E.G.S.PILLAYENGINEERINGCOLLEGE

(Autonomous) NAGAPATTINAM– 611 002.

(AffiliatedtoAnnaUniversity,Chennai|AccreditedbyNAACwith'A++'Grade Accredited by NBA | Approved by AICTE, New Delhi)



REGULATIONS-R2023

B.E – Civil Engineering

B.E./ B.Tech SECOND SEMESTER CURRICULUM

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COURSE	COURSE NAME	CATEG	L	T	Р	С	MAX.	MARK	5
CODE		ORY					CA	ES	TOTA L
Theory Cour	'Ses								_
-	Language Elective	EEC	2	0	0	2	100	0	100
2301MA203	Statistics and Numerical Methods	BSC	3	1	0	4	40	60	100
2301PH202	Material Science	BSC	3	0	0	3	40	60	100
2301GEX01	Foundation of Electrical and Electronics Engineering	ESC	3	0	0	3	40	60	100
2301GEX02	Engineering Graphics	ESC	2	1	0	3	40	60	100
2301GEX04	Problem Solving using Python	ESC	2	0	4	4	50	50	100
2301TA201	Tamils and Technology / தமிழரும்தொழில்நுட்பமும்	HSMC	1	0	0	1	100	0	100
Laboratory (Courses								
2301GEX51	Foundation of Electrical and Electronics Engineering Laboratory	ESC	0	0	2	1	60	40	100
2301GE251	CAD Laboratory	ESC	0	0	2	1	100	0	100
2301GEX51	Computer Practices Laboratory	ESC	0	0	2	1	100	0	100
2301LS201	Life Skills - II	-	-	-	-	-	100	-	100
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TOTAL			16	2	10	23	770	330	1100

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2.To s	peak E	nglish flue	ently in p	public pl	aces.									
3.10r	ead an	d write leg	ibly in E rhol ond	english.	hal aom	municat	ion							
4.10	unders	land the ve	i Dai allu	i non-vei		municat	1011.							
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	C	rganizatio	1											
C O2:	Ι	Develop the	eir inter	personal	skills ar	nd proble	em-solvi	ng skills	•					
C O3:	l	Inderstand	the role	of body	languag	ge in effe	ctive co	mmunica	ate					
C O4:		mplement	the soft	skills in	theoreti	cal and p	oractical	ways.						
C O5:		Adapt the t	echniqu	es of per	sonality	develop	ment.							
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	PO	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	0	PO	P	J12
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CO3	-	-	-	-	-	-	-	-	-	3	-	-	-	
CO4	-	-	-	-	-	-	-	-	-	3	-	-	-	
CO5	-	-	-	-	-	-	-	-	-	3	-	-	-	
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2301FLX02	JAPANESE LANGUAGE			
COURSE CON	TENTS:	I	I	
Welcome aboard				
ABK-AOTS DO	DSOKAI BENGALURU			
JLPT N5 integr	ated Course covers 120 hours of intensive coaching, in preparation for	JLPT	exam	
+ Revision for JI	.PT			
(certification by	Japan Foundation, a world-wide standard)			
Course content	<			
1 Japanese Scrip	ts / alphabets :			
_Hiragana (nativ _Katakana (fore _Kanji (Chinese	ve Japanese script) ign words) derived script)			
2. (bunpou) Grammar 25 less	ons			
3. (aisatsu) Gree	tings			
4. (kaiwa) conve	ersation through native Japanese enacted videos			
5. (choukai) List	ening to native Japanese conversion			
6. (dokkai) Read	ling / comprehension			
& Revision - sim	ulation (mock) tests			
ABK AOTS DO	SOKAI			

2301MA 203	STATISTICS AND NUMERICAL METHODS	L	Т	Р	C
2301111203	(Common to Mechanical & Civil)	3	1	0	4
PREREQUIS					
1.Basicconcept 2 Basicconcept	sofStatistics sofNumerical				
2.Dusiceoncept					
COURSEOBJ	ECTIVES:				
1. Toacqu animpo	ainttheknowledgeoftestingofhypothesisforsmall andlarge sampleswh ortantroleinreallifeproblems?	ichplays			
 Tointro To intro of difference 	oduce the basic concepts of solving algebraic and transcendental equation oduce the numerical techniques of interpolation in various intervals as the rentiation and integration which plays an important role in engineering ogy disciplines?	ns. ndnume: gand	rical t	echni	ques
4. To acq equation	uaint the knowledge of various techniques and methods of solving orons.	linarydi	fferer	ıtial	
COURSE OU	FCOMES:				
Onthes	uccessfulcompletion of the course, students will beable to				
C01:	Applytheconceptoftestingofhypothesisforsmallandlargesamplesinrea	allifepro	blems	3.	
CO2:	Applythebasicconceptsofclassificationsofdesignofexperimentsinthef	ïeldofag	ricult	ure.	
CO3:	Appreciate the numerical techniques of interpolation invarious intervals and apply the numerical techniques of interpolation invarious intervals and apply the numerical techniques of t	chniques	of		
CO4:	Understand the knowledge of various techniques and methods for so secondorderordinary differential equations.	olving fi	rst an	d	
CO5:	Solvethepartialandordinarydifferential equations with initial and boundary conditions by using certain techniques with engineering applied to the second structure of the seco	cations.			
COsVsPos MA	APPING:				

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1									
CO2	3	2	1									
CO3	3	2	1									
CO4	3	2	1									
CO5	3	2	1									

CO s VsPSOsMAPPING

COs	PSO1	PSO2	PSO3
CO1	1		
CO2	1		
CO3	1		
CO4	1		
CO5	1		

COURSECONTENTS:

MODULEI TESTINGOFHYPOTHESIS

Sampling distributions - Tests for single mean, proportion and difference of means (Large and small samples)Tests for single variance and equality of variances – Chi square test for goodness of fit – Independence of attributes.

MODULEII DESIGNOFEXPERIMENTS

9Hours

9Hours

One w Latins	ay and t quaredes	wo way classifications - Completely randomized design – Randomized block de sign -22 factorialdesign.	esign –
MODU	JLEIII	SOLUTIONOFEQUATIONSANDEIGENVALUEPROBLEMS	9Hours
Solutio Raphs Jordan metho	on of alg onmetho nmethod dandJaco	ebraic and transcendental equations - Fixed point iteration method – Newton d- Solution of linear system of equations - Gauss elimination method – Pivoting – Iterative methods of Gauss Jacobi and Gauss Seidel - Eigen values of a matrix obi's methodfor symmetric matrices.	g - Gauss x by Power
MODU	JLEIV	INTERPOLATION, NUMERICAL DIFFERENTIATION ANDNUMERICALINTEGRATION	9Hours
Lagran differe and do	nge's and enceinter oubleinte	d Newton's divided difference interpolations – Newton's forward and backward polation – Approximation of derivates using interpolation polynomials – Numer grationsusingTrapezoidaland Simpson's 1/3 rules.	rical single
MODU	JLEV	NUMERICALSOLUTIONOFORDINARYDIFFERENTIALE OUATIONS	9Hours
Singles Kutta m Bashfoi	tepmetho nethodfo rthpredic	bds: I aylor sseriesmethod-Euler smethod-ModifiedEuler smethod-FourthorderF rsolving firstorderdifferentialequations-Multistepmethods:Milne'sandAdams – torcorrectormethodsforsolvingfirstorderdifferentialequations -60HOURS	Runge -
REFE	RENCE	5:	
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2301DH2	002	MATER	IALS S	CIENC	E					L	Т	P	С
23011 112	.02	(Mech an	d Civil)							3	0	0	3
PREREC	QUISI	ГЕ:											
		1. Basic	: knowle	dge in S	olid Sta	te Physic	CS						
COURS	E OBJ	ECTIVE	S:										
To make	the stu	dents to u	nderstar	nd the ba	sics of a	crystallo	graphy a	nd its in	portanc	e in study	ying ma	aterial	s
properties	s.												
To under	stand tl	ne electric	al prope	erties of	material	ls includi	ing free	electron	theory,	applicatio	ons of c	luantu	m
mechanic	s and r	nagnetic 1	material	s.									
To instil 1	knowle	dge on pl	iysics of	semico	nductors	s, determ	ination (of charge	e carrier	s and dev	vice app	olicatio	ons
To establ	ish a so	ound gras	p of kno	wledge o	on differ	rent optio	cal prope	erties of	material	s, optical	display	ys and	Ĺ
applicatio	ons												
To inculc	ate an	idea of sig	gnifican	ce of nar	no struct	tures, qu	antum co	onfinem	ent and e	ensuing n	ano de	vice	
applicatio	ons.												
COURS	E OUT	<u>COMES</u>	:										
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		Understa	nd the b	asics of o	crystalle	ography a	and its if	nportan	$\frac{1}{c}$	ried mate	erials p	ropert	les
CO2:		Different	late betv	veen the	electric	al and m	agnetic	propertie	es of ma	terials an	d their		
<u>CO</u> 2.		applicatio	ons		• 1	· 1	· · · ·	· · ·	<u> </u>	• 1	· 1	•	
CO3:		Apply the	e concep	ots of ser	nicondu	ictor phy	sics in fi		$\frac{19 \text{ of ser}}{1 \text{ ser}}$	niconduc	$\frac{1}{1}$	ices	
CO4: CO5:		Apply the	<u>e proper</u>	ties of di	electric	material	s and we	orking p	rinciples	s of vario	us devi	ces	
COS:		A DDINC	$\frac{1}{\cdot}$	nportanc	e of fur	ictional i	lanoelec	tronic de	evices.				
		AFFING	•										
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CO3	3	3	1	1	2	1							
CO4	3	3	2	2	2	1							
CO5	3		2	2	2	1							
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Crystal st	ructure	es: BCC, I	FCC and	HCP –	directio	ns and p	lanes - li	inear and	l planar	densities	- cryst	al	
imperfect	tions- e	dge and s	crew dis	slocation	ıs – grai	n and tw	in bound	laries - I	Burgers v	vector an	d elasti	c strai	n
energy- S	lip sys	tems, plas	stic defo	rmation	of mate	rials - Po	olymorph	nism – p	hase cha	nges – n	ucleatio	on and	l
growth –	homog	geneous ai	nd heter	ogeneou	s nuclea	tion.	•			C			
MODUL	EII	ELECTI	RICAL	AND M	AGNE	FIC PR	OPERT	IES OF	MATE	RIALS		9 Hot	ırs
Classical	free el	ectron the	ory - Ex	pression	n for ele	ctrical co	onductiv	ity – The	ermal co	nductivit	y, expr	essior	1 -
Quantum	free el	ectron the	eory :Tu	nneling -	– degen	erate stat	tes – Fer	mi- Dira	c statist	ics – Den	sity of	energ	у
states – E	lectron	in period	lic poter	ntial – Er	nergy ba	ands in so	olids - M	lagnetic	material	s: Dia, pa	ara and	U	-

ferromagnetic effects – paramagnetism in the conduction electrons in metals – exchange interaction and ferromagnetism – quantum interference devices – GMR devices.

MODULE III SEMICONDUCTORS AND TRANSPORT PHYSICS	9 Hours
Intrinsic Semiconductors - Energy band diagram - direct and indirect band gap semiconductors	– Carrier
concentration in intrinsic semiconductors - extrinsic semiconductors - Carrier concentration in N	J-type & P-
type semiconductors – Variation of carrier concentration with temperature – Carrier transport in	
Semiconductors: Drift, mobility and diffusion – Hall effect and devices – Ohmic contacts – Scho	ottky diode.
	•
MODULE IV DIELECTRIC PROPERTIES OF MATERIALS	9 Hours
Polarization mechanisms: electronic, ionic, orientational, interfacial and total polarization - frequencies	uency
dependence - local field/ Internal field derivation and Causius-Mossetti equation - dielectric cor	istant and
dielectric loss.	
MODULE V NANOELECTRONIC DEVICES	9 Hours
Quantum confinement – Quantum structures – quantum wells, wires and dots – Zener-Bloch osc	illations –
Resonant tunneling – quantum interference effects - mesoscopic structures - Single electron pher	nomena –
Single electron Transistor. Semiconductor photonic structures – 1D, 2D and 3D photonic crystal	. Active and
passive optoelectronic devices – photo processes – spintronics – carbon nanotubes: Properties an	ıd
applications.	
TOTAL: 45 HOURS	
REFERENCES:	
1. V.Raghavan. Materials Science and Engineering: A First Course, Prentice Hall India Learning	g Private
Limited, 2015.	, ,
2. S.O. Kasap, Principles of Electronic Materials and Devices, Mc-Graw Hill, 2018	
3. Jasprit Singh, Semiconductor Devices: Basic Principles, Wiley (India), 2007.	
4. Jasprit Singh, Semiconductor Optoelectronics: Physics and Technology, Mc-Graw Hill India ((2019)
5. G.W.Hanson. Fundamentals of Nanoelectronics. Pearson Education (Indian Edition), 2009.	
6. https://archive.nptel.ac.in/courses/108/108/108108122/	
7 https://oplinessurges.metal.og.in/pos20 $rh24/rmsigness$	

7. https://onlinecourses.nptel.ac.in/noc20_ph24/preview

		FOU	UNDAT	TION O	F ELEC	TRICAI	L AND I	ELECT	RONIC	S		L T	Р	C
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INERE	QUIST	1 Phys	ics											
COURS	E OBJ	ECTIVE	<u>S:</u>											
1.To	introdu	uce basic	DC and	AC circ	cuits									
2.]	Го ітра	art knowl	edge in	the basic	c working	g princip	les and a	pplicati	ions of e	lectrical	machine	s and 1	neasuri	ng
i	nstrum	ents	-											-
3.]	Fo educ	ate the fu	ındameı	ntal conc	epts of a	nalog an	d digital	electro	nics.					
COURS	E OUT	COMES	5:											
	On the	successfu	ıl comp	letion of	the cours	se, stude	nts will	be able	to					
CO1:		Acquire	e basic l	knowledg	ge on DC	, AC cir	cuits and	l wiring	•					
CO2:		Underst	tand the	constru	ction, wo	rking pr	inciple a	nd appl	ications	of Electr	ical Mac	chines.		
CO3:		Underst	tand the	various	measurin	ng instru	ments ar	id conce	epts of tr	ansducer	s.			
<u>CO4:</u>		Obtain	the kno	wledge o	of semico	nductor	devices	and thei	r applica	ations.				
$\frac{CO5}{CO}$		Acquire	e basic k	cnowledg	ge on log	ic gates	and Boo	lean alg	ebra.					
	PUS M	APPING	Γ.											
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
CO1	3	3	105	3	105		1	1	3	1010	1011	2		
CO2	3						-	-				1		
CO3	3			1					3			1		
CO4	3			1	3				3			1		
CO5	3	1		2	3				3			1		
COs Vs	PSOs N	MAPPIN	G											
					COs	PSO1	PSO2	PSO3						
					<u>CO1</u>	3		3	_					
					C02	3								
					C03	3	3	3	_					
					C04		3	3						
COURS	E CON	TENTS			0.05		5	5						
MODUI	E UOI	ELEME	:NTAR`	Y CIRC	UIT CO	NCEPT	S					9	Hours	
Introduct	tion to 1	DC and A	C circu	its - Ohr	n's Law.	Kirchho	off's Law	vs. Simr	ole probl	ems: Me	sh analy	vsis. No	dal	
Analysis	; Gene	ration of	AC way	veform -	average	value, R	MS valu	e, form	factor, p	eak facto	or; Introc	luction	to thre	e
phase sys	stems; l	Electrical	safety ((not for e	examinati	ion)								
MODUI	E II	ELECT	RICAL	MACH	INES							9	Hours	
Construc	tion, w	orking pr	inciple,	EMF eq	uation, ty	vpes and	applicat	ions of	DC Gen	erators, v	vorking	princip	le of D	2
Motors, 7	Torque	equation,	, Types	and app	lication.	Working	g princip	le and a	pplicatio	ons of sin	gle phas	se trans	formers	
and singl	e phase	e inductio	n motor	rs, three	phase alt	ernator.(Simple a	pproacl	h)					
MODUI	LE III	MEASU	RING	INSTRU	J MENTS	5						9F	lours	
Measurir	ng instr	uments; C	Classific	ation of	instrume	nts -PM	MC, MI	instrum	ents, dy	namomet	er type v	wattme	ter, stati	c
watt-hou	r meter	; CRO- P	rinciple	and ope	eration; Ir	ntroducti	on to tra	nsducer	s- RTD,	LVDT.				
MODUI	<u>LE IV</u>	ANALO	<u>G ELE</u>	CTRON	NICS			15		D · 2	**	9	Hours	
Semicon	ductor (devices-	V-I char	acteristi	cs of PN	Junction	diode a	nd Zene	r diode;	Rectifier	s - Half	wave a	nd full	
wave rec	timers;	BJT, SCH	K, MOS	FEI cor	nstruction	and ope	eration (s	ample a	pproach)		0	11	
	LE V	DIGITA	L ELE	UIKUN	vico volcon ala	ahra. D.	Maraa	n'a tha-	rom. II-	lf and E-	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9 . SOD	nours	2
forme V	-map r	oystelli;	LUGIC (ninimizo	tion usin	geora; De	s (Simpl	n s uieo	eme only	11 and FU 7)	n Adder	. SOP 8	and PUX	3
TOTAL	· 45 H	DURS	10115 - 1		aton usili	<u>5 is map</u>	a (amh			9				

REFERENCES:

- 1. Mittle N., "Basic Electrical Engineering", Tata McGraw Hill Edition, New Delhi, 1990.
- 2. Sedha R.S., "Applied Electronics", S. Chand & Co., 2006.
- 3. SmarajitGhosh, "Fundamentals of Electrical and Electronics Engineering", 2nd Edition, PHI Learning, 2010.
- 4. R. Muthusubramaniam, S. Salaivahanan and K.A. Mureleedharan, "Basic Electrical Electronics and Computer Engineering", Tata McGraw Hill, 2004
- 5. D.P. Kothari and I.J. Nagrath, "Theory and Problems of Basic Electrical Engineering", PHI learning, New Delhi, 2004.
- 6. J.B. Gupta, "Fundamentals of Electrical Engineering and Electronics", S.K. Kataria and Sons, Reprint 2012 Edition
- 7. R.L. Boylestad and L. Nashelsky, "Electronic Devices and Circuit Theory", Pearson, 11th Edition, 2013.
- 8. Donald P. Leach, Albert Paul Malvino and GoutamSaha, "Digital Principles and Applications", McGraw-Hill Education, 8th Edition, 2014.

2301GEX02			ENGI	NEER	ING	GRA	PHIC	S				L 2	Т 1		P)	C 3
Prerequisite:													-			U
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2 1	Lette	ring	and D	imens	ionin	σ										
COURSE OBJ	IEC		ES:	mens		5										
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nroducts	'P III	Stud	ients, 5	rupine	SKIII	5 101 0	ommu	mean		neepu	, ideas	unu	uesię		iigiiik	cering
2 To expose	• the	m to	existi	no nati	onal	standa	rds rel	ated to	techni	cal dra	winos					
COURSE OUT		MF	· CAISUI	ing math	onui	Standa		uicu ic		cui uit						
On the		COSS	ful con	onlatic	n of	the co	11400 01	tudanta	will h	a ahla	to					
	suc		netruc	t conic		une co	volutes	and c	veloide		10					
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$\frac{CO2}{CO3}$		30	ove pro	nroio	otion	ord d	projec avalar	mont	points.	tioned	anu pia			.63		
CO3:			aw the	ortho			evelop						15			
CO4:				ortno	grapi	11C, 1SC		and p	rojectio	on or s	hing he		Daa	<u></u>		
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MODIII F I	NIE RAS		S: CONC	FPTS	OF	TECL	INICA		AWIN			NF	CUI	VFS	9 H	lours
Importance of	f ora	nhic	s in en	oineer	ing a	nnlica	tions –	Use o	f drafti	no inst	rument	s = F	SIS c	onvent	ions	and
specifications	-S	ize. S	Scale.	lavout	and f	folding	g of dra	awing	sheets -	– Lette	ring an	d dir	nens	ioning.	10115	una
Basic Geomet	trica	l cor	nstructi	ons, C	urve	s used	in eng	ineerii	ng prac	tices: (Conics -	- Co	nstru	iction of	of ell	ipse,
parabola and	hype	erbol	a by e	ccentri	city 1	netho	d – Co	nstruct	ion of o	cycloid	1 – cons	struct	tion	of invo	lutes	of
square and cir	rcle	– Dr	awing	of tang	gents	and n	ormal	to the a	above c	urves.	Practic	ing p	olane	e curves	s by	CAD
software.																
MODULE II	[PRC)JEC 1	TION	OF P	OINT	rs, Lir	NES A	ND PI	LANE	SURFA	ACE	S		9	Hours
Principal Plan	ies-F	First	angle j	project	ion-p	project	ion of	points	Projec	tion of	f straigh	nt lin	es (c	only Fir	st an	igle
projections) in	nclir	ied to	o both	the pri	ncipa	al plan	es - De	etermi	nation (of true	lengths	and	true	inclina	ition	s by
rotating line in	neth	ou ai	nu trac	es. Pro	jecu moth	on or j od Dre	planes	(polyg	onal af	ia circ	and sur	rfaces	s = 110	CAD c	0 DO	in the
	T			FCTI				g proje		n nnes	and su	lace	s Uy	CADS		Hours
Projection of	sim	ole so	olids li	ke pris	ms 1	nvram ¹	ids cv	linder	and cor	ie whe	n the a	ris is	incl	lined to	one	of the
principal plan	les b	v rot	tating of	biect 1	meth	od. Pra	acticin	g the n	roiectio	ons of	simple	obie	cts b	v CAD	soft	ware.
principal prairi		P	ROIE		NO	F SEC	TION	JED S		AND	DEVE		PMF		9	Hours
MODULE IV	V	C)F SUI	RFAC	ES				OLID		DLIL	LUI			-	10015
Sectioning of	abo	ve so	olids in	simpl	e ver	tical p	osition	when	the cut	tting p	lane is i	nclir	ned t	o the o	ne of	f the
principal plan	les a	nd p	erpend	icular	to the	e other	- obta	aining	true sha	ape of	section	. Dev	velop	oment o	of lat	eral
surfaces of sin	mple	e and	l sectio	ned so	lids -	– Prisr	ns, pyr	amids	cylinde	ers and	l cones.	Prac	cticir	ng proje	ectio	n of
sectioned soli	ds a	nd d	evelop	ment o	of sol	id surf	faces b	y CAE) softw	are.						
MODULE V	•	C	ORTH	OGRA	PHI	C AN	D ISO	MET	RIC PI	ROJE	CTION	I			9	Hours
Visualization	con	cepts	s – Rep	oresent	ation	of Th	ree-Di	mensi	onal ob	jects –	Layou	t of v	views	s- Free	hanc	1
sketching of r	nulti	iple v	views f	from p	ictori	al viev	ws of (Objects	5.							
Isometric view	w - I	Prism	ns, pyra	amids,	cylir	nders,	cones.	Princi	ples of	isome	tric proj	jectio	on –	isomet	ric so	cale –
Isometric pro	jecti	ons o	of simp	ole soli	ds ar	nd trun	icated a	solids	- Prism	s, pyra	umids, c	yline	ders,	cones-		
combination of	of tw	/0 SO	olid obj	ects in	simj	ole ver	tical p	osition	is and r	nıscell	aneous	prob	lem	s. Pract	ıcıng	5
TOTAL \cdot 45 H		ons (RS	or simp	ole obj	ects t	by CA	D SOIN	ware.								
COs Vs POs /	PSO	s M	APPI	NG:												
000 101 007	- 50															
COs PO I	PO	PO	PO4	PO5	PO	PO7	PO8	PO9	PO10	PO11	PO12	PSC	01	PSO2	PS	03
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CO1 3	1	2		2					3		2	2		2		
CO2 3	1	2	1	2				1	3		2	2		2		

 CO3

CO4

CO5	3	1	2	2			3	2	2	2	

REI	FERENCES:
	1. Bhatt N.D. and Panchal V.M., Charotar Publishing House, 53rd Edition, 2019.
	2. Natrajan K.V., A Text Book of Engineering Graphics, Dhanalakshmi Publishers, Chennai, 2018.
	3. Parthasarathy, N. S. and Vela Murali, "Engineering Drawing", Oxford University Press, 2015.
	4. BasantAgarwal and Agarwal C.M., "Engineering Drawing", McGraw Hill, 2n d Edition, 2019.
	5. Gopalakrishna K.R., "Engineering Drawing" (Vol. I&II combined), Subhas Publications, Bangalore, 27th Edition, 2017
	6. Shah M.B., and Rana B.C., "Engineering Drawing", Pearson Education India, 2 nd Edition, 2009.
	7. Venugopal K. and Prabhu Raja V., "Engineering Graphics", New Age International (P) Limited, 2008.

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2301GEA	.04		PKU	BLEN	SOL	VING	USIN	GPI	HUN		2	0	4	4
PREREQU	PREREQUISITE:													
The course	The course assumes no prior skill or background in design, art or engineering. It is open to all undergraduates													
and graduate students with an interest in programming.														
COURSE (OBJE	CTIVES:												
1. To know	1. To know the basics of problem solving													
2. To lea	 To learn the basic syntax and semantics of python programming To acquire programming skills in core python 													
3. To acc	quire p	rogramm	ing skil	ls in co	ore pyt	hon	C 1		1		1 1		1 1	
4. To use	e pytho	n data sti	ructures	and de	evelop	a skill	of des	igning	application	ns using r	nodule	es anc	Граска	ages
MODULE		EN 15: OBLEN				VTH	ON IN	TROI	DUCTION				6 Hou	rs
Problem Solving: Fundamentals of computing-Algorithms-Building blocks of an algorithm-Pseudocodes														
and flowcharts. Introduction: Python Interpreter and Interactive mode- Variables and Identifiers- Data														
Types- Operators-Operator Precedence-Expressions.														
MODULE II DECISION MAKING 5 Hours														rs
Control Flor	w If S	tatement.	Flseif	Statem	onte-N	ested I	f-else	Joon	structure_V	Vhile Loo	n-Nes	ted W	J Hou /hile	15
Loop-For L	.00p-Ne	ested for	Loop- I	Break a	and con	ntinue	statem	ents.	structure v		p 1105		mie	
MODULE		TA STR	UCTU	RES I	N PY	THON	[h	Hou	rs
Introduction	n- Lists	: List Or	peration	s-List	Slicing	-List r	nethod	s- List	Loop-Clor	ning lists-	Muta	bility	-	1.5
Aliasing-Tu	iples: '	Tuple As	signme	nt- Tup	le as r	eturn v	value- l	Nested	tuples- Ba	sic tuple	operat	ions-	Advan	ced
list processi	list processing- List comprehension -Sets and Dictionaries: Operations and Methods-Arrays.													
MODULE	IV ST	RINGS A	AND F	UNCT	IONS							6	Hou	rs
Strings: Int	troduct	ion, Inde	xing, Ti	raversi	ng, Co	ncaten	ating, I	Appen	ding, Multi	plying, F	ormat	ting, S	Slicing	3,
Comparing,	, Iterati	ng – Bas	ic Built	-In Stri	ng Fu	nctions	s – Fun	ctions	Parameter	s-Return	Value	es-Loc	al and	1
Global Scop	pe-Rec	ursion- L	ambda	functio	ons.									
MODULE	V FI	LES, EX	CEPTI	IONS,	MOD	ULES	AND	PACK	AGES			(6 Hou	rs
Files and Ex	xceptio	n: Text F	Files-Re	ading a	and wr	iting fi	les-Fo	rmat o	perator-cor	nmand lii	ne arg	umen	ts- erre	ors
and exception	ons- Ha	andling e	xceptio	ns – M	ultiple	Excep	otions.	Modu	les:Loading	g and exec	cution	-Pack	ages-	
Python stan	dard L	ibraries.	C.										20 11.	
LIST OF E	DAPER	ation wit	5: h diffor	ont nut	hon IF								<u>30 H0</u>	urs
	ullariz	imple pro	II UIIIEI	using r	non n. wthon	/E svntav	and w	manti	CS					
2. Dev 3 Der	monstra	ate nytho	n nrogr	ams us	ing Ar	ithmet	ic expr	ession	s					
4. Illu	strate c	condition	al stater	nents v	with re	al time	proble	ems	5					
5. Bas	sic pyth	on applie	cations	using l	ist, Tu	ples.	1							
6. Imp	olemen	t Python	progran	n using	, Dictio	onaries	5							
7. Imp	plemen	tation of	sorting	and sea	arching	5								
8. Imp	olemen	t Python	prograr	n using	string	gs								
9. WH	strate f	ion funct	ions lo	real ti	ie code	e reuse	,							
10. IIIu 11. Use	Excer	ne conce	dling in	nvthoi	n annli	cation	, s for er	ror ha	ndling					
12. Imp	olemen	t simple a	applicat	ions us	sing m	odules	and pa	ckage	s					
13. Dev	velop R	Real Time	applic	ations l	ike nu	mber g	guessin	g, Dic	e rolling si	nulator e	tc.			
TOTAL: 6	0 HOL	JRS												
COs Vs PO)s & P	SOs MA	PPING	:										
				DO5		D07	DOQ	DOO		11 0012			2 DCC	12
		<u>JZ PUS</u>	P04	PU5	PU6	PO/	PUð	P09	POIUPO	II POI2	P501	1950	2150	13
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2. Reema Thareja, "Python Programming: Using Problem Solving Approach", Oxford University Press, 2017.

- 3.
- Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", Second Edition, Shroff/O'Reilly Publishers, 2016. (http://greenteapress.com/wp/thinkpython/). Ben Stephenson, "The Python workbook A brief introduction with exercises and solutions", Springer International publishing, Switzerland 2014. 4.
- Guido van Rossum, Fred L. Drake Jr., "An Introduction to Python Revised and Updated for Python 5. 3.2", Network Theory Ltd., 2011.
- 6. Charles Dierbach, "Introduction to Computer Science using Python", Wiley India Edition, 2016.
- Timothy A. Budd, "Exploring Python", Mc-Graw Hill Education (India) Private Ltd., 2015. 7.
- 8. https://nptel.ac.in/courses/106106182
- https://www.learnpython.org/ 9.

10. https://www.codeacademy.com/learn/learn-python

REQUIREMENTS: (A batch of 30 students)

Hardware Requirements: Standalone Desktop Computer or Server Supporting Software Requirements: Python Interpreter Version 3

3 Hours

3

3

2301TA201	தமிழரும்தொழில்நுட்பமும்/	L	Т	Р	C
	Tamil and Technology				
		1	0	0	1

PRE REQUISITE:

The Tamils living in different parts of the World need to keep in touch with the motherland and the mother tongue and be knowledgeable about their heritage in order to preserve their cultural identity and observe their traditional and cultural activities.

Recognizing this fact and for meeting the felt and emerging needs of the Tamil Communities and others interested in Tamil studies

COURSE OBJECTIVES:

Tamil Literature is way of a life. It focuses on the historical significance of ethics, moral culture in the Tamil context.

Tamil Modern literature emphasizes on the modern development of the behavioral, moral and ethical Technology is the important key for a language and a new sector for the students to voice out for a social cause

COURSE OUTCOMES:

At the end of this course, Students will be able to,

CO1:	Develop a spirit of patriotism.
CO2:	Understand the plight of the people living in the society and Biological Struggles.
CO3:	Remember the life style of the Sangam people and To recognize the heroic spirit of the ancient Tamil kings
CO4:	Evaluate the quality and morals of local life through Tamil literature
CO5:	Introducing the various Literary Genres and dramas and enable them to produce innovative
	ideas in modern literary theories
COURSE CON	TENTS:

MODULE I WEAVING AND CERAMIC TECHNOLOGY

Weaving Industry during Sangam Age–Ceramic technology–Black and Red Ware Potteries (BRW) Graffition Potteries.

அலகு I நெசவு மற்றும் பானைத் தொழில்நுட்பம்:

சங்க காலத்தில் நெசவுத் தொழில் – பானைத் தொழில்நுட்பம் - கருப்பு சிவப்பு பாண்டங்கள் – பாண்டங்களில் கீறல் குறியீடுகள்.

MODULE II DESIGN AND CONSTRUCTION TECHNOLOGY 3 Hours

Designing and Structural construction House & Designs in house hold materials during Sangam Age Building materials and Hero stones of Sangam age -Details of Stage Constructions in Silappathikaram -Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple) - Thirumalai Nayakar Mahal – Chetti Nadu Houses, Indo-Saracenic architecture at Madras during British Period.

அலகு II 👘 வடிவமைப்பு மற்றும் கட்டிடத் தொழில்நுட்பம்:

சங்க காலத்தில் வடிவமைப்பு மற்றும் கட்டுமானங்கள் & சங்க காலத்தில் வீட்டுப் பொருட்களில் வடிவமைப்பு- சங்க காலத்தில் கட்டுமான பொருட்களும் நடுகல்லும் – சிலப்பதிகாரத்தில் மேடை அமைப்பு பற்றிய விவரங்கள் - மாமல்லபுரச் சிற்பங்களும், கோவில்களும் – சோழர் காலத்துப் பெருங்கோயில்கள் மற்றும் பிற வழிபாட்டுத் தலங்கள் – நாயக்கர் காலக் கோயில்கள் - மாதிரி கட்டமைப்புகள் பற்றி அறிதல், மதுரை மீனாட்சி அம்மன் ஆலயம் மற்றும் திருமலை நாயக்கர் மஹால் – செட்டிநாட்டு வீடுகள் – பிரிட்டிஷ் காலத்தில் சென்னையில் இந்தோ-சாரோசெனிக் கட்டிடக் கலை.

MODULE III MANUFACTURING TECHNOLOGY	3 Hours
Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel - Coppe	er and gold
- Coins as source of history - Minting of Coins – Beads making – industries Stone beads - Gl	lass beads
- Terra-cotta beads - Shell beads/bone beats - Archeological evidences -Gems tone types de	escribed in
Silappathikaram.	
அலகு III உற்பத்தித் தொழில் நுட்பம்:	3
கப்பல் கட்டும் கலை – உலோகவியல் – இரும்பக் கொழிற்சாலை -	– இரும்பை
	லாபாங்கள் –
உருக்குதல், எல்கு வர்கள்றதும் சாலதுகளான எச் மபு மற்தும் தான் நான் நாண்யுக்கள் வச்சுல் காணி வருவாச்சுல் சொலிற்காலைகள் க	ல்மணிசன்
	1000 (អ្នាមព្រ –
தொலலியல் சான்றுகள் – சிலப்பதுகாரத்தில் மணிகளின் வகைகள்.	
MODULE IV AGRICULTURE AND IRRIGATION TECHNOLOGY	3 Hours
Dam, Tank, ponds, Sluice, Significance of Kumizhi Theompu of Chola Period. Animal Hush	pandry -Wells
designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – P	earl – Conche
diving – Ancient Knowledge of Ocean – Knowledge Specific Society	
அலகு IV வேளாண்மை மற்றும் நீர்ப்பாசனக் கொழில் நுட்பம்:	3
அணை, எரி, களங்கள், மகக – சோமர்காலக் குமுமிக் காம்பின் முக்கி	யக்குவும் –
கால்கடை பாரமரிப்பு – கால்கடைகளுக்காக வுடிவமைக்கப்பட்ட கி	ணற்கள் –
	ന് കതിവ
வேளாணையை மற்றும் வேளாணையச் சார்ந்த செயல்பாடுகள் – கடலசா	பர் அறுவு –
மனவளம் – முத்து மற்றும் முத்துக்குள்ததல் – பெருங்கடல் குறுத்த	பணைபைய
அறிவு – அறிவுசார் சமூகம்.	
MODULE V SCIENTIFIC TAMIL & TAMIL COMPUTING	3 Hours
Development of Scientific Tamil – Tamil computing – Digitalization of Tamil Books –	
Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – On	line
Tamil Dictionaries –Sorkuvai Project.	
அலகு V அறிவியல் தமிழ் மற்றும் கணித்தமிழ்:	3
அறிவியல் கமிழின் வளர்ச்சி –கணிக்கமிழ் வளர்ச்சி - கமிழ் நூல்களை	மின்பகிப்ப
செய்கல் – கமிம் மென்பொருட்கள் உருவாக்கம் – கமிம் ணையக் க	ப்விக்கமகம்
	பர் பெ ட்டம்
– தயழ் யல் நிலக்ய – இல்ணியத்தில் தயழ் அகராதிகள் – சொற்குளை	்த தாட்டய்.
TOTAL:15HOURS	
REFERENCES:	
(in print)	, —
2. Social Life of the Tamils - The Classical Period (Dr S Singaravelu) (Published by: Inte	rnational
Institute of Tamil Studies.	
3. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu)	
(Published by: International Institute of Tamil Studies).	
4. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: In	nternational
Institute of Tamil Studies.)	
5. Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by	y:
Department of Archaeology & Tamil Nadu Text Book and Educational Services Corpora	tion,
Tamil Nadu)	(D. 1.1'. 1.1
6. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: 'I
	T (D 1 1

7. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)

8. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference

Book.

23	301GEX51	FOUNDATION OF ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY	L	Т	Р	С					
		(Common to CSE, IT, AIDS, BME, MECH AND CIVIL)	0	0	2	1					
LIST OF EXPERIMENTS:											
	3 H	3 Hours									
	2. Reside	ntial house wiring using fuse, switch, indicator, lamp and energy meter		3 H	ours						
	3. V-I characteristics of PN junction diode / Zener diode 3 Hours										
	4. IC 555 and IC 741 based experiments3 Hours										
	5. Energy conservation demonstration experiment using energy meter3 Hours										
	6. Waveform generation and calculation of RMS and average values										
	7. Design of 6V regulated power supply3										
	8. Verification of Logic gates 3 Hours										
	9. Speed	control of DC shunt motor.		3 H	ours						
	10. $I - V C$	Characteristics of Solar PV cell (Simulation approach)		3 H	ours						
то	TAL: 30 H	IOURS									
RF	FERENCE	2S :									
1.	Edward Hu	ighes, "Electrical Technology,", Pearson Education									
2.	D.P. Kotha	ri and Nagrath" BasicElectronics", MH Education 2013.									
3.	Paul Scher	z and Simon Monk "Practical Electronics for inventors" McGraw Hill Pub	licati	ons 20	13.						
4.	https://npt	el.ac.in/courses/122106025/									
5.	https://em	-coep.vlabs.ac.in/exp/speed-control-dc-motor/simulation.html									
6.	https://de-	iitr.vlabs.ac.in/exp/truth-table-gates/simulation.html									
7.	Dr.T.Sure Engineeri	shPadmanabhan, Dr.M.Vinothkumar and Dr.S.Sivamani, "Foundation of H ng Laboratory Manual", June 2023.	Electr	ical an	d Elec	tronics					

2301GE2	51	CA	AD La	abora	tory								L 0	Т 0	P 2		C 1
Prerequis	ite:												_				
	1. B	asic C	Compi	uter kr	nowle	dge											
	2. E	ngine	ering	Graph	ics												
COURSE	OBJ	ECTI	VES:														
CO 1:		To de	velop	in stu	dents	, Draf	ting sk	ills for	comm	unicati	on of co	oncepts,	ideas	and d	lesign	of	
		Engin	eerin	g prod	ucts												
CO 2:		To e	xpose	e them	to ex	isting	nation	al stan	dards r	elated t	to techn	ical drav	vings				
COUDSE		COM	TEC.														
COURSE	001			omnl	ation	of the	201180	atuda	nto wi	1 bo ob	la to						
On the successful completion of the course, students will be able to `O1: Ability to use the software packers for drafting and modeling																	
$\frac{CO1}{CO2}$	Ability to use the software packers for drafting and modeling												σ				
$\frac{CO2}{CO3}$	D2: Learned basic concept to drawing, edit, dimension, hatching etc. to develop 2& 3D Modelling.																
CO4:	U3: Able to create front view and top view of simple solids O4: Able to create isometric projection of simple objects																
CO5:		Able 1	to Cre	eate 3I) mod	lels of	Simpl	e Obie	cts and	l obtain	ing 2-D) multi-v	iew d	rawir	igs fro	m 3	-D
		model	l				· ·	J			0				0		
COs Vs	POs /	PSOs	MA	PPIN	G:												-
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO	01 PS	502 P;	SO3)
<u>C01</u>	3				3				2	2	2	2			3		-
CO1 CO2	3	-	-	-	3	-	-	-	2	2	2	2	-		3		-
CO3	3	-	-	-	3	-	-	-	2	2	2	1	-	-	3		
CO4	3	-	-	-	3	-	-	-	2	2	2	1	-		3		_
05	3	-	-	-	3	-	-	-	2	2	2	1	-	-	3		
General:																	
Study of b	asics	comm	ands	of a C	AD (A	AutoC	CAD) s	oftwar	e - two	-dimen	sional	drawing,	editii	ng, lag	yering	and	
dimension	ing - o	coordi	nate S	Systen	ns – u	nits –	limits										
List of Ex	perin	ients:															
1.	Const	tructio	n of I	Lines,	Simp	le geo	metries	s, and [Fitle B	lock wi	th nece	ssary tex	t and	proje	ection s	sym	bol.
2.	Const	tructio	n of I	Ellipse	, Para	bola,	Hyperl	oola.									
3.	Const	tructio	n of c	cycloid	$\frac{1}{\cdot}$ and	invol	utes.										
4.	Const	tructio	n of l	Project	ion o	f a stra	aight L	ine.									
5.	Draw	the or	thog	aphic	views	s (tron	$\frac{t, top}{\cdot 1}$	and sic	le view	s) of si	mple so	olids.					
6.	Draw	sectio	nalvi	ews of	tprisn	n, pyra	mid, c	ylındei	, cone	, etc,							
	Creat	10n of	3-Dn	nodels	ofsin	ipie ol	ojects.										
IUIAL:	43 H(JUKS															
REFERE	NCES	<u>S:</u>	<u>r</u> 1 ·	5		C	(D	1 1 . 1 .			(1.001	4					
I. ſ	N.D. E	snatt,N	/lachi	ne Dra	awing	, Char	otarPu	blishin	gHous	ePvt. L	$\frac{10.201}{201}$	4.					

- P.S. Ghi, ATextbookof Machine Drawing, Ratson books, 2015
 R.K. Dhawan, ATextbookof Machine Drawing, S. Chand, 2012.
- 4. K.C.John, Textbook of Machine Drawing, PHILearning Pvt. Ltd., 2009.

2301GEX51	COMPUTER PRACTICES LABORATORY										L	Т	Р	С
										0	0	2	1	
PREREQUISIT	ſE:											1	L	
There is no prerequisite for the course														
COURSE OBJ	ECTIVES:	- <u>r</u>	- 1											
_														
1.	To be fan	niliar	with	Comp	uter l	Hardw	are Co	mpone	ents an	d insta	llatio	on of s	software	e.
2.	Make use	e of of	fice	packag	ge and	d to be	famili	ar witl	h the u	se of C	office	softv	vare.	
3.	To learn a	about	searc	ching,	down	nloadin	ıg, and	storin	g conte	ents in	the C	Cloud	Netwo	rk.
COURSE OUTCOMES.														
COURSE OUTCOMES:														
Upon the successful completion of the course, students will be able to														
CO1	Perform assembling and disassembling of desktop machine with different periphera												eral and	
	software	instal	latior	n and s	servic	ing.								
CO2	Simulate data using MS office for Presentation and Visualization.													
CO3	CO3Use browsers for searching & accessing/storing the contents to/from cloud.													
LIST OF EXPERIMENTS:														
1. Familiar	ization of r	-omp	turnor	a Col	rogo	momo	iware	Compo molog	<u>Juents</u>					
2. Faiiiiiai 3. Installin	2. Familiarization of major types of storage/memory technology													ion of
basic so	g various of ftware/tools	perati	ng sy	stems	meru	unig s	onwai	e uow	1110au/1	instana	uon,	rann	manzai	
4 Working	with MS-(, Office	• MS	Word	1 MS	Excel	MST	Owerr	oint					
5 Familiar	ization of (Comp	uter S	Shorte	ut key	/S	, 1010 1	ower	Joint					
6 Mini Pr	oject-1 [.] As	semb	le vo	ur con	nnute	r and i	nstall a	an One	erating	Syster	n			
7. Basics of	f Internet. V	Web h	prows	sers an	d Co	ntent S	learchi	ng & a	accessi	ng/stor	ing t	he co	ntents t	o/from
cloud in	cluding Dro	pBoy	K							8	8 -			
8. Familiar	ization of v	ariou	s typ	es of s	ecuri	ty thre	ats inc	luding	virus					
9. Comput	er Ethics; C	pen S	Sourc	e way		5								
10. Mini Pr	oject-2: Do	cume	ent pr	eparat	ion u	sing M	IS Wo	rd, Da	ta Proc	essing	usin	g MS	Excel a	ınd
Presenta	tion using l	MS P	owerj	point		C				Ũ		0		
TOTAL: 30 HC	DURS													
COs Vs POs &	PSOs MAI	PPIN	G:											
						D 00		DO1	0011	0.14		01		D COO
COs POI	<u>2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 </u>	P04	P05	PU6	PO7	PU8	PO9	POIU	POII	PO12	1	01	PSO2	1
CO1 = 3	$\frac{3}{3}$ 2	$\frac{2}{2}$	-	-	-	2	2	-	-	1	1		1	1
$\begin{array}{c c} CO2 & 3 \\ \hline CO3 & 3 \\ \end{array}$	$\frac{3}{3}$ 2	1	-	-	-	2	-	-	-	1	1		1 1	1
005 5	5 2	1				4				1	1		T	1
HARDWARE/S	SOFTWAF	RE RI	EOU	IREM	IENT	1								
1.	Standalone	Desk	top C	lompu	ters v	vith In	ternet	Conne	ctivity					
2.	Office Pack	age	1	1					5					
3.	Operating S	Systen	n Pac	kages										
REFERENCES	:													
1. Kevin Wi 2021	lson, "Com	puter	Hard	ware:	The l	[llustra	ited Gi	uide to	Under	standi	ng Co	ompu	ter Haro	lware",
2. Kumar Bi	ttu, "Master	ring N	AS O	ffice".	2020)								
3. Ajay Mitt	al &Anitha	Goel	, "Co	mpute	r Fun	damer	ntals ar	nd Pro	gramm	ing in	C", 2	2017		

4. https://nptel.ac.in/courses/106103068

5. https://docs.oracle.com/cd/E19121-01/sf.x2100m2/819-6592-13/Chap1.html

6. https://www.linkedin.com/learning/topics/microsoft-office