PAAVAI ENGINEERING COLLEGE, NAMAKKAL -637018

(AUTONOMOUS) DEPARTMENT OF AGRICULTURAL ENGINEERING REGULATIONS 2023 CURRICULUM (For candidates admitted during the Academic Year 2023 Onwards) (CHOICE BASED CREDIT SYSTEM)

S.No.	Category	Course Code	Course Title	L	T	Р	C
Theory		cout				-	
1	BS	MA23301	Transform Techniques and Partial Differential Equations	3	1	0	4
2	PC	AI23301	Principles and Practices of Horticultural Crop Production	3	0	0	3
3	PC	AI23302	Surveying and Levelling	3	0	0	3
4	PC	AI23303	Principles of Soil Science and Engineering	3	0	0	3
5	MC	MC23301	Environmental Sciences and Sustainability	2	0	0	(
Theory w	with Practical						
6	ES	AI23304	Fluid Mechanics and Hydraulics	3	0	2	4
Practica	al	_					
7	PC	AI23305	Surveying and Levelling Laboratory	0	0	4	2
8	PC	AI23306	Soil Science Laboratory	0	0	4	2
9	EE	GE23301	Professional Development I	0	0	2	1
			TOTAL	17	1	12	22

SEMESTER III

SEMESTER IV

S.No.	Category	Course Code	Course Title	L	Т	Р	C
Theory	·						
1	BS	MA23403	Probability and Statistics	3	1	0	4
2	PC	AI23401	Strength of Materials for Agricultural Engineering	3	0	0	3
3	PC	AI23402	Hydrology and Water Resources Engineering	3	0	0	
4	ES	AI23403	Mechanics of Machines	3	0	0	
5	MC	MC23402	Human Values and Gender Equality	2	0	0	(
heory w	vith Practical						
6	РС	AI23404	Farm Tractors	3	0	2	4
Practic	al						
7	PC	AI23405	CAD Laboratory for Agricultural Engineering	0	0	4	2
8	PC	AI23406	Strength of Materials Laboratory	0	0	4	2
9	EE	GE23401	Professional Development II	0	0	2	
			BOARD OF STUDIE				-

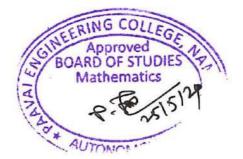
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MA	23301	1	RANSFORM TECHNIQUES AND PART DIFFERENTIAL EQUATIONS	TIAL	3	1	0	4
(Con	nmon to A	ero, Agri, BM	E, Biotech, Civil, Chemical, EEE, Food, Pha	rma. Mech.	MCT.	R&	A)	
		ECTIVES		,			,	
	nable the s		×					
1	develop fourier se		e of periodic and non-periodic functions an	d their repr	resenta	ation	s us	ing
2	acquaint	the student w	th Fourier transform techniques used in wide	variety of s	ituatio	ns.		
3	introduce	the basic con	cepts of PDE for solving standard partial diff	erential equ	ations			
4	acquaint various s		th Fourier series techniques in solving heat fl	ow problem	s used	l in		
5	develop 2	Z transform te	chniques for discrete time systems.					
UNI	TI FO	URIER SER	IES					12
Diric	hlet's cond	litions; Gener	al Fourier series; Odd and even functions; H	alf range ser	ries; S	tater	nent	of
Com	plex form	of Fourier Ser	ies; Parseval's identity; Harmonic Analysis.					
UNI		URIER TRA						12
			ithout proof); Fourier transform pair; Sin			ansf	orm	-
			mentary functions; Convolution theorem; Par	seval's iden	tity.			
			FERENTIAL EQUATIONS					12
of fir		artial differen	ial equations; Lagrange's linear equation; So tial equations; Linear partial differential equ					
UNI		URIER SER UATIONS	IES SOLUTION TO PARTIAL DIFFERE	INTIAL			- Control of Control o	12
Solut	ions of On	e-dimensiona	l wave and heat equation; Steady state two-di	mensional h	eat eq	uatio	on.	
UNIT	ГV Ζ-	FRANSFOR	MS AND DIFFERENCE EQUATIONS					12
			operties; Inverse Z-transform; Method of particles; Solution of difference equations by Z-trans		; Res	idue		
				TOTAL	PER	IOD	s	60
	RSE OUT							
At the			ents will be able to of periodic and non-periodic vibrations with	a la	BT M lighes			
201	help of F	ourier series.		uie	Ap	plyir	ng (K	3)
CO2	domain t	o time domai			Ap	plyir	ng (K	.3)
CO3	demonst	rate partial dif	ferential equations that occur in many engine	ering	Ap	plyin	ig (K	3)

	applica	ations.												
CO4		Fourier							dimen	sional he	at	A	Applyir	ng (K3)
CO5	apply l	nowled	dge of 2	Z transf	orm to	analys	e linea	ır time	invariaı	it system	IS.	Δ	Applyin	10 (K3)
TEXT	BOOF	s										-	.pp.j.n	19 (113)
1.	Veerar	ajan T	., "Tra	ansform	ns and	Parti	al Di	fferenti	al Equ	ations",	Tata	McG	raw H	Hill
		tion Pv												
2.	Grewa	l. B.S,	"Highe	r Engi	neering	Math	ematic	s", 44 ^{tl}	' Editio	n, Khan	na Pu	blicati	ons, N	ew
		(2018)				•								
REFE	RENCI	ES												
1.	Erwin	Kreyszi	ig, "Ac	lvanced	l Engin	eering	Mathe	ematics	", 10th	Edition	Wil	ey Pub	licatio	ns.
		Delhi, Iı												
2.	Raman	a. B.V	′., "Hi	gher I	Enginee	ering	Mathe	matics'	', Tata	Mc-Gi	aw 1	Hill P	ublishi	ng
		any lim												0
» 3.	Glyn Ja	ames, "	Advand	ed Mo	dern Ei	ngineer	ring M	lathema	ntics", 3	rd Editio	n, Pea	arson E	Educati	on
	(2007)													
4	Wylie.	RC a	nd Dam	ett I (· "Ad	luonoo								
10.50		R.C. a	nu Dan	CII. D.V	., nu	ivance	d Eng	ineerin	g Math	ematics"	, Tata	Mc-C	Graw H	lill
		hing Co								ematics"	, Tata	Mc-C	Graw H	lill
		hing Co	mpany							ematics"	, Tata	и Мс-С	Graw H	(ill
CO-P	Publis O MAP	hing Co PING :	mpany	limited	l, 6th E 's) wit	dition, h Prog	New	Delhi, 2	2012.					
CO-P	Publis O MAP ing of C	hing Co PING : ourse (ompany Outcon	limited	l, 6th E	dition, h Prog Outco	New gramn mes P	Delhi, 2 ne Outo SO's	2012. comes (PO's) ai	nd Pr	ogram		
CO-P	Publis O MAP ing of C	hing Co PING : ourse (ompany Outcon	limited	l, 6th E	dition, h Prog Outco corre	New ramn mes P lation	Delhi, 2 ne Outo SO's	2012. comes (nd Pr	ogram	ıme Sp	pecific
CO-PO Mapp	Publis O MAP ing of C	hing Cc PING : ourse (1/2/3	ompany Outcon indicat	limited ne (CO es strei	l, 6th E 's) with	dition, h Prog Outco corre PC	New gramn mes P lation 's	Delhi, 2 ne Outo SO's) 3-Stro	2012. comes (ong, 2-)	PO's) an Medium	nd Pr , 1-W	ogram ⁷ eak	nme Sp PS	oecific O's
CO-Pe Mapp CO's	Publis	hing Co PING : ourse ((1/2/3) 2	Outcon indicat	limitec ne (CO es stren 4	l, 6th E	dition, h Prog Outco corre PC 6	New gramn mes P lation r's 7	Delhi, 1 ne Outo SO's) 3-Stro 8	2012. comes (PO's) a	nd Pr	ogram Veak	nme Sp PS 1	oecific O's 2
CO-PO Mapp CO's CO1	Publis D MAP ing of C 1 3	hing Cc PING : fourse ((1/2/3) 2 3	Outcon indicat	limitec ne (CO es strei 4 2	l, 6th E 's) with ngth of 5 -	dition, h Prog Outco corre PC 6 -	ramn mes P lation 's 7 -	Delhi, 2 ne Outo SO's) 3-Stro	2012. comes (ong, 2-)	PO's) an Medium	nd Pr , 1-W	ogram Veak	nme Sp PS 1 1	oecific O's 2 1
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CO-PO Mapp CO's CO1 CO2 CO3	Publis D MAP ing of C 1 3 2 3	hing Cc PING : fourse ((1/2/3) 2 3 3 3 3	Outcon indicat	limitec ne (CO es strei 2 2 2	l, 6th E 's) with ngth of 5 - -	dition, h Prog Outco corre PC 6 -	ramn mes P lation 's 7 -	Delhi, 2 ne Outo SO's) 3-Stro 8 -	2012. comes (ong, 2-) 9 -	PO's) an Medium 10 -	nd Pr , 1-W 11 -	ogram Veak 12 3 3 2	PS 1 1 1 2	oecific O's 2 1
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AI23301	PRINCIPLES AND PRACTICES OF HORTICULTURAL CROP	3	0	0	3
	PRODUCTION				
COURSE	OBJECTIVES				
To enable	the students to				
1	demonstrate the basic knowledge of Horticulture crop production and propag	gation t	echni	ques.	
2	illustrate the production practices of Horticulture crops.			-	1
3	explain the cultivation practices of fruits, spices and plantation crops.				1
4	acquire knowledge in production practices of vegetable crops.		F		-
5	outline the production practices of flowers and medicinal plants.				-
UNIT I	INTRODUCTION AND PROPAGATION OF HORTICULTURE CROP	S	T	9	-
culture) · Layering)	 c factors influencing crop production; Propagation - Methods (seed, vegetat advantages and disadvantages - Propagation techniques (Cutting, G) - specialized plant parts for propagation; Tools used in propagation. 			ding	an
	PRACTICES IN HORTICULTURE CROPS			12	8
Training a Growth re Landscap		ises and ance - (l man	agem	en
Training a Growth re Landscap J NIT III	and pruning methods - usefulness; Pollination and fruit set - Fruit drops - Cau egulators - Types - Role in horticulture crops: Landscaping - Scope and Import	ises and ance - (l man	agem	en s c
Training a Growth re Landscap J NIT III	and pruning methods - usefulness; Pollination and fruit set - Fruit drops - Cau egulators - Types - Role in horticulture crops: Landscaping - Scope and Import ing. PRODUCTION PRACTICES OF FRUITS, SPICES AND PLANTA CROPS	ance - () TION	d man Comp	agem onent	en s c
Training a Growth re Landscap J NIT III Generaliz	and pruning methods - usefulness; Pollination and fruit set - Fruit drops - Cau egulators - Types - Role in horticulture crops: Landscaping - Scope and Import ing. PRODUCTION PRACTICES OF FRUITS, SPICES AND PLANTA	ance - (TION	d man Comp	agem onent 10 Mang	ent s c
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Training a Growth re Landscap J NIT III Generaliz Banana, Turmeric,	and pruning methods - usefulness; Pollination and fruit set - Fruit drops - Cau egulators - Types - Role in horticulture crops: Landscaping - Scope and Import ing. PRODUCTION PRACTICES OF FRUITS, SPICES AND PLANTA CROPS ed management and cultivation practices for important crops in Tamil Nadu - Grapes, Citrus, Pomegranate, Papaya, Sapota and Guava; Spice crops:	ance - (TION	d man Comp	agem onent 10 Mang	ent s c
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Training a Growth re Landscap JNIT III Generaliz Banana, Turmeric, UNIT IV Generalize Capsicum Amaranth UNIT V Generalize Chrysanth	and pruning methods - usefulness; Pollination and fruit set - Fruit drops - Cau egulators - Types - Role in horticulture crops: Landscaping - Scope and Import ing. PRODUCTION PRACTICES OF FRUITS, SPICES AND PLANTA CROPS ed management and cultivation practices for important crops in Tamil Nadu - Grapes, Citrus, Pomegranate, Papaya, Sapota and Guava; Spice crops: 1 Ginger and Coriander; Plantation crops: Coffee, Tea and Coconut. PRODUCTION PRACTICES OF VEGETABLE CROPS ed management and cultivation practices for important vegetable Crop , Brinjal, Bhendi, Onion, Gourds, Cassava, Carrot, Radish, Beetroot, Ca us and Moringa. PRODUCTION PRACTICES OF FLOWERS AND MEDICINAL PLAN ed management and cultivation practices for commercial flower crops - Jast emum; Commercial medicinal plants production technology: Gloriosa, Senna	ises and ance - (TION Fruit of Pepper, DS- Ton bbage, TS nine, R a and C IODS	d man Comp crops: Card nato, 0 Caul	agem onent 10 Mang damo 8 Chilli iflow 6 narig 45	ent s c o,o, m, es, er, old
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	lemonstrate	the hort	cultur	al crop	manag	gement	. practi	ces.	•	x		Unders	tandin	g (K2)
CO3 i	nterpret the	e choice	of pra	actices	to be	follow	ved for	r bette	r grov	vth of fr	uits,	Unders	tandin	g (K2)
s	pices and p	olantation	1 crops	5.										
	llustrate the										ps.	An	alyzin	g (K4)
CO5 a	apply advan	ced tech	nology	of flò	wers a	nd mee	licinal	crop p	roduct	tion.		A	pplyin	g (K3)
EXT BO	OOKS													
1. Kur	nar, N., "Int	roductio	n to Ho	orticult	ure", N	Medtec	h Publ	ishers,	New I	Delhi, 20	23.			
2. Kris	han par, Shi	ubham G	upta, l	Kuldee	p Kun	nar Bha	argav a	ind Ab	hay Sa	ini "Fun	damen	tals of l	Hortic	ulture"
SR.	Scientific	Publicat	ion. U	ttar Pr	adesh,	2023.								
3. Fage	eria, M.S, C	Choudhar	y B.R	, Dhak	a, R.S	"Prod	uction	Tech	nology	of Vege	etable	Crops"	,Kalya	nis
	lishers, Nev													
	ttopadyay, 7	Г.К, "А	Fext B	ook on	Pomo	logy (V	Vol.1-4	l)", Ka	lyani p	bublisher	s, New	Delhi,2	2021.	
EFERE	NCES													
	orticultural	Crop	Produ	iction	Guid	le, T	amil	Nadu	Agı	ricultural	Uni	versity	Pub	licatio
Co	imbatore.20	020.		×										
2. Sing	gh, A.K, "F	lower cro	ops cu	ltivatio	n and	manag	ement	", New	/ India	Publishi	ng Age	ency,Ne	ew De	lhi,
200														
	dbook of Ho		e. (Vo	1.1&2)	", ICA	R Pub	licatio	ns, Nev	w Delh	ni.				
	MAPPING													
Ma	pping of co	ourse out	tcome	(CO'S					mes (P	PO'S) an	d prog	ramme	e speci	fic
Ma		4			01	utcome	es (PS	0'S)					e speci	fic
Ma		4			01	utcome correl:	es (PS) ation)	0'S)		PO'S) an Medium,				
	(1/2/3 ind	licates	strenş	Ou gth of	utcome correl: (Pe	es (PS) ation) Os)	D'S) 3-stro	ng, 2-1	Medium,	1-We	ak	PSC)'S
COs	(1/2/3 ind		strenş	Ou gth of 6	utcome correl: (P)	es (PS) ation)	0'S)	ng, 2-M 9	Medium,		ak 12	PSC 1)'S 2
COs	(1/2/3 ind	licates	strenş	Ou gth of	utcome correl: (Pe	es (PS) ation) Os)	D'S) 3-stro	ng, 2-1	Medium,	1-We	ak	PSC)'S
Ma COs CO1 CO2	(1/2/3 ind	licates	strenş	Ou gth of 6	utcome correl: (P)	es (PS) ation) Os) 7	D'S) 3-stro 8	ng, 2-M 9	Medium,	1-We	ak 12	PSC 1)'S 2
COs	(1/2/3 ind	licates	strens 4 2	Ou gth of o 5 3	utcome correl: (P) 6 1	es (PS) ation) Os) 7	D'S) 3-stro 8	ng, 2- 1 9 2	Medium,	1-We	ak 12 2	PSC 1 2	p'S 2 2
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	02	SURVEYING AND LEVELLING 3	0	0	3
COUR	RSE OBJECTI	IVES		1	
To ena	ble the student	s to			
1	introduce the	e principles of surveying			
2	provide expo	osure in various methods and applications of surveying			5
3	understand th	he advanced level of surveying equipments			T
4	knowledge a	bout the applications of levelling			
5	enrich know	ledge on modern surveying			
UNIT	I FUI	NDAMENTALS AND CHAIN SURVEYING			9
Definit	tion - Classific	ations - Basic principles; Equipment and accessories for ranging and	cha	ainin	g -
Metho	ds of ranging;	well conditioned triangles - Errors in linear measurement and their of	corre	ectio	ns:
		g - Plotting - applications - enlarging and reducing figures; Areas e			
	t lines - Irregu		nen	JSCU	Uy
UNIT	5774 	IPASS AND PLANE TABLE SURVEYING	-		9
					-
		nciples - Types - Bearing - Systems and conversions - Sources of error			
attracti	on ; Magnetic d	declination - Dip-Traversing - Plotting - Adjustment of closing error - ap	oplie	catio	ns;
Plane	table and its	accessories - Merits and demerits - Radiation - Intersection - R	esed	ction	_
		ferrors - applications.			
UNIT	III LEV	ELLING	-		9
Level I	line - Horizont				,
		al line - Datum - Bench marks - Levels and staves - temporary and	per	man	1.00
adjustn	nents; Methods	tal line - Datum - Bench marks - Levels and staves - temporary and s of levelling - Fly levelling - Check levelling - Procedure in levelling			ent
		s of levelling - Fly levelling - Check levelling - Procedure in levelling	- Bo	ookir	ent ng-
Reduct	ion - Curvatur		- Bo	ookir	ent ng-
Reduct	ion - Curvatur ng - Types of in	s of levelling - Fly levelling - Check levelling - Procedure in levelling re and refraction - Reciprocal levelling ; Sources of errors in leveling	- Bo	ookir	ent ng- ise
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CO2	carryout t	he con	ipass a	ind pla	ne tal	ole surv	veying	4				ŀ	Applyi	ng (K3
CO3	compute	the leve	els and	to cal	culate	e the ar	ea and	volun	ne			I	Applyi	ng (K3
CO4	prepare L related to					and ca	rryout	surve	ying	works		ŀ	Applyin	ng (K3)
CO5	apply the surveying		iples,	conce	epts a	and ap	plicati	ons c	of dig	ital ,		A	Applyin	ng (K3)
TEXT I	BOOKS										-		-	
REFER 1. 2. 3. 4. H CO-PO	Surveying a ENCES N.N. Basak Agor, R., "S Punmia. B.C Kanetkar, T. MAPPING g of Course (1/2/3	, "Surv urveyin Surve P. & K :	eying ng and ying (' ulkarn ome (C	and Level Vol- I i, S.V	evellin ling", & Vo ., Surv with I	ng", Ta Khanr I-II) La veying Progra	ta McC na Publ nxmi pu & leve mme (ss PSO	Graw- ishers Iblica ling P Dutco 's	Hill E , New tions, Part I, A mes (2	ducatio Delhi. New D A.V.G. PO's) :	on Pvt. Delhi. 1 . Praka and Pr	991. shan, F rogram	?oona∃	
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GINEERING COLLEGE Approved BOARD OF STUDIES Agriculture Engineering AUTONOMOU

A CONTINUE OF A ST		SOIL SCIENCE AND ENGINEERING	3 0	0
1000	RSE OBJECTIVES			
To ena	able students to			
1	extent the fundamental knowledge of	soil physical and chemical properties		-
2	understand the various methods of soi			-
3		p of soils and various soil compaction methods		-
4	impart knowledge about engineering p			
5	relate the bearing capacity and slope sta			
UNIT				
Soil - d		rming minerals and processes; Soil profile - ph	vsical proper	rties
soil tex	sture - soil structures and types of soil	I structure - density - porosity - capillary and	d non-capill	larv
consiste	ence - colour - specific gravity - plastic	city; Soil air - soil temperature - soil water - cla	assification o	f so
water -	Movement of soil water; Soil colloids -	organic and inorganic matter - Ion exchange - I	oH - plant nu	trier
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CO	2 com of so		e proced	lures inv	olved i	n soil su	irvey, fi	eld soil	mappin	g and su	itability		emembe	
COS	3 forn	nulate th	e engine	eering cla	assificat	tion of so	oil and s	uitable c	ompacti	ion meth	ods		Applyin	g (K3)
CO4	exai	mine the eepage	shear	strength	parame	ters for	various	soil cor	nditions	and ass	essment		Applyin	
COS	anal	yse the c	concepts	s of beari	ng capa	city, and	l slope s	tability				A	nalyzin	g (K4)
TEX	T BOC	OKS												
REF 1.	EREN(Dilip	CES Kumar	Das, "In	troducto	ry Soil	Science'	', Kalyaı	ni Publis	shers, Ne	ew Delhi ew Delhi ard Publ	, 2020.	nd Distr	ributors,	New
3. 4. CO-P	Delhi Murtl Delhi Sehga	, 2018. al, S.B., ' PPING:	"Text B	ook of So me(CO'	oil Mec S) with	hànics", progra	CBS Pu mme ou (PSO'S	blishers tcomes	and Dis (PO'S)	BS Publ tributors and pro	New De	lhi, 2012 specific	2.	
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		OBJECTIVES				
To ena	1000	he students to				
1	estal	blish the knowledge of precious resources of the environment and their variou	ıs imp	pacts.		
2	creat	ate awareness on ecosystem and biodiversity preserve.				-
3	learn	n scientific and technological solutions to current day pollution issues.			-	-
4		lyze climate changes, concept of carbon credit and the challenges of environmenagement.	ental			
5	unde	erstand green materials, energy cycles and the role of sustainable urbanization		-		-
UNIT	1 1	ENVIRONMENT AND NATURAL RESOURCES			-	(
defore utiliza	station tion of	scope and importance of Environment. Forest resources: Use and n, - mining, dams and their effects on forests and tribal people. Water resource of surface and ground water, dams-benefits and problems. Food resources: of fertilizer-pesticide problems. Role of an individual in conservation of natural a	ces: U effect	Jse ai ts of	nd o	ver
UNIT		ECOSYSTEMS AND BIODIVERSITY				6
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CO1	find t	the method	od of c	onserv	vation	of nat	ural re	source	s				Un	derstand	ling (K2)
CO2	unde	rstand e	cosyste	em and	the c	onserv	vation	of biod	liversi	ty.			Un	derstand	ling (K2)
CO3	awar	e of envi	ronme	ntal po	ollutio	n and	interpr	et its e	effects				Un	derstand	ling (K2)
CO4	apply	v sustaina	able de	evelop	ment	for tee	chnolo	gical a	dvanc	emen	t and s	ocietal		640. S	
	deve	lopment.												Apply	ving (K3)
CO5	meas	ure the s	ustaina	ability	practi	ices fo	or gree	n ener	gy cyc	les.			-	Analy	zing (K4)
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	Editi	on, 2015	•												
CO-P	O MA	PPING :													
		Mappin	g of C	ourse	Outco	omes ((CO's)	with	Progr	amme	Oute	omes (PO's)	and	
				F	Progra	mme	Specif	fic Ou	tcome	s (PS	O's)				
		(1/2	/3 indi	cates	streng	gth of	correl	ation)	3-Str	ong, 2	-Medi	um, 1-	Weak		
							PO	's						P	SO's
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CO	3	2	85	1	1	-	-	-	2	-	-	-	2	1	1
CO	94	-	2	-	-	1	-	3	1	1	-	1	1	1	1
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3	estimate	the rate of flo	low	wt	th	hro	oug	gh	ı va	ario	ous	s e	ele	eme	ents																	
4	analyse	the flow throu	ough	gh	h c	ope	en	ı ch	har	nne	els	Ł																				
5	study th	e working prir	inci	cip	ipl	lec	of	fdi	iffe	erer	ent	ty	pe	es c	ofp	um	nps													_		
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UNIT II	1	FLUID STAT	TIC	IC	CS	S A	AN	ND	ЭК	AN	NE	CM	1A	TI	CS															Γ	1	0
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UNIT IV	7	OPEN CHAN	NN	[N]	NE	EL	F	FLO	OV	W																_				Τ		9
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UNIT V	1	PUMPS																												T		-
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pump - c	omponent	s - working p	prin	inc	nci	iple	le -	- ty	ype	es;	; Ot	the	er	. pu	ımp	s -	su	bn	ne	rsi	ble	pu	m	p -	Jetŗ	our	np -	٠A	ir I	lift	pui	n
- Hydrau	lic ram																															
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CO2	analyse	the stat	tic and	kinem	atic be	ehavio	ur of fl	uids.				ł	Analy	zing(K4)
CO3	measur pipes.	e the c	lischar	ge and	d loss	of ene	ergy in	flow	throug	gh			Apply	ving (K3)
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AI233	SURVEYING AND LEVELLING LABORATORY	0	0	4	2
COU	RSE OBJECTIVES		l-		
To en	able the students to			0.000	
1	acquire skills in operating various surveying instruments.				
2	provide exposure in various methods and applications of surveying t	o agricultu	ral eng	inee	rin
3	projects				
4	develop skill to operate leveling instruments				
	train the student, how to demonstrate the total station and GPS				
	OF EXPERIMENTS				
(A)	Chain Surveying				
	1. Plotting the outline of the given building Cross staff survey				
	2. Determination of the area of closed traverse				
	3. Setting out works –single Room and Double Room				
(B)	Compass Surveying				
	4. Compass traversing Measuring Bearings & arriving included angles				
(C)	Plane Table Surveying				
	5. Plane Table Surveying Radiation methods				
	6. Plane Table Surveying Intersection methods				
(D)	Levelling				
	7. Fly levelling using Height of collimation method				
	8. Fly leveling using Rise and fall method				
(E)	Total Station And GPS				
	9. Study of Electric Total Station				
	10. Field observation of GPS				
	11. computation of area of an agricultural farm land using Total Station				
	12. Using Global positioning system (GPS) technology for tree making	in an agric	ultural	lan	4
			OTAI		50
			RIODS		10
	SE OUTCOMES				
At the o	end of this course, students will be able to		[Map		
CO1	explain the principles and classification of chain surveying and		hest Lorstandi		
	handle the chain and tape survey in the field				
CO2	demonstrate the different types of bearing and plane table		Applyi	ng (I	(3)
	surveying				,
CO3	handle all types of leveling operations.		Applyi		100

CO4	make system		the th	eodoli	te ,tota	l statio	n and	globa	l posit	ion		Ар	plying	(K3)
CO-PO														
Mappin	ng of Cou				C	Progra Jutcom 1 of cor	es PSC)'s						ific
						PO	's						PS	O's
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CO1	2	1	-	3	-	-	-	34	3	-	-	-	-	-
CO2	3	2	-	3	3	-	4	-	3	-	-	3	-	-
CO3	2	2		2	1	`-	-	-	2	-	-	1	2	-
CO4	2	2	-	3	3	-	-	-	2	-	-	1	2	-

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AI233	06		S	OIL S	CIEN	CE L	ABOR	ATOR	Y			0	0	4	2
COUI	RSE OB.	JECTI											-		
To ena	able the s	tudents	s to												
1	able to i	dentify	the typ	bes of r	ocks a	nd min	erals a	nd learn	the p	rocedur	e for co	ollectin	ig soi	l sam	ples
2	know th	e vario	us qual	ity asp	ects of	soil a	nd wate	er by us	sing la	o equip	ment's.		-		
3	to provid	de hand	ls on ex	perien	ce on t	he text	ural an	alysis o	of soil						
4	should b	e able	to perfe	orm in	situ tes	ts on s	oil sam	ples				1	0		
LIST	OF EXP	ERIM	ENTS										0		
	1. Ide	entification	tion of	rocks a	and min	nerals a	ind Co	llection	and p	rocessir	ng of so	il sam	ples		
	2. De	etermin	ation o	of soil n	noistur	e, EC a	und pH	and Sp	ecific	gravity	0				
	3. De	etermin	ation o	f plasti	c limit	and lic	quid lin	nit							
	4. De	termina	ation of	f field o	lensity	by Cor	e Cutt	er meth	od						
	5. De	etermin	ation o	ffield	density	by Sa	nd Rep	laceme	nt met	hod .					
	6. De	etermin	ation o	fcomp	action	by Pro	ctor co	mpactio	on met	hod					
	7. Te	xtural	analysi	s of soi	l by In	ternatio	onal Pi	pette m	ethod						
	8. G	rain siz	e analy	sis by	using N	Mechar	nical sh	aker							×
	9. De	etermin	ation o	f Orga	nic carl	bon					-				
	10. Es	stimatio	on of G	ypsum	require	ements									
									T	TOTAL	PERI	ODS			50
COUR	SE OUT	COM	ES												
	end of thi			ents wi	ll be al	ble to						BT M (Highe			, II
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CO4						0.702						_	pplyi	1. 39911023	7.307
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CO2	3	3	-	3	3		-	-	3	-	2	3	3	_	2
CO2	2	1	-	2	1	-		-	3	2 OLLE	2 Ge	3	3		2
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3	solv	e advanc	ce level v	verba	al ap	otituc	de tes	sts to	o get	t pla	aced	in T	ier I	com	pani	es.	-			-
4	imp	rove thei	ir reasoni	ing s	skills	s to g	get pl	lace	d in i	repi	uted	com	pan	ies.	-		-		-	-
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3. Word Power Made Easy By Norman Lewis, Wr.Goyal Publications, 2021.

CO-PO MAPPING :

Mapping of Course Outcomes (CO's) with Programme Outcomes (PO's) and Programme Specific Outcomes (PSO's)

(1/2/3 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

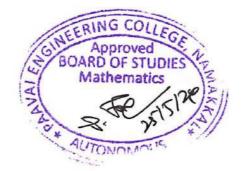
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IG COL Approved **BOARD OF STUDIES** English

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2.	differentiat	e the discret	e and continuou	is two dimensio	onal rand	om varia	bles.			
3.	determine t	he concepts	of hypotheses t	testing, its need	l and app	lications.				_
4.		statistical teo research data	chniques for des	signing experin	nents, an	alyzing, i	nterpret	ting an	ıd	_
5.	emphasize	the aspects of	of control charts	s in quality con	trol.					-
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1. M	ilton. J.	S. and	Arnol	d. J.C	C., "In	trọduc	ction to	o Prol	oabili	ty and	Statis	tics", T	ata Mc	Graw
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and str UNIT Torsion ends - 1 UNIT Determ of secti UNIT Slope a method	ted beam ess varia III n - Stres Stresses i IV inate and ons and V nd Defle ; Deform	s - Point of contra flexu ion along the length and TORSION IN SHAFT ses and deformation in n helical springs - Defle ANALYSIS OF PLAN l indeterminate plane tru nethod of tension coeffi DEFLECTION OF B ction of cantilever and si	are - Theory of Simp I section of the beam. F AND SPRING circular and hollows ction of helical spring NE TRUSSES sses – determination cient. EAMS AND SHELI mply supported beam	le Bending, Sec shafts - Deflect gs carriage sp of member force S	tion modu ion in shat rings. es by metho egration m	lus - Ber fts fixed od of join nethod - I	at the	stres
and str UNIT Torsion ends - 1 UNIT Determ of secti UNIT Slope a method	ted beam ess varia III n - Stres Stresses IV inate and ons and V nd Defle ; Deforn SE OUT	s - Point of contra flexu ion along the length and TORSION IN SHAFT ses and deformation in n helical springs - Defle ANALYSIS OF PLAP I indeterminate plane tru nethod of tension coeffi DEFLECTION OF B ction of cantilever and si ation of thin cylindrical COMES	are - Theory of Simp I section of the beam. FAND SPRING circular and hollows ction of helical spring NE TRUSSES sses – determination cient. EAMS AND SHELI mply supported beam and spherical shell.	le Bending, Sec shafts - Deflect gs carriage sp of member force S	tion modu ion in shat rings. es by metho egration m	lus - Ber fts fixed od of join nethod - I PERIO	at the nts, m	stres
and str UNIT Torsion ends - S UNIT Determ of secti UNIT Slope a method COUR At the e	ted beam ess varia III n - Stres Stresses IV inate and ons and V nd Defle ; Deform SE OUT end of thi	is - Point of contra flexu ion along the length and TORSION IN SHAFT ses and deformation in n helical springs - Defle ANALYSIS OF PLAP I indeterminate plane tru nethod of tension coeffi DEFLECTION OF B ction of cantilever and si tation of thin cylindrical COMES s course, students will b	are - Theory of Simp I section of the beam. FAND SPRING circular and hollows action of helical spring NE TRUSSES sses – determination cient. EAMS AND SHELL mply supported beam and spherical shell.	le Bending, Sec shafts - Deflect gs carriage sp of member force .S s by Double Int	tion modu ion in shat rings. es by metho egration m TOTAL	lus - Ber fts fixed od of join nethod - I PERIO BT (Highe	at the at the nts, m Maca DS Map st Le	e bot ee bot ulay' 4: ped vel)
and str UNIT Torsion ends - S UNIT Determ of secti UNIT Slope a method COUR At the e	ted beam ess varia III n - Stres Stresses IV inate and ons and V ind Defle ; Deform SE OUT end of thi appl	s - Point of contra flexu ion along the length and TORSION IN SHAFT ses and deformation in n helical springs - Defle ANALYSIS OF PLAP I indeterminate plane tru nethod of tension coeffi DEFLECTION OF B ction of cantilever and si eation of thin cylindrical COMES s course, students will b y the simple stress and s	and spherical shell.	le Bending, Sec shafts - Deflect gs carriage sp of member force .S s by Double Int dimensional ele	tion modu ion in shat rings. es by metho egration m TOTAL	lus - Ber fts fixed od of join nethod - I PERIO BT (Highe App	at the at the at the maximum of the second s	stres e bot netho ulay' 4 <u>ped</u> vel) 5 (K3
and str UNIT Torsion ends - 1 UNIT Determ of secti UNIT Slope a method COUR At the e CO1 CO2	ted beam ess varia III n - Stres Stresses i IV inate and ons and V ind Defle ; Deform SE OUT end of thi appl exam	s - Point of contra flexu ion along the length and TORSION IN SHAFT ses and deformation in n helical springs - Defle ANALYSIS OF PLAP I indeterminate plane tru nethod of tension coeffi DEFLECTION OF B ction of cantilever and si nation of thin cylindrical COMES s course, students will b y the simple stress and s nine the shear force, ber	are - Theory of Simp I section of the beam. FAND SPRING circular and hollows ction of helical spring NE TRUSSES sses – determination cient. EAMS AND SHELI mply supported beam and spherical shell. e able to train for one and two ading moment in bear	le Bending, Sec shafts - Deflect gs carriage sp of member force .S s by Double Int dimensional ele ns under loading	tion modu ion in shat rings. es by metho egration m TOTAL	lus - Ber fts fixed od of join nethod - I PERIO BT (Highe App	at the at the nts, m Maca DS Map st Le	stres e bot netho ulay' 4: vel) ; (K3
and str UNIT Torsion ends - 1 UNIT Determ of secti UNIT Slope a method COUR At the c CO1 CO2 CO3	ted beam ess varia III n - Stres Stresses i IV inate and ons and V ind Defle ; Deform SE OUT end of thi appl exam app	s - Point of contra flexu ion along the length and TORSION IN SHAFT ses and deformation in n helical springs - Defle ANALYSIS OF PLAN I indeterminate plane tru nethod of tension coeffi DEFLECTION OF B ction of cantilever and si ation of thin cylindrical COMES s course, students will b y the simple stress and s nine the shear force, ber ly torsion equation to the	are - Theory of Simp I section of the beam. FAND SPRING circular and hollows ction of helical spring NE TRUSSES sses – determination cient. EAMS AND SHELI mply supported beam and spherical shell. e able to train for one and two iding moment in bear e design of shafts and	le Bending, Sec shafts - Deflect gs carriage sp of member force .S s by Double Int dimensional ele ns under loading	tion modu ion in shat rings. es by metho egration m TOTAL	lus - Ber fts fixed od of join nethod - I PERIO BT (Highe App Ana	at the at the at the maximum of the second s	e bot netho ulay' 4: vel) t (K3 g(K4
and str UNIT Torsion ends - 1 UNIT Determ of secti UNIT Slope a method COUR At the e CO1 CO2	ted beam ess varia III n - Stres Stresses i IV inate and ons and V nd Defle ; Deforn SE OUT end of thi exan app ana	s - Point of contra flexu ion along the length and TORSION IN SHAFT ses and deformation in n helical springs - Defle ANALYSIS OF PLAP I indeterminate plane tru nethod of tension coeffi DEFLECTION OF B ction of cantilever and si nation of thin cylindrical COMES s course, students will b y the simple stress and s nine the shear force, ber	and spherical shell. E able to train for one and two ding moment in bear bears roof.	le Bending, Sec shafts - Deflect gs carriage sp of member force .S s by Double Int dimensional ele ns under loading springs	tion modu ion in shat rings. es by metho egration m TOTAL ements g	lus - Ber fts fixed od of join nethod - I PERIO BT (Highe Ana App Ana	at the at the nts, m Maca DS Map est Le olying lyzing	e bot netho ulay' 4: (K3 g(K4 (K3)

TEXT BOOKS

1. S.S.Bhavikatti, Strength of Materials, Vikas Publishing House, New Delhi, Fourth edition 2013.

2. RK Rajput "Strength of Materials", by S. Chand Publishing., Laxmi Publications 2010.

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1. R.K.Bansal., "A Textbook of Strength of Materials", Laxmi Publications, New Delhi, 2015.

- 2. Subramanian R., "Strength of Materials", Oxford University Press, Oxford Higher Education Series, 2010.
- 3. Hibbeler, R.C., "Mechanics of Materials", Prentice-Hall, 9780138149291, 0138149291, 2010.
- 4. Gambhir. M.L., "Fundamentals of Solid Mechanics", PHI Learning Private Limited., NewDelhi, 2009

CO-PO MAPPING :

Mapping of Course Outcome (CO's) with Programme Outcomes (PO's) and Programme Specific Outcomes PSO's

(1/2/3 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

						PO	's		3				PS	O's
CO's	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	2	2	-	2	-	-	-	2	-	3	1	
CO2	3	3	2	2	-	2	-	-	-	2	-	3	1	-
CO3	3	3	2	-	-	2	-	-	-	2	-	3	1	-
CO4	3	3	2	3	-	-	-	-		-	-	-	2	- 7
CO5	3	3	2	2	-	2		-	-	2	-	3	2	-

Approved BOARD OF STUDIES Agriculture Engineering No. 1

AI234	402	HYDROLOGY AND WATER RESOURCES ENGINEERING	3	0	0	3
COU	RSE OI	BJECTIVES			•	_
To en	able the	students to		-		
1	acqu	re knowledge of concept of hydrological aspects and rainfall measur	ement			-
2	recog	nize of catchment characters and runoff measurement.				
3	impa	rt knowledge on groundwater investigation methods				
4		polate the students site selection, design of spillways and storage of	sedimenta	tion		
5	gener	alize the governing equation and artificial ground water recharge.				
UNIT		PRECIPITATION AND ABSTRACTIONS			T	9
		cycle - Meteorological measurements - Types and forms of precipita				
freque	ency Ana	llysis; Rain gauges - Spatial analysis of rainfall –arithmetic mean n	nethod, Th	iessen	poly	gon
metho	d, Isohy	etal methods; Evaporation - evaporation measurements - pan eva	aporimeter	– ev	apora	tion
suppre	ession; In	filtration - single ring infiltrometer, double ring infiltrometer - infilt	ration indi	ces.		
UNIT	п	RUNOFF			T	9
Waters	shed – C	atchment - Morphological characteristics of catchment; Run off- Fac	tors affecti	ng ru	noff, l	Run
off est	imation	using Strange's table and empirical methods; SCS-CN method; Stag	e discharge	e relat	ionsh	ip -
		nents; Hydrograph – Unit Hydrograph.				
UNIT	ш	HYDRO-GEOLOGIC PARAMETERS AND INVESTIGATION				9
artesia	n well	s of aquifer – confined aquifer, unconfined aquifer, perched, Leak – Geological formation of ground water – aquifuge, aquitard, f groundwater - surface methods, Subsurface methods; Water Balance	aquiclude	Geo		
UNIT	IV	RESERVOIRS			1	9
		sification of reservoirs, Site selection, General principles of designation – Area - Capacity curve ; Sedimentation - Life of reservoirs – R		ys –	types	; of
UNIT	v	GROUND WATER MANAGEMENT				9
Ground	d water-	Origin, Occurrence, types of ground water; Steady flow - unstead	u flown Ar	:Caia	1	
		- direct method, indirect method; Rain water harvesting - rural area			i groi	Ind
		TOT	TAL PERI	ODS		45
COUR	SE OU	ICOMES				
At the	end of the	is course, students will be able to	1000 Contract Cold State (1990)	Mapp		_
CO1	compre	hend the various parameters in meteorological measurements.	(High Under			(2)
CO2		in the knowledge of hydrological processes and runoff estimation.			ing (H	~
CO3				rr-J	0 (1	-/
COS	express	the hydro-geologic parameters and investigation methods	Under	stand	ing (H	(2)

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man	ve the g agemen		ing eq	uatio	n and	know	about	of gro	undwa	ater			Apply	ving (K3)
TEXT BOO	KS				~							Į		
1. Subran	1anya K	, "Eng	gineer	ing H	ydrol	ogy"-	Tata M	AcGra	w Hill	, 2024				
2. Jayarar	ni Redd	ly P, "	Hydro	ology'	', Lax	mi Pu	blicati	ions lto	1., 202	1.				
REFERENC	CES			0.256.04										
1. Dr. R	P Reth	aliva	"Wat	er Re	Sourc	es En	vineer	ino An	d Hvd	rology	" Shree	Hari Pul	blication	s, 2021.
and the second second		15				-		100	(1 2)					3, 2021.
		100				100	_		24.		inna Pub			
3. Raghu	inath. H	.M., "	Hydr	ology	Princ	ciples,	analy	sis, de	sign: "	, New	Age Inte	rnationa	al Pvt Lto	1, 2015
4. Nisha	nt A.Up	adhye	e, Wat	ter Re	sourc	es Eng	gineer	ing, Te	ch Kn	owledg	e Public	ations, 2	023	
CO-PO MA	PPING	:								, -	<u> </u>			
CO-PO MA Mapping	of Cou	rse O				Ou	tcome	mme (Outco 's	mes (P	· ·	Progra	ımme Sj	pecific
	of Cou	rse O				Ou	tcome	mme (s PSO ion) 3	Dutco 's -Stron	mes (P) and	Progra	ımme Sj	oecific O's
	of Cou	rse O				Ou	tcome rrelat	mme (s PSO ion) 3	Dutco 's -Stron	mes (P) and	Progra	ımme Sj	
Mapping	of Cou (1/	rse O 2/3 in	dicat	es str	ength	Ou of co	rrelat PO's	mme (s PSO ion) 3	Outco 's -Stron	mes (P	D's) and edium, 1	l Progra	umme Sj PS	O's
Mapping CO's	of Cou (1/	rse O 2/3 in 2	dicat	es str	ength	Ou of co 6	rrelat PO's	mme (s PSO ion) 3	Outco 's -Stron	mes (P g, 2-M 10	D's) and edium, 1	Progra I-Weak	umme Sj PS 1	O's
Mapping CO's CO1	of Cou (1/ 1 1	rse O 2/3 in 2 2	dicat	es str 4	ength 5	Ou of co 6 -	rrelat PO's 7 -	mme (s PSO ion) 3-	Outco 's -Stron	mes (Pe	D's) and edium, 1 11 -	Progra I-Weak	emme Sp PS 1	O's 2 -
CO's CO1 CO2	of Cou (1/ 1 1 2	2/3 in 2 2 2 2 2	dicato	4 1 2	ength 5 1 -	Ou of co 6 -	rrelat PO's 7 -	mme (s PSO ion) 3 8 - -	Dutco 's -Stron 9 -	mes (Pe) and edium, 1 11 - -	Progra I-Weak	PS 1 1 2	O's 2 - 2 2

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ONEERING COLLEGE à 4 AUTONOMO 0 ×

AI234	03		MECHANICS	OF MACHINES	3 0	0 3
COUI	RSE OBJECTI	VES	*			2
To ena	able the students	to		×		
1	applying the	basic compon	ents of mechanisms.			
2	examine frict	ion in machin	e elements.			
3	designing the	cam mechan	ism for specified out	tput motions.		
4	determine gea	ar ratio for sir	nple, compound, rev	erted and epicyclic g	ear train.	-
5	understand th	e function of	flywheel.			
UNIT	I MECH	ANISMS				9
invers		hain and slide	r crank mechanism; ^v	s and mechanism - T		
UNIT	II FRICT	ION AND A	PPLICATIONS		a. 1. 295	9
	g and rolling fric s in brakes.	tion - friction	in screw threads; Be	earing and lubrication	; Friction clutches; Fr	iction
UNIT	III MOTIO	ON OF CAM	AND FOLLOWER	R		9
UNIT	IV DIFFE	RENTIAL U	NIT	and cycloid motion.	e between rack and p	9 inion:
			everted epi-cyclic ge	-		,
UNIT	V FLYW	HEEL AND	BALANCING	•		9
Inertia	- turning mome	ent - flywheel	- fluctuation of spee	ed and energy; Balanc	ing of rotating masse	es.
	1.1.5 - 5	1263			TOTAL PERIOD	s 45
COUI	RSE OUTCOM	ES				
At the	end of this cour	se, students v	vill be able to		BT Mapped (Highest Level)
CO1	construct velo	city and accel	eration diagram of s	simple mechanism,	Applying	g (K3)
CO2	predict the life	of bearings t	for different applicat	ions.	Applying	g (K3)
CO3	customize can	n mechanisms	s for required particu	lar output motions.	Applying	g (K3)
CO4	compare speed	d and torque r	atio of major gear tr	ain.	Applying	g (K3)
CO5	solve the star system.	tic and dyna	mic balancing of	various mechanical	Applyin	g (K3)
	BOOKS					
TEXT	DOORS			020		

2. Rattan, S.S, "Theory of Machines", Fifth Edition, Tata McGraw-Hill, 2019.

REFERENCES

- 1. Dr.R.K.Bansal and Dr.J. S. Brar, "A Text book of Theory of Machines", Laxmi publications, 2015.
- Theory of Machines and Mechanisms, Fifth Edition. John J. Uicker, Jr., Gordon R. Pennock, and Joseph E.Shigley. Publication Date - 07 December 2016.
- John J Uichker and Joesph E. Shigley, Theory of Machines and Mechanism, oxford university press.United States of America., 2017.
- S S. Rattan, Theory of Machines, Tata McGraw Hill Publishing Company Pvt. Ltd., New Delhi, 2019

CO-PO MAPPING :

Mapping of Course Outcome (CO's) with Programme Outcomes (PO's) and Programme Specific Outcomes PSO's

(1/2/3 indicates strength of correlation) 3-Strong, 2-Medium, 1-Weak

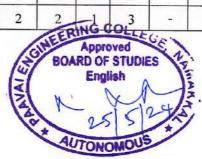
						PO	's			,			PS	O's
CO's	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	-	2	-	-	1	-	-	-	1	3	1
CO2	3	2	2	-	2	-	-	1	-	-	-	1	3	1
CO3	3	2	2	-	2	-	-	1	-	-	-	1	3	1
CO4	3	2	2	-	2	-	-	1	-	-	-	1	3	1
CO5	3	2	2	-	2	-	-	1.	-	-	-	1	3	1

Approved BOARD OF STUDIES Agriculture Engineering AUTONOMO

COURSE OBJECTIVES To enable the students to 1 define different types of human values and their impact on individual behaviour and societal norms. 2 apply principles of personal development such as self-confidence, self-discipline, and resilience to navigate modern challenges effectively. 3 evaluate the role of values in shaping professional ethics, civic sense and global citizenship. 4 examine the socio-economic factors influencing gender inequality and explore avenues for empowerment and advocacy. 5 critically analyze prevalent issues and challenges' faced by women, including gender-based violence, discrimination, and cultural biases, and propose measures for their eradication. UNIT I HUMAN VALUES 6 Value Education - Definition, Types of values; Human values - Acceptance, Consideration.
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Value Education - Definition, Types of values; Human values - Acceptance, Consideration.
Appresiation Listoning Empethy Symmetry Harris Lt. " W" 1 D. 11 11 0.10
Appreciation, Listening. Empathy, Sympathy, Honesty, Integrity, Wisdom, Decision making, Self-
actualization, Character formation towards positive personality, Contentment; - Religious Values -
Humility, Compassion, Gratitude, Peace, Justice, Freedom, Equality.
UNIT II PERSONALITY DEVELOPMENT 6
Personal Development - Introspection, Self-confidence, Self-discipline; Flexibility -Peer pressure -
Sensitization towards Gender Equality; Reliability; Unity; Modern Challenges of Adolescent
Emotions and behavior - Comparison and Competition, Positive and Negative attitudes; Family
values; Self- improvement - Physical exercises, Meditation, Yoga.
UNIT III VALUE EDUCATION TOWARDS NATIONAL AND GLOBAL 6
UNIT III DEVELOPMENT 6
Professional Values Integrity, Responsibility, Punctuality, Dedication - Perseverance - Competence;
Civic sense and Responsibility; Global Values - Computer Ethics, Moral Leadership, Code of Conduct;
Corporate Social Responsibility; Aesthetic values; National Integration and International understanding
of Religious Values - Spirituality, thought process.
UNIT IV GENDER EQUALITY 6
Gender Equality - Definition, Empowerment, Economic Equality; Condition of Women in India-
Education, Healthcare, Political Representation, Gender-based Violence; Challenging Stereotypes:
Parental and Caregiving Responsibilities; Legal and Policy Reform; Cultural Shifts; Global
Perspective; Male Chauvinism; Sustainable Development.
r cispeerve, mare chauvinishi, Sustainable Development.
UNIT V WOMEN ISSUES AND CHALLENGES 6

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											тот	AL PE	RIOD	S 3
COUF	RSE OU	TCOM	IES											
At the	end of t	his cou	rse, stu	lents w	ill be a	ble to						BT N (Highe	Aappe st L ov	
CO1	discuss and soc				ı value	s and	their s	ignific	ance in	person	al	Unders		
CO2	demons awaren	strate ir			ills to	enhan	ce pers	sonal g	growth	and sel	f-	A	pplyin	g (K3
CO3	recogni equitab			ance of	gende	r equa	lity in	prom	oting a	just an		Underst	anding	g (K2
CO4	cultivat achievi							hical c	onduct	toward	s	A	nalyzir	ng(K4
COST	analyse strategi					nen in	variou	is sphe	eres and	identif	У	A	nalyzir	ng(K4
	BOOK A Four													
		ach to V	alue E	ducatio	n - Thr	ough S	Self-ex	pĺorati	ion. Ne					
	RENCE				•									
1.	Joshi, D	Dhananj	ay. Val	ue Edu	cation	in Glol	oal Per	spectiv	ve. Lotu	is Press	. 2014			
	Mahrot 2015.												looks,	
) MAPI	PING:												
			f Cour	se Out	comes	(CO's) with	Progr	amme	Outcon	nes (P	O's) an	d	
			f Cour				- · · #		amme s (PSO		nes (P	O's) an	d	
	Maj	oping o		Progr	amme	Speci	fic Ou	tcome		's)			d	
CO-PC	Maj	oping o		Progr	amme	Speci	fic Ou lation)	tcome	s (PSO	's)				O's
CO-PC	Maj	oping o		Progr	amme	Speci corre	fic Ou lation)	tcome	s (PSO	's)				0's 2
CO-PC CO's CO1	Maj	oping o (1/2/3 i	ndicate	Progr es stren	amme igth of	Speci corre PO	fic Ou lation) 's	tcome 3-Str	es (PSO ong, 2-	's) Mediu	n, 1-W	/eak	PS	
CO-PC CO's CO1 CO2	Maj	oping o (1/2/3 i 2	ndicate	Progr es strer 4	amme ngth of	Speci corre PO 6	fic Ou lation) 's 7	tcome 3-Str ,8	es (PSO ong, 2-	's) Medium	n, 1-W	/eak 12	PS 1	
CO-PC CO's CO1 CO2 CO3	Maj	(1/2/3 i 2 1	ndicate	Progr es strer 4 1	ramme ngth of 5 1	Speci corre PO 6 1	fic Ou lation) 's 7 2	3-Str	es (PSO ong, 2- 9 2	's) Medium 10	n, 1-W 11 1	/eak 12 3	PS 1 -	
CO-PC CO's CO1 CO2	Maj	oping o (1/2/3 i 2 1 1	ndicato 3 - -	Progr es strer 4 1 1	amme ogth of 5 1 1	Speci corre PO 6 1 1	fic Ou lation) 's 7 2 3	1 come 3-Str 8 3 3	es (PSO ong, 2- 9 2 2	's) Medium 10 1 2	n, 1-W	/eak	PS 1 -	



AI23404	l .		FAR	MTRACTORS		3	0	2	4
COURS	E OBJEC	TIVES	*						
To enabl	le the stude	ents to							
1	identify th	e various pract	ices in farms a	and working principles of	tractor engine			10	
2	develop sl	cills on tractor	components ar	nd efficient use of tractors	S				
3	identify th	e method and f	unctioning of	transmission system					
4	construct	the hydraulic s	stems involve	ed in tractors					
5	discover t	he knowledge o	on test procedu	ares to assess the perform	ance of tractors	5			
UNIT I		NTRODUCT	ION TO TRA	CTOR		1.0			9
History;	Classifica	tion of tractors	with their app	olications of ploughing, t	illing, sowing,	harro	wing,	harve	esting,
puddling	g and rota	vation; Tractor	engine - con	nstruction of engine blo	ocks, cylinder	head	and o	crank	case -
features	of cylinder	r, piston, conne	ecting rod and	crankshaft; Two stroke a	and Four stroke	e engi	ne; Fi	ring c	order
ofcomb	ustion char	nbers.							
UNIT I	I	ENGINE SYS	STEMS	,		-			9
Valves-i	nlet and o	utlet valves -	valve timing	diagram; Engine coolir	ng systems - a	ir and	wate	er coc	oling;
Lubricat	ing system	s; Fuel supply	system for trac	ctor engine; Governor-wo	orking and type	s; Ele	ctrica	l syste	em of
tractor.		Sec survey							
UNIT II	u	TRANSMISS	SION SYSTEM	M					9
Contract States and	A272	on; Clutch-sing	le and multipl	e clutch system; Gear bo	ox - sliding mes	h gear	- con	istant	mesh
gear - s	ynchro me	esh gear; Diffe	rential- final	drive and wheels; Steen	ring systems -	front	axle	and	wheel
alignme	nt; Brake -	mechanical bra	ake and hydrau	ilic brake.					
UNIT F	V	HYDRAULI	C SYSTEMS	· · · · · ·	×	-	241017		9
Hydraul	ic system -	working princ	iples and appli	ications; Three point link	age - draft cont	trol -	weigh	nt tran	sfer -
theory o	f traction -	tractive efficie	ncy – tractor c	chassis mechanics - stabi	lity - longitudi	nal an	d later	ral co	ntrols
- visibili	ty - operate	ors seat.							
UNIT V	1.1		TRACTOR	TECHNOLOGY AND	TRACTOR T	ESTI	NG		9
				onomous Tractors; Trac	It's ADOREASTICS NOW ON A DESCRIPTION			nings	(IoT);
100000000000000000000000000000000000000				tems (GNSS) Technolog					
		17. A		evaluation of farm tract					
of tracto		Noceaule nee	a tot tobung e		,	F			
AND CONTRACTOR OF	F EXPER	IMENITS							_
			omponente an	d working functions		_			
		211.000		ly of diesel engine syster	n	_		_	_
			1925	and the second					
3.	To conduc	t the dismantli	ig and assemb	ly of petrol engine syster	11	_			

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- 4. Identification of engine and clutch components and working functions
- 5. Infer the differential and final drive components and working functions
- 6. Infer the brake and steering components and working functions
- 7. Summarize the hydraulic system and PTO systems
- 8. Examine of tractor testing procedure

		and the second
	E OUTCOMES	BT MAPPED (Highest Level)
At the er	nd of this course, the students will be able to	
CO1	classify the various components used in tractor	Understanding (K2)
CO2	identify the tractor engine components	Understanding (K2)
CO3	discover the knowledge of transmission system and ergonomic aspects of tractors	Applying (K3)
CO4	construct knowledge on hydraulic systems in tractor	Understanding (K2)
CO5	outline the knowledge of test procedures and performance of tractors	Applying (K3)

TOTAL PERIODS

TEXT BOOKS

- JagadeeshwarSahay, Elements of Agricultural Engineering, Standard Publishers and Distributors Pvt Ltd., New Delhi, 2020.
- 2. Jain, S.C. and C.R. Rai. Farm tractor Maintenance and Repair. Standard publishers and Distributors, New Delhi, 2012.

REFERENCES

- 1. Jain, S.C. and C.R. Rai. Farm Tractor Power tiller Maintenance and Repair. Standard publishers and distributors, New Delhi, 2018.
- 2. Sharma D.N and S. Mukesh. Design of Agricultural Tractor. Jain Brothers, New Delhi, 2016
- 3. Manoj Kumar Ghosal and Dhirendra Kumar Das. Farm Power. Kalyani Publishers, 2008
 - 4. Sanjay Kumar. Farm Power and Machinery.Kalyani Publishers, 2018

CO PO MAPPING

* Mapping of Course Outcome (CO's) with Programme Outcomes (PO's) and Programme Specific Outcomes PSO's(1/2/3/Indicates strength of correleation) 3-Strong ,2-Medium,1-Weak

-	Outcon						O's						PS	O's
COs	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	2	3	2	3	-	-	-	-	-	-	-	1	1	1
	2	3	2	3	-	-		-	-	-	-	1	1	1
CO2		2	2	3	-	_	-	-	-	-	-	1	3	3
CO3	2	5		-					-	-	10	1	2	2
CO4	2	3	2	3	-,	-	-					1	3	3
CO5	2	3	2	3	-	INE	RING	COL	-1-1-	-	-	1		

BOARD OF STUDIES

ONOMO

AI234	05 CAD LABORATORY FOR AGRICULTURAL ENGINE	RING	0 0	4	2
COU	RSE OBJECTIVES				
To ena	able the students to			-	
1	formulate the agricultural engineering related machineries and s methods.	tructures b	y comput	er ai	deo
2	understand the plan and layout of irrigation and underground pipelin	ne systems.			_
3	make use of components of irrigation systems using CAD.				
4	develop an idea about design of post harvesting units and check dam	ns.			
LIST	OF EXPERIMENTS	1.			
1.	Study of basic CAD.			200	-
2.				-	_
3.	Design and drawing of drip irrigation system.				-
4.	Design and drawing of check dam cum percolation pond.				
5.	Design and drawing of mould board plough.				-
6.	Design and drawing of disk plough.				-
7.	Design and drawing of seed drill.				
8.	Design and drawing of thresher.			_	_
9.	Design and drawing of winnower.			-	-
10.	Design and drawing of farmstead.				-
_	Design and drawing of poultry shed.				-
_	Design and drawing of biogas plant.			-	_
	Design and drawing of shaft coupling.			-	5
	Design and drawing of gears.			-	-
	Design and drawing of connecting rod.				
		TOTAL			_
		TOTAL	PERIOD	6 6	0
COUR	SE OUTCOMES				
At the	end of this course, students will be able to	B	T Mapped		
		(Hig	ghest Leve	el)	
COI	draft the farm machinery and structures by using computers.		Applyi	ng (k	(3)
CO2	draw the components of irrigation system using CAD.		Applyi	ng (k	(3)
CO3	plot the post harvesting units and check dams.		Applyi	ng (k	(3)
CO4	construct the gears and connecting rod.		Applyi	ng (k	23

CO-PO MAPPING :

Mapping of Course Outcome (CO's) with Programme Outcomes (PO's) and Programme Specific

						PC	D's			-			PS	O's
CO's	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	2	2	2	-	1	-,	-	-	2	1	2	3	3
CO2	3	2	2	2	-	1	-	-	-	2	1	2	3	3
CO3	3	2	2	2	-	1	-	=	-	2	1	2	3	3
CO4	3	2	2	2	(i m)	2	-	-	-	2	1	2	3	



COLU		IFOTI	VES					-						
COU	RSE OB.	DECTI	1 LO					*						
To en	able the s	tudents	to											
1	expose	the stud	lents to	o the te	sting of	f differ	ent mat	erials	under t	he acti	on of v	arious	forces	
2		ination												
3	experin	100 million (100 million)												
4	exposu						5(4)	1.1	•		-		-	-
LIST	OF EXP	ERIME	ENTS											-
	1. Ter	ision tes	st on s	teel rod										-
	2. Co	npressio	on test	on wo	od.			-						-
	3. Do	uble she	ar test	on met	tal.		,							
	4. To	rsion tes	st on n	nild ste	el rod					_				
	5. Izo	i Impac	t test o	on meta	l speci	men.								
	6. Cha	rpy Imp	pact te	st on m	etal sp	ecimen								
	7. Roc	kwell H	lardne	ss test o	on meta	als.				-				
	8. Brin	ell Har	dness	test on	metals.									-
	0 0 0												_	
	9. Def	lection t	test on	metal	beam.									
		12.00				ing.								-
	9. Def 10. Con 11. Def	npressic	on test	on heli	cal spri		•	1.	•	,				
	10. Con	npressic	on test	on heli	cal spri		•	1.		,	ТОТА	L PER	RIODS	5 60
COUR	10. Con	npressio lection t	on test test on	on heli	cal spri		*			,	тота	L PER	RIODS	5 60
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	10. Con 11. Def	npression lection t	on test test on	on heli carriag	cal springe sprin	ıg.			•		ΤΟΤΑ		BT N	Aappee
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2	eval	uate their	listenir	ng a	and	speak	ing sk	ills to	face the	e interv	iews in	a succe	essful v	vay.			-
3	solv	e advanc	e level v	verb	bal :	aptitud	de tests	s to ge	et placed	d in Tie	r I com	panies.					-
4	imp	rove their	reasoni	ing	g ski	ills to g	get pla	aced in	n repute	d comp	anies.						
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- 2. Agarwal, R.S." a modern approach to Verbal & Non Verbal Reasoning", S.Chand & Co Ltd, New Delhi., 2021.
- 3. Word Power Made Easy By Norman Lewis, Wr.Goyal Publications, 2021.

CO-PO MAPPING :

Mapping of Course Outcomes (CO's) with Programme Outcomes (PO's) and Programme Specific Outcomes (PSO's)

(1/2/3 indicates strength of correlation) 3-Strong	, 2-Medium,	1-Weak
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	PO's												PSO's	
CO's	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	-	-		-	-	-	3	3	2	3	-	3	1	2
CO2	-	-	-	-	-	-	2	3	2.	3	-	3	1	2
CO3	3	2	2	-	-	1	-	-	-	-	2	-	2	2
CO4	2	3	3	2	-	3	3	1	-	1	2	-	2	2

