch	<u>?v=9Yt</u>	<u>3I4bP-</u>	90					_	
						CO-PO	Map	ping		15.	1.5			10-
				H	Progra	mme O	utcon	ies (PO)			1	PS	50
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3													
CO2	3	1												
CO3	3	1												
The stree	gth of r	nappin	gisto	be writt	en as l	: Low	2: Med	lium, 3.	High		I			L
						,		,	B					

Each CO of the course must map to at least one PO.

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Course Contents for BTech Programme, Applied Mechanics Department, AY2023-24



New

		Wal	chand College	of Engineering,	Sangli	i						
	AY 2023-24											
			Course	Information								
Progr	amme		B Tech (Electrica	1 Electronics CSE a	nd IT)							
Class	Semest	or	F Y B Tech	i, Electronics, CDE a								
Cours	e Code		7CM106									
Cours	e Name	•	Civil and Mechan	ical Engineering								
Desire	ed Reau	isites:										
	u nequ											
Т	eaching	Scheme		Examination Sche	me (Mar	·ks)						
Lectu	re	3 Hrs/week	MSE	ISE	ES	SE	Total					
Tutor	ial	_	30	20	5	0	100					
				Credits:	3	-						
			1									
			Course	Objectives								
-	To pro	ovide a solid g	rounding in the fund	lamental principles a	nd conce	pts of me	chanical					
1	engine	ering, includii	ng mechanics, therm	nodynamics, material	s science	, and flui	d mechanics.					
2	To int	roduce student	s to the field of mec	chanical engineering,	its histor	y, scope,	and its					
	importance in various industries.											
	Familiarize students with different building systems, their components, and the principles of											
3	buildi	ng bye-laws, p	romoting a compreh	iensive understanding	g of safe	and comp	oliant					
	Provid	le students wit	:s. h an in denth under	standing of the signif	icance of	infractru	cture					
4	develo	opment in urba	n areas with a spec	ific focus on transpor	tation w	ater sunn	ly and waste					
-	manag	rement.	ii areas, with a spee	ine rocus on transpor	tation, w	ater supp	ry, and waste					
	Enable students to comprehend the properties and applications of various construction											
5	materi	als, including	concrete, steel, woo	d, and masonry, enha	ancing the	eir ability	to design					
	and an	alyze structure	es effectively.									
		~			-	-						
A t the	and of t		e Outcomes (CO) w	with Bloom's Taxon	omy Lev	el						
At the	end of t	ne course, the	students will be abl	e to,		DI A						
СО		С	ourse Outcome Sta	atement/s		Bloom	's Taxonomy					
		U	ourse outcome su			Level	Description					
	Identi	fy suitable ma	terials for engineer	ing applications, und	lerstand							
COL	basic	manufacturir	ng processes, and	d understand med	chanical	п	Understanding					
	engine	ering applica	tions in various in	ndustries and be av	ware of	11	onderstanding					
	curren	t industry prac	tices and standards.	1 1 1								
CON	Apply	problem-solv	ving techniques to	analyze and solv	e basic	тт	A					
02	compo	ering proble	ems related to	mechanical system	is and	111	Applying					
	Explai	n the various	building systems	their components	and the							
CO3	princi	oles of build	ing bye-laws to e	ensure safe and co	mpliant	Π	Understanding					
	constr	uction practice	es		1		_					
	Summ	arize the sign	ificance of infrastru	cture development i	n urban							
CO4	areas	and analyze in	ts impact on transp	portation, water supp	oly, and	II	Understanding					
	waste	management	. 1 1 .	<u> </u>	<i>, ,</i> •							
COF	Analy	ze the proper	ties and applicatio	ons of various cons	truction		A nol					
	inform	ais, such as one in the second s	concrete, steel, wo	ou, and masonry, t	о таке	111	Anaiysis					
			n suuciurar desigli.									
Modu	le M	odule Content	ts [Mechanical]				Hours					
linouu		saule conten	. [iiouis					

I	Introduction Engineering Materials, Properties of engineering materials (metals, polymers, ceramics) Material selection considerations for computer hardware and robotics applications Material testing and characterization techniques, Overview of manufacturing techniques (casting, machining, molding, etc.) Rapid prototyping methods (3D printing, laser cutting, etc.) for computer hardware prototypes.	6						
Ш	Thermodynamics and Heat Management, Basic concepts of thermodynamics and heat transfer Heat dissipation and thermal management in computer hardware, Electronic Packaging and Cooling Packaging considerations for computer components and devices Cooling strategies for high-performance computer hardware	7						
Ш	Introduction to Robotics, Basics of robotics and its integration with computer engineering, Overview of robotic mechanisms and control system, Gears, pulleys, belts, and other power transmission elements Bearings and lubrication Linkages and mechanical movements relevant to computer engineering	6						
Modu	le Module Contents [Civil]	Hours						
IV	Introduction to Civil EngineeringScope of civil engineering, Disciplines of civil engineeringRole of Civil Engineers in infrastructure developmentBuilding Systems: Conceptualization, Need for buildings, DefiningSustainability for Building systems, Structural systems; Load bearing,Framed, Prefabricated, Pre Engineered Construction, Loads on Building,Components in Buildings and their functions, building bye laws, Principleof building planning	7						
v	V Construction Materials Construction materials and classification Properties and uses of stone, brick, tile, timber, cement, sand, lime, mortar, concrete, bitumen and steel.							
VI	Urban Infrastructure Urban Planning and Infrastructure, Transport systems, Water supply and drainage, Waste management facilities, Concept of smart city	7						
	Text Books[Mechanical]	n and David						
1	G. Rethwisch, 10th ed. 2018 edition, Wiley.	i. aliu Daviu						
2	Thermodynamics: An Engineering Approach" by Yunus A. Çengel and Michae 8 th edition.2017, McGra hill	el A. Boles,						
	Text Books[Civil]							
1	Bhavikatti S.S "Basic Civil Engineering", I.K. International Publishing House I	Pvt. Ltd.						
$\begin{vmatrix} 2 \\ 2 \end{vmatrix}$	Hırasakar G. K., "Basıc Cıvıl Engineering", DhanpatRai publications, 1st Edition of the state of	on,2007						
5	Gole L.G., "Introduction to Civil Engineering", Mahu Publisher House, 4th Edi	1110n, 2005						
	References [Mechanical]							
1	Manufacturing Engineering and Technology (SI Edition), <u>Serope Kalpakjian</u> , S Schmid, SI edition, 2018, Pearson	Steven R.						
	References[Civil]							
1	Bindra S.P., Arora S.P., "Building Construction", Dhanpat Rai publication, 5th	edition, 2012						
2	Smart Cities Mission Statement & Guidelines, Ministry of Urban Development of India	Government						
	Useful Links[Mechanical]							
	https://ocw.mit.edu/courses/mechanical-engineering/							
2	https://www.coursera.org/browse/engineering/mechanical-engineering							

3 https://www.edx.org/learn/mechanical-engineering

CO-PO Mapping															
		Programme Outcomes (PO) PSO													
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	2				1					1		1			
CO2	CO2 1 1														
CO3 2 1															
The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High															

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

		Wale	chand College (Government Aide	of Engineering, Sa d Autonomous Institute)	ngli			
			AY	2023-24				
			Course	Information				
Progr	amme		First Year B. Tec	h. Electrical				
Class,	Semester		First Year B. Tec	h., Sem. I				
Cours	e Code		7EL101					
Cours	e Name		Fundamentals of	Electrical Engineering				
Desire	ed Requisi	tes:	NIL	6 6				
Desire	u nequisi							
	Teaching	Scheme		Examination Schem	o (Marks)			
Lootu	racing	3 Hrs/wook	MSE	ISE		Total		
Tectu	re 1	J IIIS/ WEEK			ESE	100		
lutor		-	50	20	50	100		
				Credits: 3				
			Course	e Objectives				
1	This cou	rse intends to su	mmarize and solve	electrical and magnetic c	ircuits.			
2 It imparts skill to identifying principles, construction and working of electrical machines.								
3	3 It develops skill to describe the wiring system, lamps and low voltage installation components.							
	1 6 1	Course	Outcomes (CO) v	vith Bloom's Taxonomy	Level			
At the	end of the	course, the stud	lents will be able to	,				
		C	O -4	41-	Bloom's	Bloom's		
		Cours	se Outcome Staten	nent/s	I axonomy	Laxonomy Description		
<u>CO1</u>	Understanding							
C01	Understanding							
C02	Solve ele	etrical and mag	netic circuits	ig of electrical machine.		Applying		
		ethear and mag	nette encuits.			rippiying		
Modu	ıle		Module (Contents		Hours		
lilout	Mod	ule 1. Basic Co	ncents					
	Conc	ept of power am of electrica	generation, transn al power system.	nission and distribution Concept of Resistance.	. Single line Ohm's Law.			
I	Serie	s and Paralle	l Circuit, Equivale	ent Resistance, Open C	ircuits, Short	6		
	Circu	its, Ideal Volta	age and current S	Source, practical Voltage	e and current			
	Source	ce, Source Conv	ersion. Kirchhoff's	Laws, Sign Convention,	Illustration of			
	Kirch	hoff's Laws						
	Mod	ule 2: D. C. Net	work Theorems					
	Revie	ew of R-L-C-	Electrical circui	t elements, Star- delta	conversion,	0		
	Maxv	vell's Mesh Cu	There in Eastern	dal Analysis, Superposit	ion Theorem,	8		
Equivalent Circuit, Maximum Power Transfer Theorem								
		alent Circuit, iv	ite					
	Repre	esentation of	sinusoidal wavef	forms neak RMS va	lues phasor			
	repre	sentation of vo	ltage and current	real reactive and apr	parent power			
III	Analy	vsis of single-ph	ase ac circuits cons	sisting of R. L. C. RL. RC	C. RLC (series	6		
	and r	parallel) circuits	and three-phase b	palanced circuits. Voltag	e and current			
	relati	ons in star and d	lelta configurations					
	Mod	ule 4: Electrica	l Machines					
	Cons	truction, workin	g principle and typ	es of DC generator and I	Motor. Speed-			
IV	Torq	ue characteristic	-	7				
1						1		
	Cons	truction and wo	rking principle of si	ingle and three- phase inc	luction motor.			

V	Module 5: Transformer Review of DC & AC Magnetic circuits, Construction, working principle and types of single-phase transformer, Losses, efficiency, all-day efficiency and voltage regulation. Autotransformer.	6
VI	Module 6: Wiring, Electrical Installations and Components of LT Switchgear Switch fuse unit, MCB, ELCB, MCCB. Types of wire and cables. Staircase, Godown and Domestic wiring, CFL, LED, Fluorescent tube. Lighting schemes, Earthing, types of batteries, characteristics of batteries.	6
	Textbooks	
1	D. C. Kulshreshtha, "Basic Electrical Engineering", 1 st revised edition McGraw	Hill, 2012.
2	D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw H	lill, 2010.
3	B. L. Theraja "A Textbook of Electrical Technology", S Chand Publication, 201	3.
4		
	References	
1	V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.	
2	E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.	
3	V. N. Mittle and Arvind Mittal, "Basic Electrical Engineering", 2 nd edition, Tata	McGraw Hill.
	Useful Links	
1	Basic Electrical Technology, IISc Bangalore, by Prof. 1 "https://nptel.ac.in/courses/108108076"	L. Umanand,
2	Basic Electrical Technology, IIT Kharagpur, by Prof. N. K. De, Prof. G. D. I Bhattacharya, "https://nptel.ac.in/courses/108105053"	Roy, Prof. T. K.
3	Fundamentals of Electrical Engineering, IIT Kharagpur, by Prof. De "https://nptel.ac.in/courses/108105112"	ebapriya Das ,

						CO-PC) Manı	nina						
							, mapp	nig						
		Programme Outcomes (PO) P											PS	50
	1	1 2 3 4 5 6 7 8 9 10 11 12												2
CO1	3													
CO2	3													
CO3		3												
The stren	gth of r	nappin	g is to ł	be writt	ten as 1	: Low,	2: Med	ium, 3	High					
Each CO	of the c	course	must m	ap to at	t least c	one PO.								

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Professional Core (Lab)

	Walcha	and College of	Engineering,	Sangli	
	(Government Aided Ai	utonomous Institute)		
		A I 202	23-24		
Programme		B Tech			
Class Somest	or	Eirst Vear B Tech	Sem I & II		
Class, Sellest		7DU155			
Course Code		/FIIJJ	log I ob		
Course Name	; 	Engineering Physi	ics Lab.		
Desired Requ	lisites:	Students are exped	Evamination Sector	asic practical know	ledge up to HSC
Lecture		T A 1		Lab ESE	Tatal
Lecture	-	LAI	LAZ	Lad ESE	1 otai
Tutorial	-	30	30	40	100
Practical	2 Hrs/week				
Interaction	-		Cred	its: 1	
	•	Course O	bjectives		
1	To gain practical kno	wledge by applying	the experimental	methods to correlat	e with
1	the physics theory.				
2	To learn the usage of	electrical and optic	al systems for varie	ous measurements.	
3	To Apply the analytic	cal techniques and g	graphical analysis t	o the experimental	data.
	Course Ou	utcomes (CO) with	Bloom's Taxono	my Level	
	Calculate the diameter	er of the thin wire,	Planck's constant,	Refractive index	
	of liquid / radius of	curvature of Plano	convex lens, Sp	ecific rotation of	
CO1	optical active substa	ances, I-V charac	teristics of Semi	conductor diode,	Applying
	the expression for the	air, Calculate R. I	for specific hall/at	iditorium, verify	
	Demonstrate Hartley	and Colnitt's oscill	a telescope	Wavelength of	
CO2	light by Plane diffrac	tion grating. Wavel	ength of light by H	le-Ne LASER	Applying
	I Igne of France annue	List of Experiment	s / Lab Activities.		
	List of Expe	riments/ Lab Activ	ities- Any Eight E	Experiments	
1	Find the diameter of	the thin wire by diff	fraction of the light	;	
2	Determination of way	velength of light by	plane diffraction g	rating.	
3	Determine the Specif	ic rotation of sugar	solution	-	
4	Find the wavelength	of He-Ne Laser usin	ng Plane diffraction	n grating.	
5	Verify the expression	for the resolving p	ower of a telescope	e.	
6	Measure the wavelen	gth of ultrasonic wa	ives by Kundt's tul	be method.	
7	Design and simulate	Colpitt's & Hartley	Oscillator.		
8	Determine the Planck	s's constant.			
9	Study the I-V charact	eristic of semicond	uctor diode.		
10	Newton's ring: Deter	mination of wavele	ngth of light and re	efractive index of li	quid /radius of
	curvature of Plano co	onvex lens			
11	To calculate the rever	rberation time of sp	ecific hall.		
12	Determination of Fer	mi energy of coppe	r using a Wheatsto	ne bridge.	
		Text B	ooks		
1	C. L. Arora "Practice	al Physics" S. Char	id & Co Edition 20	09.	
2	P.K. Sasi Kumar "Pr	actical Physics", P	HI Learning Pvt. L	ta 1st edition 2011.	
1	Hallider Damin - 1	Wellter "E d	ences	John Wilson Oth 1	tion 2011
	A Deiger "Corrected	walker, Fundame	" McCrow Hill L	John Wiley, 9 th edi	tion 2002
2	A. Deiser, Concepts	oj modern Physics	, MICOTAW HIII IN	iternational, 5th edi	uoli, 2005.
3	AJOY GHAIAK, Optic		in Striedition, 2012	<u> </u>	
1	https://pptel.ag.in/gg	USCIUL	05121/		
2	https://www.iitg.ac.ir	$\frac{11000}{110}$	00141/		
3	https://www.htg.ac.h	vRROMo84			

				CO-F	O Maj	pping 1	For Al	l B.Te	ch. Pro	grams	5				
					Progra	amme	Outco	mes (P	'0)					PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	1	1													
CO2	2														
	The	streng	th of n	happing	, is to b	e writte	en as 1	,2,3; W	/here, 1	:Low,	2:Med	lium, 3	:High		
					Asse	ssment	t (for I	lab. C	ourse)						
		There	are th	ree cor	nponer	nts of la	ab ass	essmer	n <mark>t, L</mark> A1	, LA2	and L	ab ESI	Ε.		
IMP: Lab l	ESE i	is a sep	arate	head o	f passiı	ng. LA	1, LA2	2 toget	her is t	reated	l as In-	Semes	ter Ev	aluatio	on.
Assessmen	t	Bas	sed on		Condu	cted b	y	Typic	al Sch	edule (for 26	-week	Sem)	Μ	arks
LA1		Lab a	ctivitie	s,	Lab C	Course	Du	ring W	veek 1 t	o Wee	k 6				30
LAI	a	attendance, journal Faculty Marks Submission at the end of Week 6											6 30		
LA2		Lab a	ctivitie	s,	Lab C	Course	Du	ring W	ng Week 7 to Week 12						30
	a	ttendar	nce, jou	ırnal	Fac	ulty	Ma	arks Su	lbmissi	on at th	ne end	of Wee	k 12		20
Lab ESE		Lab a	ctivitie	es,	Lab (Course	Du	ring W	eek 15	to We	ek 18	- F XX 7	1-10		40
XX7 1 1 1 1	a	ttendar	ice, jou	irnal	Fac	ulty	Ma	arks Su		on at th	ne end	of wee	K 18		
Week I indi	cates	startin	g week	COL a S	emester	ha as n	ypical	schedu	ile of la	ib assei	ssment	s is sho	own, co	manag	ing a
20-week sel	Formi	1. Ille a	actual s	te mini	e shan	ot as p	er acac	ne dra	wings	nrogra	mming	es/Lau	perior	itable	snan
activities as	s ner i	the nati	ire and	requir	ement of	of the l	ah com	rse Th	e expei	imenta	l lab sl	hall hav	ve tvni	cally 8.	-10
experiments	5 per - 5.	ine nut	are une	irequir	ement			15 0 . 111	e exper	monte	11 100 51	nun nu	e typi	cully 0	10
•			As	sessme	nt Plar	ı based	l on Bl	loom's	Taxor	omy I	Level				
Blo	om's	Taxon	omy L	.evel]	LA1		LA	2	La	b ESE		Tota	al
	ł	Remem	ber				10		10			15		35	
	U	Jnderst	and				10		10		10			30	
		Appl	у				10		10			15		35	
		Analy	ze				0		0			0		0	
		Evalua	ite				0		0			0		0	
		Creat	e				0		0		0			0	
		Tota	1				30		30			40		100)

		Walo	chand C	ollege of	Engine	eering, S	angli	
			(Governa)	AY 2023	8-2024	, institute)		
			(Course Info	ormatio	n		
Program	nme		First Yea	ır B. Tech				
Class, S	emester		Sem I an	d Sem II				
Course	Code		7HS101					
Course	Name	• -	Commu	ication &	Generic	skills		
Desired	Requis	ites:	10+2 leve	el English				
	- 1	7 . 1						
Locture	achings	scheme	τ	1 1 1 2	Examina	ESE	eme (Marks)	otal
Tutorio	1		20	20		40	1	100
Dractice	1	 Dilmo/woolr	30	30		40		100
Practica	11 · · · ·	ZHIS/week				0 1 1 1		
Interact	10n	IHr/week				Credits	: Z	
				Course Ol	-i			
1	Enablo	the students t	ocommu	Course Of) clarity	and proci	sion	
1	Prenar	the students	to acquire	structure	ofOral	and writte	en expression r	required for
2	their p	rofession and	enable the	em to acou	ire prop	er behavi	oural skills	equirea ior
	Provide	e relevant kno	wledge at	out generi	ic skills,	its import	ance and enab	le them to
3	unders	tand personal	attribute	s like comr	nitment	, loyalty, e	ethical values, 1	team building,
	and ens	sure exposure	to person	al growth.				
4	Infuse	the ability to p	ositively	consider of	ther's vi	ews and to	o work effectiv	ely in teams
	and tea	ch them self-	managem	ent skills, j	problem	solving s	kills and techn	ological skills.
CO1	Commi	unicato cloarly		v and com	BIOOIII a	in difforo	nt scopario	Apply
01	Acouire	e basic profici	ency in Er	<u>y and com</u> glish incli	iding rea	ading and	listening	Арріу
CO2	compre	ehension, writ	ing and si	beaking sk	ills.	anne ana	libroning	Understand
	Practic	e Lifelong Lea	rning (LL	L) with pos	itive att	itude. loya	alty,	
CO3	commi	tment, reliabi	lity, self-d	levelopme	nt and m	hanage hir	nself/herself	Apply
	physica	ally, intellectu	ally and p	sychologic	ally.			
CO4	Work e	thically and e	ffectively	as a team i	member,	, manage 1	tasks	Apply
	enectiv	ery and appry	Knowledg	ze to solve	problem	15.		
Modula			Mo	dule Cont	ents			Hours
	Modu	lo 1. Introdu	ction to		cativo I	Inglich		nouis
	1.Fund	lamentals		Johnmunn	calive	Ingrish		
	2. Elei	nents						
I	4.Tvp	es						02
	5.Barr	riers						
	6.Nee	d to develop g	ood interp	ersonal ar	nd intrap	personal s	kills	
	7.Deve	eloping effecti	ve Listeni	ng Skills (t	types, Ba	irriers, lis	tening and	
	note n	laking)			• 9 Darr	laninge	duramand	
	Moau	iez: commu	nicative	Grammar	r & Deve	eloping a	avancea.	
	Vocab	ulary.		ha aamai m		.h.a		
	2 Oues	tion tags	lioual ver	bs,semi-m	ioual vei	US		
	3.Misp	laced Modifie	rs					
	4.Pass	ives						
	5.Phra	sal verbs						
II	Vocab	ulary:						05
	1. Con	nectives,						
	2. Pref	ixes and suffix	xes,					
	3.5yno	myms and An word substitu	tions					
	5.Re-a	rranging Jum	oled sente	nces				
	6.redu	ndancies		-				

	Module 3 : Formal Communication Skills	
	a. Oral skills: Developing non-verbal skills.	
	1.Extempore /Public Speaking Skills (speeches)	
	3.Individual Presentations	
III	b. Written Skills:	05
	1.Paragraph Writing	
	2.Comprehension passage	
	4. Report Writing	
	Module 4. Introduction to Generic Skills	
	a. Importance of Generic Skill Development (GSD)	0.1
IV	b. Global and Local Scenario of GSD	01
	c. Lifelong Learning (LLL) and associated importance of GSD.	
	Module 5: Self-management skills	
	1. Knowing Self for Self-Development. (01 hrs)	
	a. Self-concept.	
	D. Attitude,	
	d. Self-confidence.	
	e. Self-motivation.	
	2 Personal Attributes (02 hrs)	
	a. Loyalty.	
	b. Commitment.	
v	c. Honesty and integrity.	07
	d. Reliability.	
	e. Enthusiasm.	
	f. Balanced attitude while studying, working and home life.	
	3. Managing Self – Physical (02 hrs)	
	a. Personal grooming.	
	c. Time Management.	
	4. Managing Self – Psychological (02 hrs)	
	a. Stress, Emotions, Anxiety- concepts and significance.	
	b. Exercises related to stress management.	
	c. Techniques to manage the above.	
	Module 6: Teamwork Skills	
	Definition, hierarchy, team dynamics.	
	2 Team related skills (02 hrs)	
	a. Sympathy, empathy.	
	b. co-operation, concern, lead and negotiate.	
	c. work well with people from culturally diverse background.	
	3. Technological Skills. (02 hrs.)	
	a. Task Initiation, Task Planning, Task execution, Task close out	07
VI	b. Exercises/case studies on task planning towards development of skills for task management	
	4. Problem Solving skills (02 hrs)	
	a. Prerequisites of problem solving- meaningful learning, ability to	
	apply knowledge in problem solving.	
	b. Different approaches for problem solving.	
	d. Exercises/case studies on problem solving.	

	Text Books
1	Textbook: Sanjay Kumar, Pushpalata, Communication Skills, Oxford University Press, First edition ,2012
	References
1	Ashraf Rizvi, Effective Technical Communication, Tata McGraw Hills publishing
1	Company 2006
2	William Sanborn Pfeiffer, T.V.S. Padmaja, Technical Communication: A Practical
	Approach, Pearson, Sixth Edition 2012
3	Exercises in Spoken English, Parts 1 and II CIEFL, Hyderabad, Oxford University Press
	Useful Links
1	www.oupinheonline.com
2	www.scitechpublications.com

						CO-P	O Ma	pping							
		Programme Outcomes (PO) PSO													
	1	1 2 3 4 5 6 7 8 9 10 11 12											1	2	3
C01															
CO2										1					
CO3									2			2			
CO4								2	3						
The strengt	h of m	apping	is to b	e writt	ten as 1	,2,3; V	Where,	1: Lov	v, 2: M	edium	, 3: Hig	gh			
Each CO of	f the co	ourse n	nust ma	ap to a	t least o	one PC).								

Assessment

The assessment is based on two In-semester evaluations (LA) of 30 marks each, one End-semester examination (ESE) of 40 marks.

LA1 and LA2 are based on the modules taught (typically Module 1-3) and ESE is based on all modules with 30-40% weightage on modules before LA1 and 60-70% weightage on modules LA2.

Assess	ment Plan b	based on Bl	oom's Taxo	nomy Level
Bloom's Taxonomy Level	LA1	LA2	ESE	Total
Remember				
Understand	10	10	10	30
Apply	20	20	30	60
Analyse				
Evaluate				
Create				
Total	30	30	40	100

			(Government Aia	led Autonomous Inst	titute)		
			AY	2023-24			
			Course	e Information			1
Progr	amme		B.Tech. (All Bran	nches)			
Class,	Semester		First Year B. Tec	h., Sem 1/11			
Cours	e Code		TAMISS	haniaa Lah			
Cours	e Name		Engineering Mec	hanics Lab			
Desire	ed Requisi	les:	Engineering Mec	names		_	
	Teaching	Scheme		Examination	Scheme (Marks)	
Practi	ical	2 Hrs/ Week	LA1	LA2	Lab	ESE	Total
Intera	ction		30	30	4()	100
				Cr	edits: 1		
			Cours	se Objectives			
1	To provid	de hands on pra	ctice for the condu	ct of experiments t	to verify th	e principles of	fmechanic
2	To demo	nstrate the grap	hical methods to ve	erity the analytical	solutions		
		Course	e Outcomes (CO)	with Bloom's Tax	konomy L	evel	
At the	end of the	course, the stud	lents will be able to),			
60		Com	na Outooma Etata			Bloom's	Bloom
co		Cour	rse Outcome State	ement/s		Level	Descrip
CO1	Demonst	rate verification	n of laws and basi	ic principles of m	echanics	III	Applyi
CO2	Apply gr	aphical method	to solve problem	s on force system	, beams,		
	and fram	es.	•			Ш	Applyi
		I	List of Experiment	ts / Lab Activities	/Topics		
List of	Experime	ents :					
1. Veri	fication of	law of triangle	of forces				
1. Veri 2. Veri	fication of fication of	law of triangle law of polygon	of forces of forces				
1. Veri 2. Veri 3. Dete	fication of fication of ermination	law of triangle law of polygon of support react	of forces of forces tions for Simply Su	pported Beam			
1. Veri 2. Veri 3. Dete 4. Veri	fication of fication of ermination fication of	law of triangle law of polygon of support react the principle of	of forces of forces tions for Simply Su f moments using Be	pported Beam ell crank lever app	aratus		
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete	fication of fication of ermination fication of ermination ermination	law of triangle law of polygon of support react the principle of of the coefficient of the coefficient	of forces of forces tions for Simply Su moments using Be nt of friction for mo nt of friction for mo	pported Beam ell crank lever app otion on horizonta ption on inclined p	aratus I plane Ilane		
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana	fication of fication of ermination fication of ermination ermination lysis of con	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non	of forces of forces tions for Simply Su moments using Be nt of friction for mo nt of friction for mo n-concurrent coplar	pported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b	aratus I plane vlane y graphica	l method	· .
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana	fication of fication of frmination fication of frmination frmination lysis of con lysis of sta	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non tically determin	of forces of forces tions for Simply Su moments using Be nt of friction for mo n-concurrent coplar ate beams by graph	pported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b nical method	aratus I plane Ilane y graphica	l method	····.
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana	fication of fication of ermination fication of ermination ermination lysis of con lysis of sta lysis of pin	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien courrent and non tically determin jointed perfect	of forces of forces tions for Simply Su moments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr	pported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b nical method raphical method	aratus I plane Ilane y graphica	I method	ж. 7 - 1
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana	fication of fication of fication of fication of ermination lysis of con lysis of sta lysis of pin	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien of the coefficien tically determin i jointed perfect	of forces of forces tions for Simply Su moments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b nical method raphical method	aratus I plane Ilane y graphica	Imethod	·····
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana	fication of fication of fication of frmination frmination lysis of con lysis of sta lysis of pin	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien current and non tically determin jointed perfect	of forces of forces tions for Simply Su moments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system by nical method raphical method extbooks files.wordpress.com	aratus I plane Jane y graphica - m/2019/03	l method	al-1.pdf
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1	fication of fication of fication of fication of fication of fication of fication of fication of fication of fication of lysis of cor lysis of sta lysis of sta lysis of pin Lab N Lab	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien tically determin jointed perfect	of forces of forces tions for Simply Su moments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1 ks - https://jec	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-ce	aratus I plane Jane y graphica <u>m/2019/03</u> ontent/uplo	l method /em-lab-manua pads/2018/10/1	al-1.pdf _Engineer
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1 1	fication of fication of frmination fication of frmination lysis of con lysis of sta lysis of pin Lab M Lab	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien current and non tically determin jointed perfect	of forces of forces tions for Simply Su fmoments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1 ks - https://jec	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system by nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-co Id-Course.pdf	aratus l plane blane y graphica m/2019/03 ontent/uplo	l method /em-lab-manua bads/2018/10/1	al-1.pdf _Engineer
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1 1 2 3	fication of fication of frmination fication of frmination lysis of cor lysis of sta lysis of sta lysis of pin Lab N Lab Mecha Bhavi	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non tically determin jointed perfect <u>fanual Link - ht</u> Manual Lin anics-Laborator katti., S. S. and	of forces of forces tions for Simply Su moments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1 ks - https://jeo y-2nd-SEM-DU-O Rajashekarappa., Edition	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-cu ld-Course.pdf K. G. "Engineerin	aratus I plane Jane y graphica m/2019/03 ontent/uplo	l method /em-lab-manua bads/2018/10/1 iics", New Ag	al-1.pdf _Engineer e Internati
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1 2 3	fication of fication of frmination fication of frmination lysis of con lysis of sta lysis of pin Lab M Lab Mecha Bhavi Publis	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non tically determin a jointed perfect fanual Link - ht Manual Lin anics-Laborator katti., S. S. and thers, 2015, 5 th I	of forces of forces tions for Simply Su fmoments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1 ks - https://jec y-2nd-SEM-DU-O l Rajashekarappa., Edition.	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system by nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-co ld-Course.pdf K. G. "Engineerin	aratus l plane blane y graphica m/2019/03 ontent/uplo	l method /em-lab-manua bads/2018/10/1 iics", New Ag	al-1.pdf Engineer e Internati
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1 2 3	fication of fication of frmination fication of frmination lysis of cor lysis of sta lysis of sta lysis of pin Lab M Lab Mecha Bhavi Publis	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non tically determin jointed perfect <u>fanual Link - ht</u> Manual Lin anics-Laborator katti., S. S. and thers, 2015, 5 th F	of forces of forces tions for Simply Su moments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1 ks - https://jeo y-2nd-SEM-DU-O Rajashekarappa., Edition.	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-cu ld-Course.pdf K. G. "Engineerin	aratus I plane Ilane y graphica m/2019/03 ontent/uplo ng Mechar	l method /em-lab-manua bads/2018/10/1 nics", New Ag	al-1.pdf _Engineer e Internati
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1 2 3	fication of fication of frmination fication of rmination lysis of cor lysis of sta lysis of pin Lab M Lab Mecha Bhavi Publis	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non tically determin a jointed perfect fanual Link - ht Manual Lin anics-Laborator katti., S. S. and thers, 2015, 5 th H	of forces of forces tions for Simply Su fmoments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.f ks - https://jec y-2nd-SEM-DU-O I Rajashekarappa., Edition. Re "Textbook of Ap	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system by nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-co ld-Course.pdf K. G. "Engineerin ferences plied Mechanics"	aratus I plane Jane y graphica m/2019/03 ontent/uplo ng Mechar	l method /em-lab-manua pads/2018/10/1 nics", New Ag	al-1.pdf Engineer e Internati ing Comp
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1 2 3 1 2	fication of fication of frmination fication of frmination lysis of con lysis of sta lysis of sta lysis of pin Lab M Lab Mecha Bhavi Publis Rama Limite Beer, Comp	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non tically determin a jointed perfect fanual Link - ht Manual Lin anics-Laborator katti., S. S. and thers, 2015, 5 th F	of forces of forces tions for Simply Su fmoments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1 ks - https://jec y-2nd-SEM-DU-O I Rajashekarappa., Edition. Re "Textbook of Ap ston, E. R. "Vector , 2011, 9 th Edition	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system b nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-cc ld-Course.pdf K. G. "Engineerin ferences plied Mechanics" r Mechanics for E	aratus I plane Jane y graphica m/2019/03 ontent/uplo ng Mechar c, Dhanpat	l method /em-lab-manua bads/2018/10/1 iics", New Ag Rai Publish Vol. I and II",	al-1.pdf Engineer e Internati ing Comp McGraw
1. Veri 2. Veri 3. Dete 4. Veri 5. Dete 6. Dete 7. Ana 8. Ana 9. Ana 1 2 3 1 2 3	fication of fication of frmination fication of frmination lysis of con lysis of sta lysis of sta lysis of pin Lab M Lab Mecha Bhavi Publis Rama Limite Beer, Comp R. K.	law of triangle law of polygon of support react the principle of of the coefficien of the coefficien neurrent and non tically determin jointed perfect Manual Link - ht Manual Link anics-Laborator katti., S. S. and thers, 2015, 5 th I mrutham., S. ⁴ ed, 2008. F. P. and Johns any Publication Bansal "Engine	of forces of forces tions for Simply Su fmoments using Be nt of friction for mo n-concurrent coplar ate beams by graph plane frames by gr Te tps://atifmohd077.1 ks - https://jeo y-2nd-SEM-DU-O I Rajashekarappa., Edition. Re Textbook of Ap ston, E. R. "Vector , 2011, 9 th Edition.	apported Beam ell crank lever app otion on horizonta otion on inclined p nar force system by nical method raphical method extbooks files.wordpress.con cassam.ac.in/wp-co ld-Course.pdf K. G. "Engineerin ferences plied Mechanics" r Mechanics for E Laxmi Publication	aratus I plane Jane y graphica m/2019/03 ontent/uplo ng Mechar c, Dhanpat Engineers	l method /em-lab-manua bads/2018/10/1 nics", New Ag Rai Publish Vol. I and II",	al-1.pdf _Engineer e Internation ing Comp McGraw



	Useful Links	1
1	https://nptel.ac.in/courses/112106286	
2	https://www.youtube.com/watch?v=9Yt314bP-90	
3	https://www.vlab.co.in/broad-area-civil-engineering	
4	Virtual Lab link by IIT Mumbai - http://vlabs.iitb.ac.in/vlab/labsme.html	

						CO-P	O Map	ping							
	Programme Outcomes (PO)													PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
COI				1											
CO2		1													

Each CO of the course must map to at least one PO, and preferably to only one PO.

		Assessment		
There are three IMP: Lab ESE	e components of la is a separate head	b assessment, LA1, LA2 and of passing.(min 40 %), LA	nd Lab ESE. 1+LA2 should be min 40%	
Assessment	Based on	Conducted by	Typical Schedule	Marks
LAI	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 8 Marks Submission at the end of Week 8	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 9 to Week 16 Marks Submission at the end of Week 16	30
Lab ESE	Lab activities, journal/ performance	Lab Course Faculty and External Examiner as applicable	During Week 18 to Week 19 Marks Submission at the end of Week 19	40

Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

Realized

Course Contents for BTech Programme, Applied Mechanics Department, AY2023-24



I Same

Walchand College of Engineering, Sangli (Government Aided Autonomous Institute)							
			(Government A	Y 2023-24			
			Сош	rse Information			
Progra	amme		B Tech (Electrica	1 Electronics CSE	TT)		
Class.	Semest	er	First Year B Tech	SEM-L& II	11)		
Cours	e Code		7CM156				
Cours	e Name		Civil and Mechani	ical Engineering Lab)		
Desire	d Reau	isites:			, 		
Desire	u nequ						
Т	eaching	Scheme		Examination S	Scheme (Marks)	
Practi	cal	2 Hrs/Week	LA1	LA2	ESE	,	Total
Intera	ction	-	30	30	40		100
				Cre	dits: 1		
			Cou	rse Obiectives			
	To pro	vide a solid gr	ounding in the fund	amental principles a	nd concepts of n	nechanica	l engineering,
I	includ	ing mechanics,	thermodynamics, n	naterials science, and	d fluid mechanic	s	0 0
2	To int	oduce students	to the field of mech	hanical engineering,	its history, scop	e, and its	importance in
3	To int	s mousures.	to fundamental civ	il engineering exper	iments and proc	edures	
4	To dev	velop practical	skills in handling ci	vil engineering equi	pment and instru	iments.	
=	To pro	mote teamwor	k, problem-solving,	and analytical skills	while conduction	ng experir	nents and
5	interpr	eting results.					
A (1]	1 64		irse Outcomes (CC)) with Bloom's Ta	xonomy Level		
At the	end of t	he course, the	students will be able	e to,			
СО			Course Outcome	Statement/s		Bloom'	's Taxonomy
00	Level Description						
						Level	Description
	Tour	iderstand mec	hanical testing an	d inspections, such	n as hardness	Level	Description
CO1	To un testing	derstand mec , non-destructi	hanical testing and we testing (e.g., ult	d inspections, such trasonic testing), an	n as hardness d dimensional	II	Understand
CO1	To ur testing measu To der	derstand mec , non-destructi rements.	hanical testing and we testing (e.g., ult	d inspections, such trasonic testing), an	n as hardness d dimensional heat transfer.	II	Understand
CO1	To ur testing measu To der such a	iderstand mec , non-destructi rements. nonstrate expenses s measuring he	hanical testing and we testing (e.g., ult riments related to th at conduction throu	d inspections, such trasonic testing), an ermodynamics and l gh different material	n as hardness d dimensional heat transfer, ls or studying	II II	Description Understand Apply
CO1 CO2	To ur testing measu To der such a heat di	aderstand mec , non-destructi rements. nonstrate expenses s measuring he ssipation from	hanical testing and we testing (e.g., ult riments related to th at conduction throu electronic compone	d inspections, such trasonic testing), an ermodynamics and l gh different material ents.	n as hardness d dimensional heat transfer, ls or studying	II II	Description Understand Apply
CO1 CO2 CO3	To ur testing measu To der such a heat di Demon	iderstand mec , non-destructi rements. nonstrate expenses s measuring he ssipation from nstrate identific	hanical testing and ve testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a	d inspections, such trasonic testing), an ermodynamics and gh different materia ents. bility of elements in	n as hardness d dimensional heat transfer, ls or studying building	Level II II II	Description Understand Apply Understand
CO1 CO2 CO3	To ur testing measu To der such a heat di Demon drawir	aderstand mec , non-destructi rements. nonstrate expenses s measuring he assipation from instrate identificang. ne the material	hanical testing and we testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in	n as hardness d dimensional heat transfer, ls or studying building	Level II II II	Description Understand Apply Understand
CO1 CO2 CO3 CO4 CO5	To ur testing measu To der such a heat di Demon drawir Exami Use su	iderstand mec , non-destructi rements. nonstrate expension s measuring he assipation from instrate identificant ne the material ryeving equipt	hanical testing and ve testing (e.g., ult riments related to th at conduction throu electronic component cation and reading a properties and com- ment to measure dist	d inspections, such trasonic testing), an ermodynamics and l gh different materia ents. bility of elements in ment on their qualit tance and area.	n as hardness d dimensional heat transfer, ls or studying building y.	Level II II II II III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5	To ur testing measu To der such a heat di Demon drawir Exami Use su	aderstand mec , non-destructi rements. nonstrate expenses s measuring he assipation from nestrate identificang. ne the material rveying equipr	hanical testing and we testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com nent to measure dis	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area.	n as hardness d dimensional heat transfer, ls or studying building y.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5	To ur testing measu To der such a heat di Demon drawir Exami Use su	aderstand mec , non-destructi rements. nonstrate expension s measuring he assipation from nstrate identificant ne the material rveying equipr	hanical testing and ve testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com nent to measure dis List of Expe	d inspections, such trasonic testing), an ermodynamics and l gh different materia ents. bility of elements in ment on their qualit tance and area.	n as hardness d dimensional heat transfer, ls or studying building y.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha	To ur testing measu To der such a heat di Demon drawir Exami Use su	aderstand mec , non-destructi rements. nonstrate expenses s measuring he ssipation from nstrate identificang. ne the material reveying equipr	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com nent to measure dis List of Exper	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ	n as hardness d dimensional heat transfer, ls or studying building y.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1.	To ur testing measu To der such a heat di Demon drawir Exami Use su	aderstand mec , non-destructi rements. nonstrate expension s measuring he assipation from nstrate identificand ne the material rveying equipr	hanical testing and ve testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com nent to measure dist List of Expen measurements and f	d inspections, such trasonic testing), an ermodynamics and l gh different materia ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ	n as hardness d dimensional heat transfer, ls or studying building y.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2.	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquid	aderstand mech , non-destructi rements. nonstrate expenses s measuring he ssipation from nstrate identificand ne the material rveying equipt	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com- nent to measure dist List of Expe measurements and f particle testing for o	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examination	n as hardness d dimensional heat transfer, ls or studying building y. vities	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquid Hardn Tensil	aderstand mec , non-destructi rements. nonstrate expension s measuring he assipation from nestrate identificand ne the material rveying equiption onic thickness and magnetic ess measureme e test of metall	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com nent to measure dist List of Exper measurements and f particle testing for o ents by using Rockw ic materials and stu	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examination rell, Brinell hardness dy of Stress vs Strain	n as hardness d dimensional heat transfer, ls or studying building y. rities	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5.	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquic Hardn Tensil Eddy o	aderstand mech , non-destruction rements. nonstrate expension s measuring he assipation from nestrate identified ne the material rveying equiption onic thickness l and magnetic ess measureme e test of metall current and aco	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com- nent to measure dist List of Expe measurements and f particle testing for o ents by using Rockw ic materials and stu- oustic emission flaw	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin vell, Brinell hardness dy of Stress vs Strain measurement techn	n as hardness d dimensional heat transfer, ls or studying building y. vities nation. s testers. n curve. iques.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5. 6.	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquid Hardn Tensil Eddy o Use of	aderstand mec , non-destructi rements. nonstrate expension s measuring he assipation from nestrate identificand ne the material rveying equipt onic thickness and magnetic ess measureme e test of metall current and aco machine learn	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com nent to measure dist List of Expe measurements and f particle testing for a ents by using Rockw ic materials and stud- oustic emission flaw ing and AI in mech	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin vell, Brinell hardness dy of Stress vs Strain measurement techn anical testing. Only	n as hardness d dimensional heat transfer, ls or studying building y. vities hation. s testers. n curve. iques. Demonstration.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5. 6. Civil:	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquic Hardn Tensil Eddy o Use of	aderstand mech , non-destruction rements. nonstrate expension s measuring he ssipation from nethe material reveying equiption onic thickness and magnetic ess measureme e test of metall current and aco	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com- nent to measure dis List of Exper measurements and f particle testing for o ents by using Rockw ic materials and stud- oustic emission flaw ing and AI in mech	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin rell, Brinell hardness dy of Stress vs Strain measurement techn anical testing. Only	n as hardness d dimensional heat transfer, ls or studying building y. rities nation. s testers. n curve. iques. Demonstration.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5. 6. Civil: 1.	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquid Hardn Tensil Eddy o Use of	aderstand mec , non-destructi rements. nonstrate expension s measuring he ssipation from nstrate identificant ne the material rveying equipt onic thickness and magnetic ess measureme e test of metall current and aco machine learn and identify ba	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com- ment to measure dist List of Exper measurements and f particle testing for o ents by using Rockw ic materials and stud- oustic emission flaw ing and AI in mech-	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin vell, Brinell hardness dy of Stress vs Strain measurement techn anical testing. Only	n as hardness d dimensional heat transfer, ls or studying building y. rities nation. s testers. n curve. iques. Demonstration.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5. 6. Civil: 1.	To ur testing measu To der such a heat di Demon drawir Exami Use su ultras Liquic Hardn Tensil Eddy o Use of Study i) Sit	aderstand mech , non-destruction rements. nonstrate expension s measuring he assipation from nethe material rveying equiption onic thickness and magnetic ess measureme e test of metall current and aco machine learn and identify bat te plan,	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com- nent to measure dist List of Exper measurements and f particle testing for o ents by using Rockw ic materials and stud- ustic emission flaw ing and AI in mech	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin vell, Brinell hardness dy of Stress vs Strain measurement techn anical testing. Only	n as hardness d dimensional heat transfer, ls or studying building y. rities nation. s testers. n curve. iques. Demonstration.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5. 6. Civil: 1.	To ur testing measu To der such a heat di Demon drawir Exami Use su nical: Ultras Liquic Hardn Tensil Eddy o Use of Study i) Sit ii) Pla	aderstand mec , non-destruction rements. nonstrate expension s measuring he ssipation from nstrate identified in the material rveying equiption onic thickness and magnetic ess measurement e test of metall current and acco machine learn and identify bac te plan, an, elevation an	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com- ment to measure dist List of Exper measurements and f particle testing for o ents by using Rockw ic materials and stu- oustic emission flaw ing and AI in mech asic elements in and section of a resid	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin yell, Brinell hardness dy of Stress vs Strain measurement techn anical testing. Only ential building	n as hardness d dimensional heat transfer, ls or studying building y. rities nation. s testers. n curve. iques. Demonstration.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5. 6. Civil: 1. 2. 2.	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquic Hardn Tensil Eddy o Use of Study i) Sit ii) Pla	aderstand mec , non-destruction rements. nonstrate expension s measuring he assipation from netrate identified and the material rveying equiprication onic thickness and magnetic ess measurement e test of metall current and acco machine learn and identify bac te plan, an, elevation and water supply a	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone- cation and reading a properties and com- nent to measure dist List of Exper measurements and f particle testing for o ints by using Rockw ic materials and stud- ustic emission flaw ing and AI in mech asic elements in and section of a resid nd sanitation plan o	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin rell, Brinell hardness dy of Stress vs Strain measurement techn anical testing. Only ential building f a residential buildi	n as hardness d dimensional heat transfer, ls or studying building y. rities nation. s testers. n curve. iques. Demonstration.	Level II II II III III	Description Understand Apply Understand Applying Applying
CO1 CO2 CO3 CO4 CO5 Mecha 1. 2. 3. 4. 5. 6. Civil: 1. 2. 3. 4.	To ur testing measu To der such a heat di Demon drawir Exami Use su anical: Ultras Liquic Hardn Tensil Eddy o Use of Study i) Sit ii) Pla Study	aderstand mec , non-destruction rements. nonstrate expension s measuring he ssipation from nstrate identificant ne the material rveying equiption onic thickness and magnetic ess measurement e test of metall current and acco machine learn and identify bac te plan, an, elevation and water supply a tests on brick tests on brick	hanical testing and ive testing (e.g., ult riments related to th at conduction throu electronic compone cation and reading a properties and com- ment to measure dis List of Exper measurements and f particle testing for o ents by using Rockw ic materials and stu- oustic emission flaw ing and AI in mech asic elements in and section of a resid nd sanitation plan o	d inspections, such trasonic testing), an ermodynamics and l gh different material ents. bility of elements in ment on their qualit tance and area. riments / Lab Activ flaw detection. discontinuity examin yell, Brinell hardness dy of Stress vs Strain measurement techn anical testing. Only ential building f a residential buildi	n as hardness d dimensional heat transfer, ls or studying building y. rities nation. s testers. n curve. iques. Demonstration.		Description Understand Apply Understand Applying Applying

5.	Measurement of distance and area						
6.	Demonstration of Total station						
	Text Books [Mechanical]						
1	Raghuwanshi B. S., "A Course in Workshop Technology I", Dhanpat Rai Publications, 10 th Ed., 2009						
2	S. K. Hajra Choudhury and A. K. HajraChoudhary, "Workshop Technology" – Vol I [Manufacturing Processes]", Media Promoters and Publishers Pvt. Ltd., 10 th edition, reprint 2001						
3	Bawa H S. "Workshop Practice," McGraw Hill Education, Noida, 2 nd edition, 2009 ISBN-13: 978-0070671195						
4	Gupta, J. K.; Khurmi, "A Textbook of Manufacturing Process" (Workshop Tech.) R S S Chand and Co., New Delhi, 2020, ISBN:81-219-3092-8						
5	Singh Rajender, "Introduction to Basic Manufacturing Process and Workshop Technology", New Age International, New Delhi; 2014, ISBN: 978-81-224-3070-7						
References [Mechanical]							
1	W.A.J. Chapman, "Workshop Technology Volume I", CBS Publishing & Distributors, Delhi. [ISBN-13:9788123904016] 2001						
2	Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGraw Hill House, 2017						
3	Gowri P. Hariharan and A. Suresh Babu, "Manufacturing Technology – I" Pearson Education, 2008						
	Text Books [Civil]						
1	Hiraskar G. K., "Basic Civil Engineering", DhanpatRai publications, 1st Edition,2007						
2	Gole L.G., "Introduction to Civil Engineering", Mahu Publisher House, 4 th Edition, 2005						
3	Bhavikatti S.S., "Basic Civil Engineering", New Age Publications, 2010						
	References [Civil]						
1	Duggal S. K., "Surveying (Vol-I)", Tata McGraw Hill, 4 th edition 2013						
2	Bindra S. P., Arora S. P., "Building Construction", DhanpatRai publication, 5 th edition, 2012						
	Useful Links						
1	https://www.ylab.co.in/broad.area_machanical_anginearing						

1	https://www.vlab.co.in/broad-area-mechanical-engineering
---	----------------------------------------------------------

						CO-I	PO Ma	pping							
		Programme Outcomes (PO) PSO													
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	3		1							1		1			
CO2	3		1												
CO3						2				1					
The stren	gth of 1	nappir	ig is to	be wri	itten as	,1,2,3;	Where	e, 1: Lo	w, 2:1	Mediu	m, 3: F	ligh			

	Assessment						
There are three IMP: Lab ESE	There are three components of lab assessment, LA1, LA2 and Lab ESE. IMP: Lab ESE is a separate head of passing. LA1, LA2 together is treated as In-Semester Evaluation.						
Assessment	Based on	Conducted by	Typical Schedule (for 26-week	Marks 30 30			
			Sem)				
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 6 Marks Submission at the end of Week 6	30			
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 7 to Week 12 Marks Submission at the end of Week 12	30			
Lab ESELab activities, attendance, journalLab Course FacultyDuring Week 15 to Weel Marks Submission at the Week 18				40			
Week 1 indica	tes starting week of a	semester The typi	cal schedule of lab assessments is show	'n			

Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 26-week semester. The actual schedule shall be as per academic calendar. Lab

activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments.

	Walchand College of Engineering, Sangli (Government Aided Autonomous Institute)							
			AY	Y 2023-24				
	Course Information							
Progra	amme		First Year B. Tec	h. Electrical				
Class,	Semester		First Year B. Tec	h., Sem I				
Cours	e Code		7EL151					
Cours	e Name		Fundamentals of	Electrical Enginee	ring Lab			
Desire	d Requisi	ites:	NIL					
r	Feaching	Scheme		Examination	Scheme ((Marks)		
Practi	cal	2 Hrs/ Week	LA1	LA2	Lab l	ESE		Total
Intera	ction	-	30	30	40)		100
				Cr	edits: 1			
			Cour	se Objectives				
1	This cou	rse intends to de	emonstrate basic ki	nowledge of Electr	ical engin	eering.		
2	It intend	s to develop skil	lls to recognize wo	rking principle, co	nstruction	and types	of el	ectrical
	Machine	S.	o Outcomos (CO)	with Dloom's To	I ON OWNER I	aval		
At the	end of the	course the stur	<u>e Outcomes (CO)</u> dents will be able t		konomy L	Level		
At the		course, the stud	dents will be able t	0,		Bloom'	s	Bloom's
СО		Cou	rse Outcome State	ement/s		Taxonon	ny	Taxonomy
						Level		Description
CO1	Describ	e basic concepts	of electrical circu	its and various theo	orems.	II		Understanding
CO2	Demons	trate the use of	transformers and A	AC/DC machines.		III		Applying
			ist of Europinon	ta / I ab A ativitia	Tonia			
List of	Tonia ()	Annliaghla fan 1	List of Experiment	its / Lab Activities	a ropics			
1 To s	tudy AC a	and DC machine	es parts and their fu); inctions				
2. Stud	ly of AC/I	DC motor starter	rs.					
3. To s	tudy serve	o motor/ steeper	motor with applic	ation.				
4. Stud	ly of instal	llation technique	es using fuse, MCI	B and MCCB.				
		• •,•						
List of	Lab Acti	vities:						
1. Elec	tudy serie	s-parallel RI R	C and RI C circuit	r c				
2. TO S	verifv KVI	L and KCL theo	rems.					
4. To s	tudy spee	d control technic	ques of dc motor.					
5. To s	study speed	d control technic	ques of induction r	notor.				
6. To p	perform lo	ad test on transf	ormer.					
7. Find	l out equiv	alent resistance	in series and paral	llel connection.	a ainanit			
9 Mea	isure Volta	age current and	power factor of si	ase A.C., K-C sells ngle phase A C R	-I series (rircuit		
<i></i>			power factor of sh	ingie pliuse rice., it		incuit.		
			Т	extbooks				
1	D. C.	. Kulshreshtha, '	"Basic Electrical E	ngineering", 1 st rev	vised editi	on McGrav	w Hil	11, 2012.
2	D. P.	Kothari and I. J	J. Nagrath, "Basic	Electrical Engineer	ring", Tata	a McGraw	Hill,	2010.
			R	eferences	• •• - nd	 . =		
1	V. N	. Mittle and Arv	und Mittal, "Basic	Electrical Enginee	rıng", 2 nd	edition, Ta	ita M	cGraw Hill.
			T T	oful I intra				
			US	erui Liliks				

1 Virtual Labs, An Initiative of Ministry of Education Under the National Mission on Education through ICT, 1. https://www.vlab.co.in/broad-area-electrical-engineering 2. http://vlabs.iitkgp.ac.in/asnm/#	'n
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

	CO-PO Mapping													
		Programme Outcomes (PO)							PS	50				
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3													
CO2	3								2					
The stre	The strength of mapping is to be written as 1,2,3; where, 1: Low, 2: Medium, 3: High													
								~ ~						

Each CO of the course must map to at least one PO, and preferably to only one PO.

	Assessment						
There are three	There are three components of lab assessment, LA1, LA2 and Lab ESE.						
IMP: Lab ESE	is a separate head	of passing.(min 40 %), LA	1+LA2 should be min 40%				
Assessment	Based on	Conducted by	Typical Schedule	Marks			
	Lab activities,		During Week 1 to Week 8				
LA1	attendance,	Lab Course Faculty	Marks Submission at the end of	30			
	journal		Week 8				
	Lab activities,		During Week 9 to Week 16				
LA2	attendance,	Lab Course Faculty	Marks Submission at the end of	30			
	journal		Week 16				
	Lab activities,	Lab Course Faculty and	During Week 18 to Week 19				
Lab ESE	journal/	External Examiner as	Marks Submission at the end of	40			
	performance	applicable	Week 19				

Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

Walchand College of Engineering, Sangli							
	AY 2022-23						
	Course Information						
Progra	amme		B.Tech. All Branc	hes			
Class,	Semest	er	First Year B. Tech	n. SEM-I & II			
Cours	e Code		7VS151				
Cours	e Name		Engineering Skills	s-I			
Desire	d Requ	isites:					
Т	eaching	Scheme		Examination Second	cheme (N	Marks)	
Lectur	re	-	LA1	LA2	ES	SE	Total
Tutori	ial	-	30	30	4	0	100
Practi	cal	2Hrs/Week		-			
Intera	ction	-		Cred	its: 1		
			Cou	rse Objectives			
1	To tra	in the students	to use different tool	s and equipment invo	olved in t	the manufactu	uring processes
2	To de	velop the skills	to handle the basic	cutting tools and dev	vices rec	quired for var	ious
	manuf	acturing proce	sses, interpret the gi	iven job drawing, sele	ect releva	ant fitting too	ls
3	To pre	pare the studer	nts to carry out the v	various operations to	make a f	inished produ	ıct
A (1) -			rse Outcomes (CO)) with Bloom's Tax	onomy I	Level	
At the	end of t	ne course, the	students will be able	e to,			
СО		Course	Outcome Stateme	nt/s		Bloom's	s Taxonomy
		004150				Level	Description
COL	Descr	be the basic m	ethods, operations a	and processes of		Ι	Understand
	manuf	acturing					
CO2	Illustr	ate the simple i	nechanical systems	, machines, equipmer	nt, the	II	Apply
<u> </u>	basic v	working of cut	ing tools for manuf	acturing.		III	Apply
C03	Check	verticality and	l level difference	, measuring tools			Apply
C04	Estim	ate the material	requirement in con	structed structure.			Apply
CO6	Sketch	n building plan	· · · · · · · · · · · · · · · · · · ·			III	Apply
		0.1					
			List of Exper	riments / Lab Activi	ties		
List of	' Mecha	nical Enginee	ring Skills:				
1.	Introd Perfor type] (uction to wood m Planning op (4 Hrs)	working, the hand eration, cutting by	tools required and m chisel to prepare sm	achines: all mobi	le phone sta	nd [Square joint
2.	 Introduction to fitting shop tools, equipment/machines: Job consisting of male and female parts viz.one with groove, another with matching projection, holes on both and their assembly, as per given job drawing. operations to be performed: Marking, Punching, Saw cutting, Drilling, Edge filing operations (4 Hrs.) 						
5.	follow	ing operations:	Marking, Cutting,	bending/folding (4 H	li tray a [rs.)	s per given j	ob drawing with
List of	Civil E	Ingineering Sk	tills:				
1. 2. 3.	Establ Line o Estima a) B b) C	ishing verticali ut of building p tte the quantitie rickwork oncrete compo	ty, right angle corne blan on site (2 Hrs) es/ material requiren nents/elements	er, and level difference nent for (4Hrs)	e in mas	onry construc	ction (2 Hrs)

4.	Sketching of building plan and calculation of FSI (2Hrs)
	Text Books [Mechanical]
1	Raghuwanshi B. S., "A Course in Workshop Technology I", Dhanpat Rai Publications,10 th Ed., 2009
2	S. K. Hajra Choudhury and A. K. HajraChoudhary, "Workshop Technology" – Vol-I [Manufacturing Processes]", Media Promoters and Publishers Pvt. Ltd., 10 th edition, reprint 2001
3	Bawa H S. "Workshop Practice," McGraw Hill Education, Noida, 2 nd edition ,2009 ISBN-13: 978-0070671195
4	Gupta, J. K., Khurmi, "A Textbook of Manufacturing Process" (Workshop Tech.) R S S Chand and Co., New Delhi,2020, ISBN:81-219-3092-8
5	Singh Rajender, "Introduction to Basic Manufacturing Process and Workshop Technology", New Age International, New Delhi; 2014, ISBN: 978-81-224-3070-7
	References [Mechanical]
1	W.A.J. Chapman, "Workshop Technology Volume I", CBS Publishing & Distributors, Delhi. [ISBN-13:9788123904016] 2001
2	Rao P. N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGraw Hill House, 2017
3	Gowri P. Hariharan and A. Suresh Babu, "Manufacturing Technology – I" Pearson Education, 2008
	Text Books [Civil]
1.	Gole L. G., "Introduction to Civil Engineering", Mahu Publisher House, 4th Edition, 2005
2.	Bhavikatti S. S., "Basic Civil Engineering", New Age Publications, 2010
	References [Civil]
1	Bindra S. P., Arora S. P., "Building Construction", Dhanpat Rai publication, 5 th edition, 2012
	Useful Links
1	https://www.vlab.co.in/broad-area-mechanical-engineering
2	https://drive.google.com/file/d/1tp5yV2ghp_Slub58S7iKnvvJyoEwQVYq/view
3	https://www.youtube.com/@workshop.supdtjmdabir5653
4	https://www.youtube.com/watch?v=gPaBULgRRuM
5	https://www.youtube.com/watch?v=-f7tTNRH_04
6	https://www.youtube.com/watch?v=UD3q5R0N8U4
7	https://www.youtube.com/watch?v=uapzeNwKq4U
8	https://www.youtube.com/watch?v=jbRgJblGAwc
9	https://www.youtube.com/watch?v=TeErxz59Sss
10	https://www.youtube.com/watch?v=F4SwbJTeuB8
11	https://www.youtube.com/watch/v=cuv-tP6JHEI
12	https://www.youtube.com/watch?v=v011_BiLyFi
13	https://www.youtube.com/watch?v=AMQOK0Jg504
14	https://www.youtube.com/watch?v=0drBprNJNar
15	https://www.youtube.com/watch?v=uAIAIIqOIII0AW
17	https://www.youtube.com/watch?v=TO_NeHenT9Y
18	https://www.youtube.com/watch?v=rv_rvenenry1
19	https://www.youtube.com/watch?v=iDL_sMvXsYs
20	https://www.youtube.com/watch?v=xZotyNdGHvs
20	

CO-PO Mapping															
	Programme Outcomes (PO) Mechanical PSO														
	1	1 2 3 4 5 6 7 8 9 10 11 12 1 2 3													
CO1				1											
CO2				1											
CO3 1 1															
The strength of mapping is to be written as 1,2,3; Where, 1: Low, 2: Medium, 3: High															

There are three components of lab assessment, LA1, LA2 and Lab ESE. IMP: Lab ESE is a separate head of passing. LA1, LA2 together is treated as In-Semester Evaluation.													
Assessment	Based on	Conducted by	Typical Schedule (for 26-week	Marks									
	Sem)												
	Lab activities	Lab Course	During Week 1 to Week 6										
LA1	LA1 Lab activities, Lab Course Marks Submission at the end of 30												
attendance, journal Faculty Week 6													
	Lab activities	Lab Cauraa	During Week 7 to Week 12										
LA2	Lab activities,	Lab Course	Marks Submission at the end of	30									
	attendance, journal	гасину	Week 12										
	Lab activities	Lab Cauraa	During Week 15 to Week 18										
Lab ESE	Lab activities,		Marks Submission at the end of	40									
	attendance, journal	Faculty	Week 18										
Week 1 indicates starting week of a semester. The typical schedule of lab assessments is shown, considering a 26-week semester. The actual schedule shall be as per academic calendar. Lab													

activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments.

Semester II Professional Core (Theory)

		Walc	hand College	of Engineering	g, Sangli								
			AY	2023-24	· · · /								
			Course l	Information									
Progr	amme		B.Tech (Electrica	ul/Electronics)									
Class,	Semester		First Year B. Tec	h., Sem II									
Cours	e Code		7MA103										
Cours	e Name		Engineering Math	hematics- II (Elect/	ELN)								
Desire	ed Requisi	tes:	Mathematics cour	rse at Higher Secon	ndary Junior Colleg	e							
			1										
	Teaching	Scheme		Examination S	cheme (Marks)								
Lectu	re	3 Hrs/week	MSE	ISE	ESE	Total							
Tutor	ial	1 Hrs/week	30	20	50	100							
				Cred	its: 04								
	Course Objectives												
1	Familiari	ze the students	with techniques in	multivariate integ	ration and Differen	tial equation.							
2	Awarene	ess adout Mathen	natics rundamental	necessary to solve	and analyse the En	gmeering							
3													
4	<u>,</u> 1												
		Course	Outcomes (CO) w	ith Bloom's Taxo	nomy Level								
At the	At the end of the course, the students will be able to,												
C01	Understa problem	and the Mather	matical Tools that	t are needed to s	solve Engineering	Understanding							
CO2	Solve the	e problems in mu	ıltivariable calculu	s,		Applying							
CO3	Apply th	e statistical tech	nique to interpret t	the data		Applying							
CO4													
	•												
Modu			Module Co	ontents		Hours							
Ι	Beta Defir	Gamma Functi ition of Beta, Ga	ions: amma functions and	l properties of Beta	Gamma functions	6							
II	Curv Traci	ve tracing ng of curves for	Cartesian and pola	r coordinate		6							
	Mult	ivariable Calcu	lus:			8							
III	Mult varia Mult Volu	iple Integrals: Do bles (Cartesian t iple integrals suc me of solid.	buble integrals, cha to polar) Evaluatio ch as Area enclose	nge of order of inte on of triple integra ed by plane curves	gration, change of ls, Application of , Mass of lamina,								
	Line	ear Differential	equations of nth o	order with constan	t coefficient:	8							
IV	Linea funct	ar Differential ion, Particular Ir	equation with co ntegral	onstant coefficient	, Complementary								
	Appl	ications of L.D.	E with constant C	Coefficient:									
v	Appl	ications of L.D.H	E with constant Coe	efficient to Electric	al Engineering	4							
VI	Stat	istics:											

	Correlation, Linear regression, Curve fitting (a) straight line (b) logarithmic	7									
	curve,										
	Textbooks										
1	P. N. and J. N. Wartikar, "A Text Book of Applied Mathematics", Vol I ar Griha Prakashan, Pune, 2006	nd II", Vidyarthi									
2	B.S. Grewal, "Higher Engineering Mathematics", Khanna Publication, 44th Edition, 2017.										
3	S.C. Gupta, "Fundamentals of Mathematical Statistics and probability" & Sons, 2014.	", Sultan chand									
4											
	References										
1	Erwin Kreyszig, "Advanced Engineering Mathematics", Wiley Eastern Lim 2015, 10th Edition	nited Publication,									
2	Wylie C.R, "Advanced Engineering Mathematics", Tata McGraw Hill Publica 1999	ation, 8th Edition,									
3	H. K. Dass, "Higher Engineering Mathematics", S. Chand & Company Ltd.,	1 st Edition 2014.									
4	S. S. Sastry, "Engineering Mathematics (Volume-I)", Prentice Hall Publica 2006	tion, 3rd Edition									
	Useful Links										
1	https://www.youtube.com/watch?v=KgItZSst2sU										
2	https://nptel.ac.in/courses/111105121										
3											
4											

CO-PO Mapping														
	Programme Outcomes (PO)												PSO	
	1 2 3 4 5 6 7 8 9 10 11 12											1	2	
CO1	2			1										
CO2	2			1										
CO3	2			1										
CO4														
The strength of mapping is to be written as 1: Low, 2: Medium, 3: High														
Each CO of the course must map to at least one PO.														

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

	Walchand College of Engineering, Sangli											
			(Government Aided	Autonomous Institute)								
			AY	2023-24								
			Course	Information								
Progra	amme		B. Tech. (Electric	cal Engineering)								
Class,	Semester		First Year B. Tec	h., Sem I								
Cours	e Code		7EN106									
Course	e Name		Basic Electronics	Engineering								
Desire	d Requisi	tes:	Physics course at	Secondary and Higher	secondary level							
	-				•							
	Teaching	Scheme		Examination Schen	ne (Marks)							
Lectur	re	3 Hrs/week	MSE	ISE	ESE	Total						
Tutori	ial	-	30	20	50	100						
				Credits: 3	3							
			Course	Objectives								
1	1 To explain the difference between analog and digital electronic circuits											
2	To expla	in the realization	n of a logic using c	ombinational and seque	ntial circuits.							
3	To explai	in the working c	of diode circuits, tra	ansistorized and op-amp	based amplifier	rs.						
4	To build	and test simple	electronic circuits.	1	•							
		Course	Outcomes (CO) w	ith Bloom's Taxonomy	v Level							
At the	end of the	course, the stud	ents will be able to),								
со		Bloom's Taxonomy Level	Bloom's Taxonomy Description									
CO1	Explain th	ne fundamentals	of digital electronic	S.	Ι	Understand						
CO2	Explain th	ne working of an	plifiers and oscillat	tors.	I	Understand						
CO3	Explain th	ne working of an	plifiers and oscillat	tors.	III	Apply						
CO4	Implemer	nt small applicati	on circuit using op-	amp and IC 555.	III	Apply						
Modu	le		Module C	Contents		Hours						
Ι	Fund Boold AOI full a count	lamentals of Dig ean algebra, SOF to NAND/NOR dder and subtrac ters.	gital Electronics and POS terms, K- logic. Combinationa tor, 1-bit and 2-bit c	map reduction technique al Circuits: half adder and comparator, Sequential C	, converting l subtract 1-bit ircuit flip-flop,	7						
II	Diod P-N j	es and its Appli unction diode, d ers and clampers	cations iode characteristics, : Zener diode, LED	half-wave and full-wave Photodiode and Solar C	rectifier ell.	4						
III	Basic Trans biasin	cs of Transistor istor structure, t g methods, trans	ypes (BJT, FET as istor as a switch, In	nd MOSFET), transistor troduction to CMOS circ	configuration uit.	4						
IV	Amp Ampl comm ampli	lifiers and Osci ifier fundamentation collector an fier, Oscillators:	llators als, small signal a plifier; JFET/MOS classification, RC p	amplifiers: common em SFET common source/ o bhase shift oscillator.	itter amplifier common drain	5						
VOperational Amplifier Basic op-amp configuration, op-amp powering, feedback in op-amp circuit ideal op-amp circuits analysis, inverting, non-inverting amplifier, summing amplifier, difference amplifier, unity gain buffer; IC555 timer.5												
VI	Regu Block series	lated DC Power diagram of reg and shunt regula	r Supply gulated dc power s ator, op-amp based y	supply, Zener diode vol voltage regulator.	tage regulator	3						
			Тех	rtbooks								

Course Contents for B. Tech. Programme, Department of Electronics Engineering, AY 2023-24

1	R. P. Jain, "Modern Digital Electronics," 4th edition, Tata McGraw Hill, 2009.
2	Anand Kumar, "Fundamentals of Digital Circuits," 4th edition, PHI Learning Private Limited,
	2016.
3	Robert L. Boylestad, "Electronic Devices and Circuit Theory," Pearson, 2015.
4	Ramakant Gaikwad, "Op-amp and Linear Integrated Circuits", 4th edition, Pearson, 2015.
	References
1	M. Morris Mano, "Digital Design," Pearson Education, 2011.
2	Donald A. Neamen, "Electronic Circuit Analysis and Design," McGraw-Hill Education, 2011.
2	Robert F. Coughlin and Frederick F. Driscoll, "Operational Amplifiers and Linear Integrated
3	Circuits," Pearson Education, 2009.
	Useful Links
1	https://nptel.ac.in/courses/108101091
2	https://nptel.ac.in/courses/108105113

	CO-PO Mapping														
	Programme Outcomes (PO)													PSO	
	1 2 3 4 5 6 7 8 9 10 11 12												1	2	
CO1	2	2													
CO2	2	2													
CO3	2	2													
CO4	2	2													
The streng	The strength of mapping is to be written as 1: Low, 2: Medium, 3: High														
Each CO of the course must map to at least one PO.															

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

		Walc	hand College	of Engineering, S	angli								
			AY	2023-24									
			Course l	Information									
Progra	amme		First Year B. Tec	h. Electrical									
Class,	Semester		First Year B. Tec	h., Sem II									
Cours	e Code		7EL102										
Cours	e Name		Electrical Measur	ement and Instrumenta	tion								
Desire	ed Requisi	tes:	Fundamentals of	Electrical Engineering									
	Teaching	Scheme		Examination Sche	ne (Marks)								
Lectur	re	3 Hrs/week	MSE	ISE	ESE	Total							
Tutor	ial		30	20	50	100							
	Credits: 3												
	1		Course	Objectives									
1	This cour	rse intends to pr	ovide basic concep	ts of errors in measurer	nents and basic	fundamentals of							
	Measurin	ig systems, fori	nal representation,	computational metho	as, notation, an	d vocabulary of							
	It is aim	ed to impart ski	ills to classify brid	ges, measuring instru	nents and equir	ment's and also							
2	demonstr	ates digital inst	ruments, advance ir	struments.									
3	To impar	t basic knowled	ge of transducer.										
Course Outcomes (CO) with Bloom's Taxonomy Level													
At the	At the end of the course, the students will be able to,												
СО		Cours	e Outcome Statem	ent/s	Taxonomy	Taxonomy							
					Level	Description							
CO1	Describe	fundamental co	ncepts of measurer	nent and identify errors	i I	Remembering							
	in measu	rement and its s	tatistics.	· · · ·		Trememoering							
CO2	explain	working prin	ciple and mech	anism of measuring		Understanding							
CO3	Impleme	nt a proper mea	suring instrument	and modern techniques	;								
	for meas	urement of elec	ctrical and physica	l parameters for giver	III	Applying							
	application	on.											
	-												
Modu	ile		Module C	ontents		Hours							
	Intro	duction	and Standards S	tructure of Massurer	nont Systems								
T	Instru	, Dimensions iment Types-A	allo Stalloalos, S	Static Characteristics	& Dynamic	6							
· ·	Chara	acteristics of Ins	truments, Measure	ment Errors, Sensors a	nd Transducers	0							
	- Ove	rview, Definitio	on, Classification, S	election Criteria.									
	Meas	uring Instrum	ents	• • •	0 5								
	Indica	ating, Integrat	ing, Recording	Instruments, Analog	g & Digital								
п	Dam	iments. Essentia	Construction We	truments Deflecting, C	ontrolling And	7							
	Adva	ntages & Dis	advantages of M	oving Iron (MI) (A	ttraction And	,							
	Repu	lsion), Permane	nt Magnet Moving	Coil (PMMC) & Dyna	mometer Type								
1	Traction	manta Danas E	vtancion of MI Inc	truments									

	Measurement of Power and Energy								
III	Active And Reactive Power Measurement In Three Phase System for Balanced and Unbalanced Load Using Two Wattmeter Method & One Wattmeter Method. Construction, Working Principle, Torque Equation of Single Phase Conventional (Induction Type) Energy Meter, Calibration of Energy Meter, Digital Energy Meter	6							
	Measurement of Electrical Quantities								
IV	Measurement of Low, Medium and High Resistance, Wheatstone Bridge, Kelvin's Double Bridge, Ammeter-Voltmeter Method, Megger, Earth Tester for Earth Resistance Measurement, Maxwell's Bridge, Hay's Bridge, Anderson's Bridge, Schering Bridge and Wien's Bridge.	6							
	Measurement of Non-electrical Quantities								
V	Force Measurement Using Strain Gauges, Displacement Measurements Using LVDT, Temperature Measurement Using RTD, Thermistor, Thermocouple, Bellows and Diaphragm. Flow Measurement Using Rotameter, Electromagnetic Flow Meter. Speed Measurement Using Magnetic Pick-Up And Photoelectric Pick-Up.	8							
	Recent Developments								
VI	DSO, Power Analyzer, Wave Analyzer, Harmonic Distortion Analyzer, Instrument Transformers, Digital Ammeter & Voltmeter	6							
	Textbooks								
1	1 Alan Morris "Principles of measurement and instrumentation", Prentice Hall- India, 2004 ISBN: 0134897099.								
2	A. K. Sawhney, "A Course in Electrical and Electronics Measurement and In Dhanapat Rai & Company, New Delhi, reprint, 17th Edition, 2005.	nstrumentation",							
3	Rangan, Mani and Sharma, "Instrumentation Devices and Systems", Tata McG Delhi, 2nd Edition.	raw Hill, New							
4	Helfrick and Cooper, "Modern Electronic Instrumentation and Measureme Pearson, 2007	nt Techniques"							
5	C. D. Johnson, "Process Control Instrumentation Technology", Pearson Educat	ion.							
	References								
1	M. A. Baldwin, "Fundamentals of Electrical Measurements", Publication – Ly Ludhiyana.	all Book Depot,							
2	Albert D. Helfric, "Modern Electronics measurement & instruments", PHI Ltd,	2003.							
3	Doebelin E. O., "Measurement Systems", McGraw Hill Book Co.								
4	Patranabis D, "Sensors and Transducers", Wheeler Publishing Co., Ltd. New D	Delhi.							
5	Murthy D. V. S., "Transducers and Instrumentation", Prentice Hall of India Delhi.	Pvt. Ltd., New							
	Useful Links								
1	https://nptel.ac.in/courses/108/105/108105153								
2	https://nptel.ac.in/courses/108/105/108105064								
3	elearning.vtu.ac.in/, nptel.iitg.ernet.in/								

CO-PO Mapping															
	Programme Outcomes (PO)													PSO	
	1	1 2 3 4 5 6 7 8 9 10 11 12												2	
CO1	3														
CO2	2	1													

CO3		2	1											
The streng	The strength of mapping is to be written as 1: Low, 2: Medium, 3: High													
Each CO of the course must map to at least one PO.														

Assessment
The assessment is based on MSE, ISE and ESE.
MSE shall be typically on modules 1 to 3.
ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can
be field visit, assignments etc. and is expected to map at least one higher order PO.
ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on
modules 4 to 6.
For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in

ESE are needed. (ESE shall be a separate head of passing)

Professional Core (Lab)

Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

AY 2023-24

	Course Information	
Programme	B.Tech.	
Class, Semester	First Year B. Tech. Sem I/II	
Course Code	7CH155	
Course Name	Engineering Chemistry Lab	
Desired Requisites:	Chemistry course at secondary and higher secondary level	

Teaching S	Scheme	Examination Scheme (Marks)									
Practical	2Hrs/ Week	LA1	LA2	Lab ESE	Total						
Interaction	0Hrs/ Week	30	30	40	100						
				Credits: 1							

Course Objectives

To make the student familiar with analytical techniques.

To provide hands on practice of Instrumental and titrimetric analysis.

Course Outcomes (CO) with Bloom's Taxonomy Level

At the end of the course, the students will be able to,

1

2

со	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
CO1	Apply principles of Volumetry/gravimetry to quantitative analysis for water quality parameter, metal and alloys.	Ш	Applying
CO2	Demonstrate use of instrument for quantitative analysis.	III	Applying
CO3	Experiment physical/Chemical characteristics of material. Execute preparation of product.	III	Applying

List of Experiments (Minimum 8 experiments from the following list)

Sr. No	List of Experiments	Hours
1	Estimation of hardness of water by EDTA method (Complexometric Titration).	
2	Estimation of alkalinity of water (Neutralization Titration).	
3	Estimation of Dissolved Oxygen in water (Iodometric Titration).	
4	Estimation of Chloride content in water (Argentometry).	2 Has as also
5	Demonstration of pH meter & pH metric titration.	2 Hrs. each
6	Determination of strength of acid/base by conductometrically.	Expt.
7	Colorimetric estimation of Copper.	
8	Estimation of copper from Bronze. (Iodometric Titration).	
9	Estimation of Zn from Brass (Displacement Titration).	
10	Determination of purity of Iron (Redox Titration).	
11	Determination of viscosity of given liquid. by Ostwald viscometer.	
12	Determination of corrosion rate by weight loss method	
13	Gravimetric estimation of Ba from BaSO ₄ as BaO.	
14	Preparation of Resin	
	List of Topics(Applicable mode):	
	Verification of Calcium content from Cement/ Limestone/Eggs she tablet.	ells/Calcium

Dr. Doellas. Pao) A. A. Powar

							Tex	tbo	oks					
1	C U	ollege nivers	Pract	ical ress.	Cher	nistr	y, V	K /	Ahalı	iwaliya	. Sunita	a Dhingra	, Adar	sha Gulati ,
2	L R	aborat ai& C	tory M co.	anua	l on I	Engin	eering	Ch	emist	ry by S	Sudha Ra	ani And S	.K. Bas	shin, Dhanpat
							Ref	erer	ices	-			WOR	Concelli
1	E	ngine	ering C	hem	istry	Labo	oratory	Ma	nual,	Depart	tment of	Chemistry	y WCE	, Sangli.
2	J	Men nalysi:	dham, s", Vog	R.C gels,	Pears	enney son E	, J.D. ducati	. B on, i	arnes 2008.	, M.J. 6th Ec	K Thou lition.	mas, "Qu	antitati	ve Chemicai
							Usef		inko					
	1				du/or	odan	User	ione	JIIIKS	Lengin	eering/s	cience-in-	motion	/labs-
1	h e	quipm	ent/ch	emist	try-la	b-exp	perime	nts	e-and	I-engin	ieering/s		motion	1405
2	h	ttps://	edu.rsc	.org/	resou	irces/	collect	tion	s/clas	sic-che	emistry-	experimen	ts	
						(CO-PO) M	appi	ng				
				P	rogr	amm	e Out	com	es (P	O)				PSO
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3													
CO2	3													
CO3	3													
The streng	th of r	nappi	ng is to	bev	vritte	n as	1,2,3; 1	whe	re, 1:	Low, 2	2: Mediu	ım, 3: Higl	h	
Each CO c	of the o	course	must	map	to at	least	one PC), ai	nd pro	eferably	y to only	one PO.		
The Sec							Ass	essi	nent					
There are to IMP: Lab	three c ESE is	compo s a sep	nents o parate h	of lab	o asse	ssme	nt, LA .(min 4	1, L 40 %	.A2 a 6),LA	nd Lab) ESE. 2 should	be min 40)%	
Assessn	nent	I	Based of	on	Co	nduc	ted by	/		Турі	ical Sch	edule		Marks
LA1 LA1 LA1 LA1 LA1 Lab activities, attendance, journal					Lab Course Faculty				Durir Mark Week	g Weel s Subm 8	of	30		

LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 8 Marks Submission at the end of Week 8	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 9 to Week 16 Marks Submission at the end of Week 16	30
Lab ESE	Lab activities, journal/ performance	Lab Course Faculty	During Week 18 to Week 19 Marks Submission at the end of Week 19	40

Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing experiments, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

A. Dodlas. Pas)

		Wa	alchand Colleg	e of Engineering	g, Sangli								
(Government Aided Autonomous Institute) AY 2023-24													
				Y 2023-24									
Ducan			Cours	e Information	T \								
Progra	amme		B.Tech. (Electrica	I, Electronics, CSE, I	1)								
Class,	Semest	ter	First Year B. Tech	i., Sem I &II									
Cours	e Code		7ME108										
Cours	e Name	2	Engineering Graph	hics Lab									
Desire	ed Requ	iisites:	Basic Knowledge	of Computer									
Т	oaching	Schomo		Evamination Sci	home (Marks)								
Practi	cal	2Hrs/Week	ΤΑΙ		FSF	Total							
Intere	$\begin{array}{c c c c c c c c c c c c c c c c c c c $												
			50	JU Credit	40	100							
				Creun	.5. 2								
			Cour	se Objectives									
1	To im	part the technic	ues of engineering	graphics.									
2	To pre	epare the studer	nts for applying know	wledge of engineering	g graphics in real li	fe drawings.							
3	To de	velop the skills	of students for eval	uating CAD software	for its applications	5							
A (1	1.0		rse Outcomes (CO)	with Bloom's Taxo	nomy Level								
At the	end of	the course, the	students will be able	e to,	Ploom's	Ploom's							
СО	Cours	se Outcome St	atement/s		Taxonomy	Taxonomy							
	Court				Level	Description							
CO1	Under	stand the basic	principle of Engine	ering graphics.	II	Understanding							
CO2	Draw	different views	of components usir	ng the first angle	III	Applying							
	projec	tions method.		1									
CO3	Apply	the knowledge	e of engineering grap	phics in real life	111	Applying							
	applic	auons.											
			List of Experi	ments / Lab Activiti	es								
List of	f Exper	iments:											
Subm	ission o	f drawing on f	ollowing topics (Ar	ny two sheets on CA	D)								
1: Plar	he Curv	es and Conic Se	ections (Min. 5 Prob	blems)									
2: Proj	ections	of Planes and L	Lines (Min. 5 Proble Solids (Min. 6 Probl	ems)									
4: Dev	velopme	int of Lateral Su	urfaces (Min. 3 Prob	lems)									
5: Ortl	nograph	ic Projections (Min. 2 Problems))									
6: Isor	netric P	rojections (Min	. 2 Problems)										
1	Di		T	ext Books									
	Shah	N.D., Panchal	V.M. and Ingle P.R.	, Engineering Drawing	ig, Charotar Publis	hing House, 2014							
2	2008	M.D. and Kan	а Б.С., Engineering	g Drawing and Com	puter Graphics, Pe	earson Education,							
3	Agrav	wal B. and Agra	awal C. M., Enginee	ering Graphics, TMH	Publication, 2012.								
	0.0		, ,		7								
			R	leferences									
1	Naray	ana, K.L. and F	P Kannaiah, Text bo	ok on Engineering Di	rawing, Scitech Pu	blishers, 2008.							
2	Warre 2010	en J. Luzzader,	Fundamentals of E	ngineering Drawing,	Prentice Hall of I	ndia, New Delhi,							
3	Fredd McMi	erock E. Giese illan Publishing	cke, Alva Mitchell	others, Principles	of Engineering G	raphics, Maxwell							
			Us	seful Links									

1	https://nptel.ac.in/courses/112/103/112103019/
2	https://nptel.ac.in/courses/105/104/105104148/
3	https://www.youtube.com/watch?v=xXdpkQXDuMw&list=PL9RcWoqXmzaJT-fliqTSwUjWU4zCX_H2A

	CO-PO Mapping For Electrical Engineering Department																
	Programme Outcomes (PO)														PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2			
CO1	2				1					1		1					
CO2			1														
CO3					2					1							
The stren	gth of 1	mappir	ng is to	be wri	itten as	\$ 1,2,3;	Where	e, 1:Lo	w, 2:N	ledium	n, 3:Hig	gh					

	CO-PO Mapping Electronics Engineering Department																
	Programme Outcomes (PO)														PSO		
	1	1 2 3 4 5 6 7 8 9 10 11 12 1 2															
CO1	1				1					1							
CO2			1														
CO3					2					1							
The stren	The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High																

	CO-PO Mapping Computer Science and Engineering Department																
	Programme Outcomes (PO)														PSO		
	1	1 2 3 4 5 6 7 8 9 10 11 12 1 2															
CO1					3					1		1					
CO2			1														
CO3					3					1							
The stren	gth of 1	mappir	ig is to	be wr	itten as	\$ 1,2,3;	Where	e, 1:Lo	w, 2:N	ledium	, 3:Hig	gh					

CO-PO Mapping For Information Technology Department															
	Programme Outcomes (PO)												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1					3					1		1			
CO2			1												
CO3					3					1					
The stren	The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High														

	Assessment												
There are three components of lab assessment, LA1, LA2 and Lab ESE. M(P) Lab ESE is a surgest a based of page in a (min 40 %). LA1 + LA2 should be min 40%													
IVIP: Lab ESE is a separate nead of passing.(min 40%), LA1+LA2 should be min 40%													
Assessmen	Based on	Conducted by	Typical Schedule	Mark									
t				S									
LA1	Lab activities,	Lab Course	During Week 1 to Week 8	20									
	attendance, journal	Faculty	Marks Submission at the end of Week 8	50									
1.4.2	Lab activities,	Lab Course	During Week 9 to Week 16	30									
LAZ	attendance, journal	Faculty	Marks Submission at the end of Week 16	50									
	Lab activities	Lab Course											
Lob ESE		Faculty and	During Week 18 to Week 19	40									
Lab ESE	journal/ External		Marks Submission at the end of Week 19	40									
	performance	Examiner as											

		applicable							
Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing									
experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the									
nature and requirer	nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and								
related activities if	any.	-							

	Walchand College of Engineering, Sangli (Government Aided Autonomous Institute)									
AY 2023-24										
			Course	e Information						
Progra	Programme B.Tech. (Electronics Engineering)									
Class Semester First Year B. Tech Semester-I										
Cours	e Code		7CS107							
Cours	e Name		Computer Program	mming (C Program	nming)					
Desire	d Requisi	tes:	-							
,	Teaching	Scheme		Examination	Scheme (Marks)				
Practi	cal	2 Hrs/ Week	LA1	LA2	Lab l	ESE	Total			
Interaction 2 Hrs/ Week			30	30	40)		100		
				Cre	edits: 3					
	Course Objectives									
1	To under	stand problem s	olving and probler	n solving aspects.						
2	To learn	basics, features	and future of C pro	ogramming.						
3	To acqua string, po	aint with data t	ypes, input output and union in C.	t statements, decis	sion makir	ng, loopi	ng, fu	inctions, array,		
		Course	e Outcomes (CO)	with Bloom's Tax	konomy L	evel				
At the	end of the	course, the stud	lents will be able to),						
со		Cour	rse Outcome State	ement/s		Bloon Taxon Leve	n's omy el	Bloom's Taxonomy Description		
CO1	To und program	derstand the ming.	basics of pro	blem solving	and C	II		Understand		
CO2	To trans	late the algorit	hms to programs	(in C language).		III		Applying		
CO3	To test a errors.	and execute the	C programs and	correct syntax and	d logical	IV		Analyse		
		I	List of Experimen	ts / Lab Activities	/Topics					

List of Topics (Applicable for Interaction Mode):

Module I: Basics of Problem Solving & C Programming: General Problem Solving Concepts, Types of Problems, Problem Solving Strategies. **Program Design Tools:** Algorithms, Flowcharts and Pseudo-Codes. **C Programming:** Types of programming languages, Features of C, Basic Concepts, Structure of a C Program, Declarations, Constants, Variables, Data Types, Operators and Expressions, Input and Output Functions.

Module II: Decision Control Statements: Conditional Statements: If, If-else, Nested If, If-elseif Statements. **Iterative Statements:** While Loop, For Loop, Do While Loop, Break, Continue, Pass, else Statement used with Loops.

Module III: Functions: Need for functions, Definition, Function Call, Block Structure, Variable Scope, Return Type, Passing Arguments to a Function: Call by Reference, Call by Value, Recursive Functions.

Module IV: Array: Declaration, Initialization, Two-Dimensional Arrays, Multi-Dimensional Array. **String**: Declaration and Initialization of Strings, Array of Strings, String functions.

Module V: Pointers: Introduction, Definition and Declaration of Pointers, Address Operator, Pointer Variables. **Structures and Unions:** Declaration, Initialization, Accessing members of a Structure, Initializing a Union, Accessing the Members of a Union.

Module VI: File handling: Concept of a File, Types of File, File Operation, File functions, File opening modes in C, Reading, Write and Closing a File.

List of Experiments:

- 1. Program to simulate simple calculator that performs basic tasks such as addition, subtraction, multiplication and division.
- 2. Program to demonstrate different operators and their order precedence.
- 3. Program to accept the number and Compute a) square root of number, b) Square of number, c) Cube of number d) check for prime, d) factorial of number e) prime factors.
- 4. Program to accept a number from user and print digits of number in a reverse order.
- 5. Program to accept two numbers from user and compute smallest divisor and Greatest Common Divisor of these two numbers.
- 6. Program to find whether the number is positive / negative / zero using conditional statement.
- 7. Programs to show different types of iteration / loop.
- 8. Program to accept N numbers from user and compute and display maximum in list, minimum in list, sum and average of numbers.
- 9. Program to print the Fibonacci Series (with & without recursion).
- 10. Program to swap two number using function (Call by value & reference).
- 11. Program to demonstrate structure to array.
- 12. Program to demonstrate structure and union.
- 13. Program to demonstrate file handling.

Textbooks									
1	E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill.								
2	Yashavant Kanetkar, "Lets Us C", BPB Publication, 5th Edition, 20216.								
References									
1	Maureen Spankle, "Problem Solving and Programming Concepts", Pearson; 9 th edition, ISBN-10:								
1	9780132492645, ISBN-13: 978-0132492645.								
2	Herbert Schidt, C: The complete reference, 4th edition, McGraw Hill publication.								

Course Contents for B. Tech Programme First Year, AY 2023-24

3	Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India							
Useful Links								
1	https://www.programiz.com/c-programming							
2	https://www.w3schools.com/c/c_intro.php							
3	https://www.javatpoint.com/c-programming-language-tutorial							

	CO-PO Mapping														
	Programme Outcomes (PO)												PS	PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO1	3	2													
CO2	1		2		2										
CO3		2	1	2											
The stre	ngth of	f mappi	ng is to	be wri	tten as	1,2,3; v	where, 1	: Low,	2: Med	lium, 3	: High				

Each CO of the course must map to at least one PO, and preferably to only one PO.

Assessment											
There are three components of lab assessment, LA1, LA2 and Lab ESE.											
IMP: Lab ESE is a separate head of passing.(min 40 %), LA1+LA2 should be min 40%											
Assessment	Ient Based on Conducted by Typical Schedule										
	Lab activities,		During Week 1 to Week 8								
LA1	attendance,	Lab Course Faculty	Marks Submission at the end of	30							
	Submission		Week 8								
	Lab activities,		During Week 9 to Week 16								
LA2	attendance,	Lab Course Faculty	lty Marks Submission at the end of Week 16								
	Submission										
	Lab activities/	Lab Course Faculty and	During Week 18 to Week 19								
Lab ESE	submission/	External Examiner as	Marks Submission at the end of	40							
	performance	applicable	Week 19								
Week 1 indicate	es starting week o	f a semester. Lab activities/	Lab performance shall include performance	rming							

experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

	Walchand College of Engineering, Sangli										
AV 2023-24											
Course Information											
Progr	amme		B Tech (Electric	cal Engineering)							
Class	Semester		First Year B Tec	h Sem - I							
Cours	e Code		7EN156	II., 50III. 1							
Cours	e Name		Basic Electronics	Engineering Lab							
Desire	d Requisi	tes.	Physics course at	Secondary and His	wher secon	dary level					
Desire	u nequisi		Thysics course ut	becondury and mg							
r	Feaching	Scheme		Examination	Scheme	(Marks)					
Practi	cal	2 Hrs/ Week	LA1	LA2	Lab	ESE	Total				
Intera	ction		30	30	4	0	100				
				Cr	edits: 1	0	100				
			Cours	se Objectives							
	To provi	de knowledge o	of electronic compo	nents and circuits t	o first yea	r engineering s	students, so				
1	that they	can understand,	design and implem	nent simple analog	/ digital e	lectronic circui	ts.				
		Cours	e Outcomes (CO)	with Bloom's Tax	xonomy I	Level					
At the	end of the	course, the stud	dents will be able to	0,							
CO		C		4/-		Bloom's	Bloom's				
CO Course Outcome Statement/s						I axonomy	1 axonomy Description				
CO1	Identify	and explain use	ments.	II	Understand						
CO2	Explain	op-amp	 	Understand							
	based an	plifiers.		11							
CO3	Constru	ct digital IC, die	ode, transistor and c	pp-amp based circu	its.	III	Apply				
CO4	Build an	d Test simple e	lectronic circuits us	sing op-amp and IC	2555.	III	Apply				
]	List of Experimen	ts / Lab Activities	s/Topics						
List o	of Topics (Applicable for	Interaction mode)	: List of Lab Acti	vities: (m	inimum 08 ex	periments)				
1.	Identific	ation of compo-	nents and instrume	nts required in lab t	to perform	experiments i	n basic				
2	Realizat	ion of logic gate	es using basic build	ing block (NAND/	NOR)						
3.	Impleme	entation of com	pinational and seque	ential logic circuit.							
4.	Study of	p-n junction di	ode characteristics.	-							
5.	Study of	half-wave and	full-wave rectifier.								
0.	Study of Study of	f transistor as a s	pper and clamper classifier of switch and amplifier	r (BIT and IFFT)							
8.	Study of Study of	common emitte	er/common source a	amplifier.							
9.	Study of	inverting and n	on-inverting ampli	fier using op-amp.							
10). Impleme	entation of op-a	mp based application	ons (adder / subtrac	tor).						
Study.	I. Build an	d test multivibr	ator/ timer circuits	using IC 555.	omn hogo	d lin con volto a	a magyulatan)				
Study	JI legulate	u uc power supp	bry (Zener diode vo	nage regulator op-	-amp base	u illeai voltag	e legulator).				
			Т	extbooks							
1	R. P.	Jain, "Modern D	Digital Electronics."	4th edition, Tata M	lcGraw Hi	11, 2009.					
2	Anan	d Kumar, "Fund	amentals of Digital	Circuits," 4th edition	on, PHI Le	arning Private	Limited, 2016.				
3	Robe	rt L. Boylestad,	"Electronic Devices	and Circuit Theory	," Pearson	n, 2015.					
4	Rama	ıkant Gaikwad, ʻ	Op-amp and Linear	r Integrated Circuits	s", 4th edit	tion, Pearson, 2					
			R	eferences							
	M. M	orris Mano, "Di	gital Design," Pears	on Education, 2011			2011				
2	Dona	iu A. Neamen,	Electronic Circuit A	marysis and Design	i, wicGrav	w-mill Educatio	лі, 2011.				

Proposed Course Contents for B. Tech. Programme, Department of Electronics Engineering, AY 2023-24

3	Robert F. Coughlin and Frederick F. Driscoll, "Operational Amplifiers and Linear Integrated Circuits," Pearson Education, 2009.									
Useful Links										
1	https://nptel.ac.in/courses/122106025									
2	https://nptel.ac.in/courses/108101091									
3	https://nptel.ac.in/courses/108105113									

CO-PO Mapping													
Programme Outcomes (PO)											PSO		
1	2	3	4	5	6	7	8	9	10	11	12	1	2
2													
2													
			2					1					1
			2					1					2
The strength of mapping is to be written as 1,2,3; where, 1: Low, 2: Medium, 3: High													
	1 2 2	1 2 2 2 ngth of mappi	1 2 3 2	1 2 3 4 2	Program 1 2 3 4 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 1 2 2 2 2 1 2 2 2 2 1 1 2 2 2 2 1 1 2 2 1 2 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 1 1 1 1 1 1 1 1 1 1 1 1 1 </td <td>Programme O 1 2 3 4 5 6 2 2 2 2 2 2 2 2 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 <td< td=""><td>Programme Outcom 1 2 3 4 5 6 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 2 2 2 2 1 1 2 1 2 2 2 1 1 1 1 1 2 2 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 2 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 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 2 2 2 1 1 2 1 1 2 2 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 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 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td></td<><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 11 2 2 2 2 1 1 1 1 2 2 2 1 1 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 1 1 1 1</td><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 11 12 2 2 2 2 1 1 12 2 2 2 1 1 12 1 2 1 1 1 12 2 1 1 1 1 1 1 2 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1</td><td>Programme Outcomes (PO) PS 1 2 3 4 5 6 7 8 9 10 11 12 1 2 2 2 2 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 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 1<</td></td>	Programme O 1 2 3 4 5 6 2 2 2 2 2 2 2 2 2 2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 <td< td=""><td>Programme Outcom 1 2 3 4 5 6 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 2 2 2 2 1 1 2 1 2 2 2 1 1 1 1 1 2 2 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 2 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 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 2 2 2 1 1 2 1 1 2 2 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 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 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td></td<> <td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 11 2 2 2 2 1 1 1 1 2 2 2 1 1 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 1 1 1 1</td> <td>Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 11 12 2 2 2 2 1 1 12 2 2 2 1 1 12 1 2 1 1 1 12 2 1 1 1 1 1 1 2 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1</td> <td>Programme Outcomes (PO) PS 1 2 3 4 5 6 7 8 9 10 11 12 1 2 2 2 2 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 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 1<</td>	Programme Outcom 1 2 3 4 5 6 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Programme Outcomes (PO) 1 2 3 4 5 6 7 8 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 2 2 2 2 1 1 2 1 2 2 2 1 1 1 1 1 2 2 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 2 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 1 1 1 1 1 1 1 1 1 1 1 1 1	Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 2 2 2 1 1 2 1 1 2 2 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 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 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 11 2 2 2 2 1 1 1 1 2 2 2 1 1 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 1 1 2 1 1 1 1 1 1 1 2 1 1 1 1	Programme Outcomes (PO) 1 2 3 4 5 6 7 8 9 10 11 12 2 2 2 2 1 1 12 2 2 2 1 1 12 1 2 1 1 1 12 2 1 1 1 1 1 1 2 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1	Programme Outcomes (PO) PS 1 2 3 4 5 6 7 8 9 10 11 12 1 2 2 2 2 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 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 1<

Each CO of the course must map to at least one PO, and preferably to only one PO.

Г

		Assessment						
There are three	There are three components of lab assessment, LA1, LA2 and Lab ESE.							
IMP: Lab ESE	MP: Lab ESE is a separate head of passing.(min 40 %), LA1+LA2 should be min 40%							
A second se								

Assessment	Based on	Conducted by	Typical Schedule	Marks
	Lab activities,		During Week 1 to Week 8	
LA1	attendance,	Lab Course Faculty	Marks Submission at the end of	30
	journal		Week 8	
	Lab activities,		During Week 9 to Week 16	
LA2	attendance,	Lab Course Faculty	Marks Submission at the end of	30
	journal		Week 16	
	Lab activities,	Lab Course Faculty and	During Week 18 to Week 19	
Lab ESE	journal/	External Examiner as	Marks Submission at the end of	40
	performance	applicable	Week 19	

Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

	Walchand College of Engineering, Sangli							
	(Government Aided Autonomous Institute)							
			AY	Y 2023-24				
			Course	e Information				
Progra	amme		First Year B. Tec	h. Electrical				
Class, Semester First Year B. Tech., Sem II								
Course Code 7EL152								
Cours	e Name		Electrical Measur	rement and Instrum	nentation I	Lab		
Desire	d Requisi	tes:	Fundamentals of	Electrical Engineer	ring			
			·					
r	Teaching	Scheme		Examination	Scheme ((Marks)		
Practi	cal	2 Hrs/ Week	LA1	LA2	Lab I	ESE	Total	
Intera	ction	-	30	30	40)	100	
				Cre	edits: 1	· · ·		
		· · · · · ·						
			Cours	se Objectives				
Course Objectives 1 This course explain and physically identify the parts like moving coil, control system, damping				m, damping				
-	systems,	pointer, shunts,	multipliers etc. of	different types of	deflection	systems.		
2	It aims to	o recognize vari	ous transducers and	d use them in the n	neasureme	ent of variou	s electrical and	
3	It intends	s to develop skil	ls for measurement and instrumentation system					
	n mena	Cours	e Outcomes (CO)	with Bloom's Tay	konomv L	.evel		
At the	end of the	course, the stud	dents will be able to	0,	<i>j</i>			
						Bloom's	Bloom's	
CO		Cou	rse Outcome State	ement/s		Taxonom	Taxonomy	
<u>CO1</u>	Idontifu	the principles of	ad operation of yer	ious massurament	daviaas	Level	Description	
COI	their characteristics, limitations. II Remembering						Remembering	
CO2	CO2 Describe proper method, sensors and transducers for specific II Understanding							
CO3	Execute	measurement el	ectrical and physic	al parameters.		III	Applying	
]	List of Experimen	ts / Lab Activities	/Topics			

List of Lab Activities:

- 1. Study of Moving iron, PMMC and Dynamometer type instruments (Basic moving systems)
- 2. Measurement of power in three phase balanced and unbalanced circuits by conventional two wattmeter method.
- 3. Calibration of Single-phase energy meter for energy measurement
- 4. Measurement of R, L and C Using Different Bridges and confirmation with analytical calculations.
- 5. Measurement of temperature using RTD
- 6. Comparative study of temperature measurement using RTD and thermocouple
- 7. Study of strain gauge and measurement of force using it
- 8. Study of construction of LVDT and measurement of displacement, force and pressure by using it.
- 9. Measurement of Light intensity using Lux-meter and to realize the light intensity distribution with change in distance.
- 10. Speed measurement using photoelectric pick up, magnetic pick up and stroboscope.

Textbooks

1	Alan Morris "Principles of measurement and instrumentation", Prentice Hall- India, 2004 ISBN: 0134897099.
2	A. K. Sawhney, "A Course in Electrical and Electronics Measurement and Instrumentation", Dhanapat Rai & Company, New Delhi, reprint, 17th Edition, 2005.
3	Rangan, Mani and Sharma, "Instrumentation Devices and Systems", Tata McGraw Hill, New Delhi, 2nd Edition.
4	C. D. Johnson, "Process Control Instrumentation Technology", Pearson Education.
	References
1	Albert D. Helfric, "Modern Electronics measurement & instruments", PHI Ltd, 2003.
2	Doebelin, E. O., "Measurement Systems", McGraw Hill Book Co.
3	Patranabis, D," Sensors and Transducers", Wheeler Publishing Co., Ltd. New Delhi.
4	Murthy, D. V. S., "Transducers and Instrumentation", Prentice Hall of India Pvt. Ltd., New
	Delhi.
	Useful Links
1	https://nptel.ac.in/courses/108/105/108105153
2	https://nptel.ac.in/courses/108/105/108105064

	CO-PO Mapping												
		Programme Outcomes (PO) PSC									50		
	1 2 3 4 5 6 7 8 9 10 11 12 1									2			
CO1	CO1 3												
CO2	1				3								
CO3	CO3 1 3												
The stre	The strength of mapping is to be written as 1,2,3; where, 1: Low, 2: Medium, 3: High												
Each CO	O of the	e course	e must 1	nap to	at least	one PC), and p	referab	ly to or	nly one	PO.		

	Assessment									
There are three IMP: Lab ESE	There are three components of lab assessment, LA1, LA2 and Lab ESE. IMP: Lab ESE is a separate head of passing.(min 40 %), LA1+LA2 should be min 40%									
Assessment	Based on	Conducted by	Typical Schedule	Marks						
	Lab activities,		During Week 1 to Week 8							
LA1	attendance,	Lab Course Faculty	Marks Submission at the end of	30						
	journal		Week 8							
	Lab activities,		During Week 9 to Week 16							
LA2	attendance,	Lab Course Faculty	Marks Submission at the end of	30						
	journal		Week 16							
	Lab activities,	Lab Course Faculty and	During Week 18 to Week 19							
Lab ESE	journal/	External Examiner as	Marks Submission at the end of	40						
	performance applicable Week 19									
Week 1 indicate	es starting week o	f a semester. Lab activities/	Lab performance shall include perfo	rming						
experiments, m	ini-project, presei	ntations, drawings, program	ming, and other suitable activities, a	s per the						

experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

	Walchand College of Engineering, Sangli							
			(Government A	ided Autonomous In V 2023-24	istitute)			
			Cour	se Information				
Progra	Programme B. Tech. (All Branches)							
Class.	Semester	•	First Year B. Te	ch., SemI/II				
Cours	e Code		7VS152	· · · · · ·				
Cours	e Name		Engineering Ski	lls (E/EN)				
Desire	d Requis	ites:	Nil	· · /				
	•							
ſ	Feaching	Scheme		Examinatio	n Scheme	(Marks)		
Practi	cal	2 Hrs/	LA1	LA2	Lab ES	SE	Total	
		Week						
Intera	ction	-	30	30	40		100	
				C	redits: 1			
			Cou	rse Objectives				
1	To prov	ide basic know	ledge of handling	g electrical equipm	nent and saf	fety.		
2	To impa	rt skills to pla	n and implement	simple electrical w	viring.		· ·	
3	To prov	ide exposure to	the students with	n hands on experie	ence on var	ious basic eng	gineering	
4	To expl	ain the working	of small electror	nic gadget like ele	ctronic bell	emergency 1	amp etc	
-	10 eapa	Cours	e Outcomes (CO) with Bloom's T	axonomy	Level		
At the	end of the	e course, the stu	udents will be able	e to,	v			
со	Course	Outcome Stat	ement/s			Bloom's Taxonomy Level	Bloom's Taxonomy Description	
CO1	Identify	the instrument	ts for measuremen	nt of electrical par	ameters.	Ι	Remembering	
CO2	Illustrat protectio	t <mark>e</mark> working o ons.	of switchgear f	or electrical sa	fety and	ΠΙ	Applying	
CO3	Identify	and explain the	he use of electron	ic instruments.		II	Understanding	
CO4	Build a	nd Test simple	electronic gadget	•		III	Applying	
			List of Exporime	nts / I ab Activiti	ies/Topics			
L ist of	f I ah Act	ivities: (minim	List of Experime	nts)	les/ Topics			
Engin	eering Sk	ills (Electrical)	11(5)				
Modu	le 1:	(,					
i.	Mea	surement of El	ectrical Paramete	rs in DC Circuits.				
ii.	Mea	surement of El	ectrical Paramete	rs in Single Phase	AC Circui	ts.		
Modu	le 2:	ly of various ty	nos of wiros and	ablas				
ii .	Basi	ic wiring schen	hes for residential	and industrial and	olications			
iii.	. Den	nonstrate the op	peration of fuse, N	ACCB, ELCB	, incutions.			
Modu	le 3:	-						
i.	Prep	paration of Eart	hing Pit for Elect	rical Installation S	afety.	-		
11.	Disi Iron	nantling, Assei , Plate Tube W	mbly and Fault Fi ater Heater, Use of	nding of Ceiling F of Megger.	fans / Table	e Fans, Autom	hatic Electric	
Fnoin	ooring Cl.	ille (Flootnori	(e)					
Modu	le 1: Intro	duction to Lab	o Instruments like	CRO. Power sur	oply. Oscill	lator. Multi m	eter. Frequency	
measu	rement, A	C-DC voltage	measurement usi	ng CRO and mult	ti meter			
Modu	le 2: Stu	dy of compoi	nents (Resistance	e, capacitor, Dio	de, Transi	stor, Transfo	rmer, switches,	
relays,	PCB etc.) testing and le	ad identification					
Modu	le 3: Elect	tronics Gadget	building & testing	g (Gadget must we	ork)			
				T41 1				
1	Male	a: Flactronics	hy Charles Dlatt	Lextbooks	or Modia	2015		
1		e. Electronics,	by Charles Platt, I	i ubiisheu by wiak	ei ivieula, 2	2013		

Proposed Course Contents for B. Tech. Programme, Department of Electronics Engineering, AY2021-22

2	Electronics Projects For Dummies, by Earl Boysen and Nancy Muir, Published by Wiley Publishing, Inc., 2006
3	D. C. Kulshreshtha, "Basic Electrical Engineering", 1 st revised edition McGraw Hill, 2012.
4	D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
	References
1	Paul Horowitz, Winfield Hill, "The Art of Electronics", Cambridge University Press, 1989
2	E-learning material through Intranet/Internet
3	V. N. Mittle and Arvind Mittal, "Basic Electrical Engineering", 2 nd edition, Tata McGraw Hill.
	Useful Links
1	

	CO-PO Mapping												
		Programme Outcomes (PO) PSO											
	1 2 3 4 5 6 7 8 9 10 11 12 1 2												
CO1			1		2				1			1	
CO2			1		2				1			1	
CO3				2					1				1
CO4	CO4 2 1 2												
The stre	ngth of	mappi	ng is to	be wri	tten as	1,2,3; v	where, 1	: Low,	2: Mec	lium, 3	: High		

Each CO of the course must map to at least one PO, and preferably to only one PO.

		Asses	sment	
There are three IMP: Lab ESE	components of la is a separate head	b assessment, LA1, of passing.(min 40	LA2 and Lab ESE. %), LA1+LA2 should be min 40%	
Assessment	Based on	Conducted by	Typical Schedule	Marks
LA1	Lab activities, attendance, journal	Lab Course Faculty	During Week 1 to Week 8 Marks Submission at the end of Week 8	30
LA2	Lab activities, attendance, journal	Lab Course Faculty	During Week 9 to Week 16 Marks Submission at the end of Week 16	30
Lab ESE	Lab activities, journal/ performance	Lab Course Faculty and External Examiner as	During Week 18 to Week 19 Marks Submission at the end of Week 19	40

Week 1 indicates starting week of a semester. Lab activities/Lab performance shall include performing experiments, mini-project, presentations, drawings, programming, and other suitable activities, as per the nature and requirement of the lab course. The experimental lab shall have typically 8-10 experiments and related activities if any.

applicable

	Wa	Ichand College of (Government Aided)	f Engineering, Sar Autonomous Institute)	ngli	- di shti. Silmini	
		AY 2	023-24		nie rekie e	
		Course In	formation			
Progr	amme	B.Tech. (Electrical	& Electronics Enginee	ering)	Hart India	
Class,	Semester	First Year B. Tech.,	Sem I/ II			
Cours	e Code	7CH102		netaconado, a l	in the second second	
Cours	e Name	Engineering Chemi	istry (Electrical / Electrical	onics)	ting of the state	
Desire	ed Requisites:	Chemistry course a	at Secondary and Higher	secondary lev	vel	
	Teaching Scheme		Examination Scheme	(Marks)		
Lectu	re 2 Hrs/week	MSE	ISE	ESE	Total	
Tutor	ial 0 Hrs/week	30	20	50	100	
			Credits: 3	1		
1.00000		Course C	biectives			
1	To make student famil	iar with engineering pr	roperties associated with	n different ma	terials to use	
1	them successfully in p	actice.	aler Gillin philos sta	A 649/61 2 5	doold .	
2	To provide knowledge	and significance of cha	aracterization and chemi	cal analysis fo	r using	
	materials in different e	ngineering application	IS.			
					901-202	
At the	end of the course the st	e Outcomes (CO) wit	h Bloom's Taxonomy I	level		
At the		idents will be able to,		Bloom's	Bloom's	
со	Cou	rse Outcome Stateme	ent/s	Taxonomy Level	Taxonomy Description	
CO1	Explain terms chemic	al analysis, thermal ar	analysis, thermal analysis/ Batteries, fuel			
	cell, water parameter	ng				
	of Corrosion, water's i	dustrial applications				
CO2	Draw schematic of	vater softeners, phas	se diagrams, Thermo		Understand	
a dar	grams/ Batteries, Fuel GLC setup	cell, Thermo equipm	ent's, Glass electrode,		ng	
CO3	Classify types of chen	ical analysis, hard wa	ater, Chromatography.		Understand	
	Corrosion, Batteries		, , , , ,	П	ng	
CO4	Calculate concentratio	n of solutions, % of a	nalyte gravimetrically,	ere		
	hardness of water, Cal	orific values, % weight	loss TGA		Applying	
Modu	le Madula 1 C	Module Co	ntents		Hours	
	Chemical analysis	principles of chemical	Analysis Part A: Volum	etry		
I	concentration of s	olution & Numerical	nrohlems Standards a	d its types	7	
1	Definition of terms	associated with titrim	etry, Classification of tit	rimetry with	0.000	
	application of type	analysis, Numerical pro	oblems.	inficitly with		
	Module 2. Genera	I principles of chemi	cal Analysis Part B: G	ravimetry &		
	Instrument					
	Gravimetry and its	equirements, applicati	ions and Numerical prob	lems.		
п	pH metry, potenti	ometry, Single beam	spectrophotometry w.r	.t. Principle,	6	
11	Instrumentation, C	alibration, Application	Chromatography and	its types &	0	
	Introduction to GLC	, Introduction for SEM	I, TEM, AFM and its app	lications.		
	Advantages and	Disadvantages of in	strumental and non-i	nstrumental		
	methods.					

Dr. Dodla S. Rao) (A-A- Poral)

(K.V. Machale) Barry (K.V. Machale) (MK. V.B. crivyaonkar)

ш	Modules 3. Water Chemistry - Natural sources of water, Impurities in natural water. Water quality parameters Hardness- Definition, Causes, Types, Expressing hardness, units to measure hardness, Numerical problems on hardness calculation, ill effects of hard water in steam generation, Alkalinity, Chloride, Dissolved oxygen(DO), Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) its significance. Ion exchange method of water softening	7
IV	Module 4 : Corrosion Science Definition of corrosion, Types of corrosion, Dry & wet corrosion, Electrochemical & Galvanic series & its importance, Mechanism of Hydrogen evolution and Oxygen absorption corrosion, Factors influencing rate of corrosion, Various methods for protection from corrosion viz. Surface coatings(Electroplating, Galvanizing, Tinning) Cathodic and Anodic protection,	7
v	 Module 5. Battery & Fuel cell: Terms in battery and fuel cell: Anode, Cathode, Cell, Battery, Electrode Electrolyte, Types of batteries: Construction, working, uses and advantages of primary cells: Dry Cell: (Leclanche Cell), Lithium cells: Lithium cells with solid cathode Lithium cells with liquid cathode, Secondary cell: Lead – Acid cell, Nickel – Cadmium Cell, Hydrogen oxygen fuel cell, Methyl Alcohol- Oxygen (Alkaline Fuel Cell) 	6
VI	Module 6- Phase Rule: Gibbs phase rule, Explanation of the terms Phase, Component, Degree of freedom, Phase reactions, types of equilibrium, equilibrium conditions. One component system-Water system, Sulphur system, Two component system- Lead Silver system, Application of Eutectic system, Merit and Demerits of Phase rule.	6
	Textbooks	
1	S.K. Singh, "Engineering Chemistry", New Age Publication, 3rd Edition, 2005.	2
2 3	Jain P.C. and Jain Monika, "Engineering Chemistry", Dhanpat Rai Publication, 3 2013	16th Edition
	References	
1	O G Palanna, "Engineering Chemistry" Tata McGraw Hill 2009.	veie" Magal'
2	Mendham, R.C. Denney, J.D. Barnes, M.J.K Thomas, "Quantitative Chemical analy	ysis, vogers
-	Pearson Education, 6th Edition, 2008.	merap es
3	B.Viewapathan, M. Aulice Scibioh" Fuel Cell: Principle and Applications" Universit	ies Press
4	B Viswanathan W. Adiree Scienci Fraei Com Fraei Spie Law Fr	
5	Adveloped and Phylos "The Science and Engineering of Materials" Thomson Pu	blication 4th
3	Edition 2003	
6.	Douglas A. Skoog, E James Holler, Stanely R Crouch, "Principles of Instrument	al Analysis"
	Thomson publication, 2007, 6 th Edition	
	Useful Links	
1	https://edu.rsc.org/resources	er education
2	A free resource for Chemistry teachers and students of all levels, including high	ci caacation
2	https://www.digimat.in/pptel/courses/video/122106028/L01.html	
3	https://onlinecourses.nptel.ac.in/noc21_cv49/preview	
4	https://onintecoursesingeendent/teen/terps/tesses	

	Programme Outcomes (PO)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3					ł								
CO2	3												_	
CO3	3	1												
CO4	3													

Each CO of the course must map to at least one PO.

Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments, surprise or declared test etc.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

(Dr. Dodla S. Rao) A-A-Powar (E.V. Marchale) Pur. (MB.V.B. Girgannar)