Title of the Co	urse	NUMERICAL METHODS WITH APPLICATIONS									
Paper Number	•	ELECTIV	E EC1								
Category	Allied	Year	Ι	Credits	3	Cou	rse	23BMAA1			
		Semester	Ι			Cod	e				
Instructional H	Iours	Lecture Tutorial			Lab Tota			al			
per week					Practice	•					
		1			2		3				
Pre-requisite		12 th Standard Mathematics									
Objectives	of the	• To exp	ose the	students to	o various	tools	in s	olving numerical			
Course		problems.									
		• To prepare the students for competitive Examinations like CSIR									
		,NET e	tc.								
		Solution of	f Algebi	aic and Tr	anscender	ntal eq	quatio	ons- introduction,			
Unit I		Bisection	method-	Iteration	method -	-Meth	od o	of False Position			
		Method – N	lewtob I	Raphson Me	ethod.						
		Interpolat	ion : Fi	nite differer	nces –Forv	ward o	liffer	ences –Backward			
Unit I	ſ	differences	-Cen	tral differe	ences-Syn	npolic	rel	ations –Newton			
		formula for	r interpo	lation-Inter	polation v	with u	ineve	nly spaced points			
		– Lagrange	e 's inter	polation for	rmula.	· •	. 1				
		Numerical	differen	ntiation and	1 integrat	10n-lr	itrodu	action Numerical			
Unit II	T	Differentia	tion –C	ubic spline	Numari		ximui	m and Minimum			
	•	values of a	nnson's	rulo1/2 on	-Numeric		legra	tion – i rapezoidai			
			npson s	Tule1/5 and	1 5/8 Tules						
		Matrices a	nd Line	ear system	of equati	ons -	-Guas	ssian Elimination			
Unit IV	7	method –Modification of the Guass Method to compute the inverse									
		-Iterative Method -Jacobi and Guass Seidal Method.									
		Numerical	Solution	n of Ordina	ry differe	ential	equat	tion –Solution by			
Unit V	,	taylor Seri	$es -P_{1c}$	ard's Meth	od of Su	ccessi	ive A	Approximations –			
	e • 1	Runge-kut	Runge-kutta Methods.								
Extended Pro	tessional	Questions	related	to the abo $C / TNDSC$	ve topics	, Iron	n var	rious competitive			
component (is	s a part	(To be diag	used d	uning the T	/ others it) be so	orved				
only Not	to be		usseu u	uning the T	atoriar not	ui)					
included in	n the										
External Exa	mination										
question paper	•)										
Skills acquire	ed from	Knowledge	e, proble	m solving,	analytical	abilit	ty, pr	ofessional			
this course		competenc	y, profe	ssional com	municatio	on and	l tran	sferable skill.			
Recommended	Text	1.Sastry S.S (2012) Introductory methods of Numeri									
		Analysis.New Delhi : PHI Learning Pvt.Ltd									
		1.Kandasa	ny .P., 7	Thilagavath	i.K., & Gi	unava	thy.k	(2008)			
Reference Boo	ks	Numerical	Method	s .S.Chand	Publicatio	ons					
		2Arumuga	m.S., Tł	angapandi	Isaac.A &	Som	asuno	daram .A(2013)			
		Nmerical A	Analysis	with Progra	amming C	C, Pala	iyaml	kottai: New			
		Gamma Publishing House									

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

- CLO 1: Classify and Solve Bisection Method and False Position Method
- CLO 2: Find the Finite difference, Forward and Backward Differences
- CLO 3: Find Numerical Differentiation and Integration, Maximum and Minimum Values
- CLO 4: Find Guassian Elimination Method, Guass Seidal Method

CLO 5: Find Picard's Method, Runge-Kutta Method

			PSOs						
	1	2	3	4	5	6	1	2	3
CLO1	3	1	3	-	1	-	3	2	1
CLO2	2	1	3	1	1	1	3	2	1
CLO3	3	1	3	1	-	2	3	2	1
CLO4	3	1	3	1	2	-	3	2	1
CLO5	3	1	3	-	-	-	3	2	1

• Offered by B.Sc., Mathematics to B.Sc., Mathematics student.

Title of the Course		NUMERICAL METHODS WITH APPLICATIONS PRACTICAL									
Paper Number	•	ELECTIVE EC1									
Category	Allied	Year Semester	I I	Credits	2 Cou Cod		rse e	23BMAAP1			
							-				
Instructional Hours per week		Lecture		ıtorial	Lab Practic	e	Total				
•		1			1		2				
Pre-requisite	12 th Standa	12 th Standard Mathematics									
Objectives Course	of the	 To exp probler To prep ,NET e 1. 5 exa 2. F exa 3. F exa 4. F wit 5. F 	oose the ns. pare the tc. Solve Bi mples Find the mples Find Nu mples Find Gu h examp	the students to various tools in solving nur he students for competitive Examinations like Bisection Method and False Position Method s he Forward and Backward Differences with s Numerical Differentiation and Integration with s Guassian Elimination Method, Guass Seidal M mples							

Title of the Course ANCILLARY MATHEMATICS - I												
Paper Nur	nber	Allied Cou	ırse –	EC1								
Category	Core	Year	Ι		Credits	3	Cou	rse	23BMAA2			
		Semester	Ι				Cod	e				
Instruction	nal Hours	Lecture		Tuto	orial	Lab Pract	tice	Tota	ıl			
per week		2 1 3										
Pre-requis	site	12 th Standa	ard Ma	athem	atics							
Objectives	of the	• To leas	rn the	basi	c concepts	and proble	em so	olving	in differential			
Course		equatio	ns									
		• To explore trigonometry as a tool in solving problems										
Unit I	Matrices – Characteristic Equation and Cayley - Hamilton											
		Theorem (Proof not included) – Finding the inverse of a matrix using										
		Cayley – Hamilton Theorem – Eigen values and Eigen vectors.										
Unit II		Equations	of the	first	order but o	f Higher D	egree	- Eq	uations solvable			
		for dy/dx – Equations solvable y, x – Clairaut's form – Linear										
		equations	with c	onsta	nt coefficie	nts – Findi	ng th	e com	plementary			
		function ar	nd part	ticula	r integral of	the type ea	ax cos	sax sir	lax			
Unit III		Differentia	l Calc	culus	- Successi	ve Differen	tiatio	n – n	th derivative of			
		standard f	functio	ons (Derivation	not need	ed) p	proble	ms – Leibnitz			
		formula fo	r the 1	nth d	erivative of	a product	(proc	of not	needed) simple			
		problems c	only –	Curv	ature and R	adius of Cu	rvatu	re in (Cartesian			
		coordinate	s only	– pro	blems							
Unit IV		Integral Ca	lculus	s - In	tegration by	/ Parts – Be	ernoul	lli's fo	ormula			
		– Definite	integr	als –	Properties	– problems	. , co	snθ, s	$inn\theta$ and $tann\theta$,			
		cosnθ										
Unit V		(n being	aθ, co	osnθ,	$sinn\theta$ and	tannθ, cosi	nθ Tr	igono	metry :			
		Expression for sinn (only problems in all θ in powers of θ , tan θ , cos θ +ve										
		integer) Ex	pansio	on of	sin the abo	ve)						
		integer) LA	pansi	011 01	sin the doo	(0)						

Extended	Questions related to the above topics, from various competitive										
Professional	Questions related to the above topics, from various competitive examinations UPSC / TNPSC / others to be solved										
Component (is a	(To be discussed during the Tutorial hour)										
nort of internal	(10 be discussed during the Futorial hour)										
part of internal											
component only,											
Not to be included											
in the External											
Examination											
question paper)											
Skills acquired	Knowledge, problem solving, analytical ability, professional										
from this course	annunstan av masfassional annunsiostian and transfarshla skill										
	competency, professional communication and transferable skill.										
Recommended	1. Arumugam, S., & Thangapandi Isaac, A. (2002). Ancillary										
Text	Mathematics Paper I (Revised). Palayamkottai: New Gamma										
	Publishing House										
	2. Arumugam, S., & ThangapandiIssac, A. (2003). Modern Algebra.										
	Chennai: Scitech Publications.										
	3. Naravanan, S., & ManickavachagomPillay, T. K. (2006). Calculus.										
	(Volume I). S. Viswanathan (Printers & Publishers) Pvt. Ltd										
	4. Narayanan, S., & ManickayachagomPillay, T. K. (2014), Calculus,										
	(Volume II) S Viswanathan (Printers & Publishers) Pvt I td										
	5 Narayanan S & ManickayachagomPillay T K (2015)										
	Differential Equations and its Applications S Viswanathan (Publishers										
	& Printers)Pvt Ltd										
Website and											
e-Learning Source	https://nptel.ac.in										
C-Learning Source											

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CLO 1: Classify and Solve reciprocal equations

CLO 2: Find the sum of binomial, exponential and logarithmic series

CLO 3: Find Eigen values, eigen vectors, Clairaut's form and diagonalize a given matrix

CLO 4: Expand the powers and multiples of trigonometric functions in terms of sine and cosine

	SEMESTER I							
COURSE CODE	ALLIED COURSE I	T/P	C	H/W				
23BMAAP2	PRACTICAL	P	2	2				
	ANCILLARY MATHEMATICS - I							
Q1. Find the rank of	a 3 into 3 matrix.							
Q2. Finding inverse	of a given matrix using Cayley- Hamilton Theo	orem.						
Q3. Finding complet	nentary functions and particular integral of give	en differ	ential					
equations with right	hand side consisting of exponential, trigonome	try and						
algebraic function ar	d its combinations.							
Q4. Finding nth derivative of a product of functions using Leibnitz formula.								
Q5. Finding Integration by parts two or more times using Bernoulli's formula.								
Q6. Express sinm $\theta cosn\theta$ in terms of either sin θ or cos θ .								

Title of the Cour	se	AS	STRONOMY									
Paper Number		El	ective II									
Category	Elect	ive	Year	Ι	Credits		3	Course	e Code			
			Semester	II				23BM	AA3			
Instructional Ho	urs		Lecture	T	utorial	Lab	Prac	tice	Total			
per week			3 1 3									
Pre-requisite			12th Standard Mathematics									
Objectives of the	e	• To provide Knowledge about the universe ,scientific thinking to problems in astronomy, the observational foundations of astronomy's greatest discoveries and the nature of galaxy.										
UNIT-I:	IT-I: Celestial sphere and diurnal motion –celestial coordinate sidereal time							ordinates	s –			
UNIT-II:	NIT-II:Morning and evening stars =circumpolar stars -Zone earth-Perpetual day -Twilight.							-Zones	of			
UNIT-III:			Refraction –L orizontal ref parallaxs	aws ractio	of Refra n –Geo	ction ocentri	–Ta ic j	ngent f parallax	formula -horizon	tal		
UNIT-IV:			Kepler's Law-	anom	alies-Kepl	er's e	quatio	on-calen	dar.			
UNIT-V:			Moon-Sidereal moon –Eclips eclipses-Maxin year	and a es- u num a	synodic m mbraand nd minin	nonths penum num n	–elo mbra umbe	ngation -Lunar er of ec	–phase and so lipses in	of lar 1 a		
Extended 1	Profess	ional	Questions rela	ted 1	o the a	bove	topic	cs, fror	n vario	ous		
Component (is	a pa	rt of	competitive exa	amina	tions UP:	SC /	TNPS	SC / ot	hers to	be		
internal compo	nent	only,	solved									
Not to be inclu	ded ir	n the	(To be discusse	d duri	ng the Tu	torial l	hour)					
External E	xamin	ation										
question paper)			xz 1 1	D 11					1 .1.			
Skills acquired	Knowledge, Problem Solving, Analytical ability,											
course			Transferrable S	mpet kill	ency, Prot	tession	nal C	ommuni	cation a	nd		
Recommended T		S.kumaravel and susheelakumaravel, Astronomy ,Prentice Hall(2000)										

Title of the	e Course	ASTRONOMY	PR	ACTICAI					
Paper Nu	nber	ELECTIVE PRA	CTIC	CAL					
Category	ELECTIVE	Year	Ι	Credits		2	Course	Code	
		Semester	II				23BMAAP3		
Instruction	nal Hours	Lecture	Т	utorial	Lab	Pract	Total		
per week		1 1 2							
Pre-requis	ite	12th Standard Math	emati	cs					
		•							
Course Ou	ıtline	1.If the hour anglazimuth is Δ and latitude φ of the equation cos H-H 2.A circumpolar altitudes α 1 and α .Show that the lati Sin α 1+ α 2 /2 sin α 3.if r'' be the hor horizon where the δ)) ^{1/2} where δ is t the place 4. Show that the a and the radius vec e sin u where u is 5.if the interior ex- times as fast a everybrevolutiont minimum number 2(n-1) β / $n\theta$ +2 Π	les of H v plac 2'/2 = star (2 and tude of $\delta = sin$ brizon e sun he de ngle l tor jo eccent cliptic as th he mode	a slar of yhen its a e of obse tan δ cos a, δ) cros l the meric of the plac n φ cos α l- tal refract rises is sh clination of between th ining it to tric anoma c limits be e sun, a oon makes	declin zimut rvatio H-H' ses th dian b e is gi $\alpha 2/2$ ion, i ifted b of the the su aly e + β a and i s roun esx oc	nation h is 1 n can /2 e som etwee ven by show by r''s sun at ction of in is g nd if ts no id the currin	delta be 80+A sh be pour he vertica n the zen y that the p sin $\varphi(\sec(\alpha))$ nd φ , the of motion iven by ta the moor odes reg earth, sh g at or ne	H when ow that ad from 1 cirlcle ith and p point on $p - \delta$)sec(latitude a of a pla un ⁻¹ (1-e ²) n revolve ress θ low that ear a node	its the the at ole the $(\phi^+)^{1/2}$ s n for the e is

Title of the	ANCILLARY MATHE	MA	TI	CS II							
Paner Number	ALLIED										
Category	Vear	I		Credits	2	3	Cour	se Code			
Category	Semester	I		Cicuits	,	5	23BN	AA4			
Instructional	Lecture		Tu	torial	Lab	Practic	e	Total			
Hours	3		1	1 - 3							
per week											
Objectives of the	• To learn vector differentiation and vector integration and solve										
Course	differential equations										
UNIT-I:	Vector Calculus –Vec	tor	di	ifferentia	tion-g	gradient-	Diverg	gence-curl-			
	Properties-Result										
	Linear equations with con	nsta	nt c	coefficier	nts wi	th Right	hand	side of the			
UNIT II.	from e ^{ax} v where v is an	y fi	inct	ion of x	-x ^m n	n be a p	ositive	e integer –			
UINI I -11:	Linear equations with var	riab	le c	coefficier	nts (H	omogen	eous I	Differential			
	equations only).										
	Fourier series -definition	-Fo	ouri	er series	expar	nsion of	period	ic function			
UNIT-III:	with period 2π - Even an	nd c	odd	function	s –ha	lf range	fouri	er series –			
	Problems										
	Interpolation-Newton's in	nterp	ola	tion for	mula-	Centre	ql dif	ference –			
	Interpolation formulae-Lag	rang	e's i	interpolati	ion foi	rmulae					
UNIT-V:	Correlation –Rank corr	elqt	ion	-Regre	ssion	Lines	and	Regression			
	coefficietns.										
					1		1 .	1			
Skills acquired	Studnets relating the conc	cept	s of	compou	nd int	terest an	d simp	le interest			
from this course	1.D. 0	1	• 7	1	1.	1 (2)		A 1 (* 1			
Recommended	1.Dr S.arumugam and	d .	A.1	hangapa	ndi	Isaac(20	JU6)	Analytical			
Text	Geometry 2D and Ve	ctor	· C	alculus,	Palaya	imkottai	, Nev	v Gamma			
	Publishing House					1					
	2. Dr 5.a		luga	um tattai Na	and	u mana Du	A. I f سناهه: اما				
	Isaac(2000), Statisticss, Pa	Th.	amk ang	ioliai, Ne	w Ga	mma Pu	DIISNII	ig House.			
	5. Dr S.arumugam and A	. I Ili alau	ang	apandi is kottoi Ni	aac(2)	000) Nu	uhlichi	ng House			
	4 S Narayanan and T Maniakamyasagampillai (2014). Calculus (Val										
	III) Vishwanathan printers and publishers										
	S Narayanan and T M	ania	nu j rkai	nvasagai	s nnilla	i (201	4) T	Differentail			
	Equation and its applicati	on	Vis	hwanath	an nri	nters an	d nubl	ishers			
Website and	2-quarter and its approach	, <u>,</u>	, 15		P11	inters un	- 1 401				
e-Learning	https://nptel.ac.in										
Source											

Title of the	e Course	ANCILLARY N	ANCILLARY MATHEMATICS II PRACTICAL								
Paper Nur	nber	ELECTIVE PRACTICAL									
Category	ELECTIVE	Year	Ι	Credits		2	Course Code				
		Semester	II				23BMAAP4				
Instructional Hours		Lecture	T	utorial	Lab		Total				
per week					Pract	ice					
		1			1		2				
Pre-requis	ite	12 th Standard Mathematics									
		•									
Course Ou	ıtline	1.To find the Fourier coefficients of periodic functions of period 2									
		pi									
		2 Solving problems using Newton's Interpolation formula									
		3.Solving Proble	m us	sing Lag	range's	interpol	ation formula				
4. Solvinng problem Rank Correlation											
		5.Solving proble	m re	gression	line an	d regres	ssion coefficients				
		4. Solving probemscorrelation coefficients									

Title of the	Course	MATHEMATICAL STATISTICS-I								
Paper Nun	nber	ELECTIVE N	A5							
Category	Elective	Year	II	Credits		3	Course Code			
		Semester	III				23BMAA5			
Instruction	nal	Lecture	Tı	ıtorial	Lab		Total			
Hours					Practic	e				
per week		2	1				3			
Pre-requis	ite	12 th Standard N	/lathem	atics						
Objectives	of the	To provide	an un	derstandin	g of the	fundar	nental concepts of			
Course		probability	theory							
		• To develo	op ski	lls in ap	plying	probab	oility theory and			
		statitstical inference to sole real world								
UNIT-I:		Definition of	sample	space –E	vents –D	efinitio	on of probability –			
		addition and	Multip	lication la	ws of pr	obabili Dava'a	the answer aiments			
		problems	onanic	mai proba	ionny –	baye s	theorem –simple			
		Distribution	Functio	n_Mather	natical E	vnecto	tion _Conditional			
UNIT_II.		Expectation	and c	onditional	Variar	лреста рсе-Мо	ment Generating			
01111-11.		Function –Pi	robabil	ity Gener	rating F	Function	n –Cumulants –			
		Characteristic function-Simple problems								
				<u>-</u>	<u>r</u>					
UNIT III		Discrete Distr	ibutior	Binomia	l .Poisso	on Cont	inuos Distribution			
		and Normal			,					
UNIT IV		Sampling Dis	tributio	on & Test	of Signit	ficance	Sampling –Tests			
		of Significan	ce –Ni	ull Hypot	hesis –T	ests of	f significance for			
		Large Sample	S							
UNIT V										
		Test of Signif	icance	for Small	Samples	s : Usi	ng the Chi-Square			
		distribution- S	Student	s t-distribu	tio-F-dis	stributi	on			
			~		-		11 11 - ~			
		On Completi	on of	this cours	se, stude	ents wi	Il able to Define			
a a i		Sammple spa	ce .eve	nts, and p	robabilit	y and a	apply the addition			
Course Out	come	and multiplica	ation L	aws of pro	obability	to calc	culate probabilities			
		or events								
Recommend	ded Book									
		S.C Gupta &V.K.Kapoor, Fundamental Mathematical Statistics								
		, Sultan & son	IS	1 , - , - , - ,						
L										

Title of the	e Course	MATHEMATI	CAL S	TATIST	ICS-I I	PRACT	ГICAL
Paper Nur	nber	ELECTIVE					
Category	Elective	Year	II	Credits	5	2	Course Code
		Semester	III				23BMAAP5
Instruction	nal	Lecture	Tu	torial	Lab		Total
Hours					Pract	ice	
per week		-	-				2
			•				
		•					
Course Ou	come	1.Find the Skev 2.Applying Bay 3.Find the bino 4.Using the non- fir the mean wh 5.Perform Z tes 6.Conducting a variance using 7.Perform t-tes 8.Conducting a population vari	vness a ve's the mial d rmal d hen the stfor di a hypo t for ec a hypo iance	and kurte corem to istribution istribution estandar ifference othesis te distribution quality of thesis tes	osisof a solve si on with on to c d devia in mea in mea est for tion f mean stfor a	given imple p imple p a n=20 alculat ition is in the di sample	data set distribution problems ,p=0.4 te confidence intervals known fference between two e mean with a known

Title of	the	OPERATION RESEARCH 1 (ANCILLARYMATHEMAICS III										
Paper Nur	nber											
Category	Core	Year II Credits 4 Course 23BMAA6										
		Semester	III				Cod	e				
Instruction	nal	Lecture	Τι	itorial	Lab	Prac	tice	Tota	ıl			
Hours		4	1					4				
per week												
Pre-requis	ite	12th Standard Mat	hemat	ics								
Objectives	of	Identify and characterize sets and functions and Understand, test and										
the Course	e	analyze the conve	ergenc	e and div	/erger	nce of	fseque	ences,	series			
Unit 1:		Introduction -ori	gin an	d develo	pmen	t of (DR-Na	ature a	and features of OR-			
		Scientific method	l in O	R-Mode	lling i	in OF	R-Adv	antage	e and Limitation of			
		Model-General Solution methods of OR Models-Applications of OR-										
		LPP-Mathematical formulation of the problem-Illustration on										
		Mathematic formulation of LPP-Graphical Solution Method-General										
		LPP-Canonical and	nd Sta	ndard for	rms of	t LPP	,	DI				
Unit II		Use of Artificial Variables (Big M Method-Two Phase Method)Duality in										
		Linear Programming-General primal and dual Pair –Formulating a dual										
		Problem-Primal	-Dua	I Pair i	n a	Mati	TIX IC	orm –	Duality theorems-			
		Complementary slackness theorem-Duality and simplex method –Dual										
Unit III		Introduction – I	P for	mulation	of 7	Г Р_Е	visten		lution in TP- The			
		transportation table-Loops in T.P. Solution of a Transportation problem-										
		Finding an initial basic-feasible solution (NWCM-LCM-VAM0-										
		Degeneracy in TP-Transportation Algorithm (MODI Method)-										
		Unbalanced T.P-	Maxin	nization '	Г.Р		0					
Unit IV		Assignment pro	hlem_	Introduc	tion_N	/lathe	matic	al fo	rmulation of the			
		problem _Test for optimality by using Hungarian Method-Maximization										
		case in Assignment Problem										
Unit V		Sequencing prob	lem-Ir	troductio	on –P	roble	m of	Seaue	ncing –Basic terms			
		used in sequencin	1g —n	iobs to b	e ope	rated	on tw	o ma	chines – problems –			
		n jobs to be operated on K machines –problems –Two jobs operated on K										
machines (Graphical Method)-Problems									5 1			
				,								
Recommen	nded	1, Operation Res	earch	(14 th Edi	tion)b	y Ka	ntiswa	arub, I	P.K.Gupta and Man			
Text		Mohan Sultan C	hand	& sons,	New	Delhi	,2008	3	-			
Website an	ıd											
e-Learning	3	https://nptel.ac.in										
Source												

Title of the Course		ANCILLARY MATHEMATICS III PRACTICAL								
Paper Number		ELECTIVE PRACTICAL								
Category	ELECTIVE	Year	II	Credits 2		2	Course Code			
		Semester	III				23BMAAP6			
Instructional Hours		Lecture	T	utorial	Lab		Total			
per week						tice				
		1			1		2			
Pre-requis	ite	12 th Standard Mathematics								
		•								
Course Ou	ıtline	1.Solving Problem using Big –M method								
		2 Solvinng problem using Two Phase Methodntrol								
		3.Solvingn Transportation Problem,								
		4. Solving Assignment probems								
		5. Solving Mathemtical formulation problem								
		6.Solving problems using Graphical Method								

Title of	the	TRANSFORMATION TECHNIQUES									
Course											
Paper Numb	er	ELECTIVE M7									
Category	Core	Year	II	Credits		4	Course Code				
		Semester	IV				23BMAA7				
Instructional	I	Lecture	T	utorial	Lab)	Total				
Hours					Pra	ctice					
per week		3	1				4				
Pre-requisite	e	12 th Standa	rd Ma	thematio	cs						
Objectives of	of the	Identify an	nd cha	aracteriz	e set	s and	functions and Understand, test and				
Course		analyze the convergence and divergence of sequences, series									
Course Out li	ne	Unit 1: L	aplace	e Transf	orm-	Definit	tion-Laplace Transform of Standard				
		function – Laplace Transform of Periodic functions.									
		Unit II Inverse Laplace Transform -Standard formulae-Solving									
		Ordinarry Differential Equation with constant Coefficients –variable									
		coefficients of periodic functions of period 2 pi									
		Unit III Fouriers series – Definition – To find the Fourier coefficients of									
		periodic functions of period 2 pi									
		Unit ly Fourier transforms Compley forms of Fourier integral formula									
		Unit iv Fourier transforms – Complex form of Fourier integral formula									
		-round integral incorent -round sine and cosine Unit V Z transforms Definition Properties Z Transforms of some									
		basic functions and problems _Inverse 7 transforms _Method to fid the									
		inverse 7 Transfroms									
Recommend	ed 1	Naravanar		&Man	icava	chagan	nPillai T.K Calculus (Vol III)				
Text	S.	Viswanatha	ı (Prir	iters and	l Publ	lishers) PVT Ltd				
		1. Veerar	aian .	T (2004	I) En	gineeri	ing Mathematics . New Delhi Tata				
		MacGraw Hill Publishing Limited.									
Website and					0						
e-Learning											
Source											
	ht	tps://nptel.ac	<u>.in</u>								

Title of the Course		TRANSFORM TECHNIQUE PRACTICAL							
Paper Nur	nber	ELECTIVE PRACTICAL							
Category	ELECTIVE	Year	II	Credi	ts	2	Course Code		
		Semester	IV				23BMAAP7		
Instructional Hours		Lecture	,	Tutorial	Lab		Total		
per week					Practi	ice			
		1			1		2		
Pre-requisite		12 th Standard Mathematics							
		•							
Course Outline 1.Laplace transform s of student functions qnd periodic fun 2.Solving ordinary differential Equations with c coefficients ,Variable coefficients 3.Solving Simultaneous linear equations using laplace trans 4. –To find the Fourier coefficients of periodic functions of 2 pi 5. Solving problems of Complex form of Fourier integral fo 6. Solving z Transforms of some basic functions and problements							ad periodic functions ons with constant ag laplace transform lic functions of period rier integral formula tions and problems		

Title of the Course		OPERATION	II	(ANCILLARY							
		MATHEMATICS IV)									
Paper Nur	nber	ELECTIVE M5									
Category	Elective	Year	II	Credits	4	Course Code					
		Semester	IV			23BMAA8					
Instruction	nal Hours	Lecture		Tutorial	Lab	Total					
per week					Pract						
					ice						
		3		1		4					
Pre-requis	ite	12th Standard Math	nematics								
Objectives	of the	Replace Proble	em								
Course		Inventory Con	trol								
		Queuing Syste	m								
UNIT-I:		Replace Probler	n and S	System Re	liability	-Introduction –					
		Replacement of	f Equipr	nent/ Ass	sert that	at Deteriorates					
		gradually-replacement of Equipment that fails suddenly.									
UNIT-II:		Inventory control-Types of inventories-Reason for carrying									
		inventories-Costs Associated with inventories-Factors									
		affecting Inventory Control-The Concept of EOQ-									
		Deterministic Inventory Problems with no shortages with									
		shortages problem of EOQ with price Breaks.									
IIn:4 III.		Queuing theory-Introduction-Queuing System -Elements of									
		Queuing System-Operating characteristics of a Queuing									
		system-Determini	stic	Queuing	sys	stem-Probability					
		Distributions of	Queuing	system Cl	assificat	ion of queuing					
		Models -Definition of transient and steady states-Poisson									
		Queuing System- (M/M/1)::(∞/FIFO).									
		(M/M/I)::(\mission/SIRO),(M/M/I)\emissionN/FIFO) Generlized model									
		Birth-Death process									
Unit IV		Network Scheduling by PERT/CPM-Network Basic									
		Components -Drawing network-Critical path Analysis-PERT									
		Analysis-Distinction between PERT and CPM									
		Game theory –Two person zero –Sum Games-Basic terms-									
Linit V		Maximum-Minim	ax Princij	ole-Games	without	saddle points -					
Unit V		Mixed strategies-Graphical solution of 2xn and mx2 games-									
		Deterministic property- General solution of mxn rectangular									
		games									
Recommen	ded	1, Operation Research (14th Edition)by Kantiswarub,									
BookRecon	nmended	P.K.Gupta and Man Mohan Sultan Chand & sons, New									
Text		Delhi ,2008									
Website an	d	https://nptel.ac.ir	1								
e-Learning	Source		-								

Title of the Course		ANCILLARY MATHEMATICS IV PRACTICAL							
Paper Number		ELECTIVE PRACTICAL							
Category	ELECTIVE	Year	II		Credit	S	2	Course Code	
		Semester	IV					23BMAAP8	
Instructional Hours		Lecture		Tutorial		Lab		Total	
per week						Practice			
		1				1		2	
Pre-requis	ite	12 th Standard Mathematics							
		•							
Course Ou	ıtline	1.Solving Replace Problem and System Reliability-							
		2 Solvinng problem Inventory control							
		3.Explain(M/M/1)::(∞/FIFO). (M/M/I)::(∞/SIRO),							
		4. Solving probemsNetwork Scheduling by PERT/CPM method.							
		5. Solving problems of Two person zero –Sum Games							
		6. Solving problems Graphical solution of 2xn and mx2 games							

Title of the	e Course	MATHEMATICAL STATISTICS-II									
Paper Nur	nber	ALLIED									
Category	Elective	Year	Ι	Credit	s	3	Course Code				
		Semester	Π				23BMAA9				
Instruction	nal	Lecture	T	utorial	Lab	Pract	tice	Total			
Hours		2	1					3			
per week											
Pre-requis	ite	12 th Standard M	lathe	ematics							
Objectives	of the	To provide	e an	unders	tandi	ng of	the fundamental conce	epts of			
Course		probability	thec	ory		C		•			
		• To develop skills in applying probability theory and statistical									
		inference to	inference to sole real world								
Course Ou	ıtline	UNIT-I: Def	initi	ion of	samp	ole sp	bace –Events –Definit	ion of			
		probability –a	addi	tion an	d M	ultiplic	cation laws of probab	ility –			
		Independence	of e	events –	Condi	itional	probability -Baye's the	orem –			
		simple problem	ns.								
		UNIT-II:	Dis	tribution	Fu:	nction	-Mathematical Expecta	tion –			
		Conditional	Exp	pectation	ar	nd c	onditional Variance-N	Ioment			
		Generating Fu	ncti	on –Prol	babili	ty Ger	erating Function –Cumu	ılants –			
		Characteristic	func	ction-Sin	nple p	orobler	ns				
		UNIT III Discrete Distribution Binomial ,Poisson Continuos									
		Distribution and Normal									
				D							
		UNIT IV Sampling Distribution & Test of Significance Sampling –									
		Tests of Sign	11108	ance –N	ull H	ypothe	esis –Tests of significat	nce for			
		Large Samples	5								
			t of	- Cianifi		for C	mall Samulas . Using th	a Chi			
		Square distribu	st OI	. Signino 2. Studer	ts t c	lor SI	inali Samples : Using u	le Chi-			
		Square distribu	anoi	I- Studel	115 1-0	11511101					
Course Ou	itcome	On Completio	n of	this cou	irse (studen	ts will able to Define Sa	mmnle			
	ittoine	snace events		and pro	habil	itv a	nd apply the addition	n and			
		multiplication	, t Law	vs of pro	hahili	tv to c	alculate probabilities of a	events			
		munipheution	Luv	, 5 01 p10	ouom		alculate produbilities of v	o v entes			
Recommen	nded	S.C Gupta &	ZV.K	Kapoor	; Fu	ndame	ental Mathematical Stat	istics ,			
Book		Sultan & sons		1	·			· · · · · ·			
		S.Arumugam&	2Th	angapan	di Isa	ac, Sta	tistics ,New Gamma Pub	olsihing			
		House,		~ I		~		C			

Title of the Course		MATHEMATICAL STATISTICS PRACTICAL-II									
Paper Nur	nber	ELECTIVE									
Category	Elective	Year	II	Credi	ts	1	Course Code				
		Semester	IV				23BMAAP9				
Instruction	nal	Lecture	Τι	Tutorial La			ctice	Total			
Hours		-	-					1			
per week											
		•									
Course Ou	itline	2.Find the binomial distribution with n=20,p=0.4 4.Using the normal distribution to calculate confidence intervals fir the mean when the standard deviation is known 5.Explain Poisson distribution with Exampl 6.Conducting a hypothesis test for the difference between two variance using the F-distribution 7.Perform t-test for equality of mean 8.Conducting a hypothesis testfor a sample mean with a known population variance 9.Explain F-distribution with example									