

NATIONAL COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI – 1
B.Sc. (MATHEMATICS) –SCHEME AND SYLLABUS – CBCS SYSTEM
(Applicable to the candidates admitted from the academic year 2013-2014 onwards)

Semester	Part	Course Title	Title	Instr. Hours/ week	Credit	Exam Hours	Marks			Total
							Int	Ext		
								Oral	W	
I	I	Language Course-I (LC - I)	Language	6	3	3	25		75	100
	II	English Language Course-I (ELC-I)	English	6	3	3	25		75	100
	III	Core Course – I (CC-I)	Differential Calculus and Trigonometry	5	5	3	25		75	100
		Core Course – II (CC-II)	Integral Calculus and Fourier Series	3	-	-	-		-	-
		First Allied Course-I (1AC-I)	Allied Physics I	5	3	3	25		75	100
		First Allied Course – II (1AC-II)	Allied Physics Practical	3	-	-	-		-	-
	IV	Skill Based Elective-I (SBE-I)	Office Automation	2	2	3	25		75	100
	Total			30	16				500	
II	I	Language Course-II (LC-II)	Language	6	3	3	25		75	100
	II	English Language Course – II (ELC-II)	English	4	2	3	25		75	100
		Communicative English –I (CEC-I)	Communicative English –I	2	1	3	25	5	70	100
		Core Course – II (CC-II)	Integral Calculus and Fourier Series	3	5	3	25	5	70	100
	III	Core Course – III (CC-III)	Analytical Geometry (3D) & Vector Calculus	5	5	3	25		75	100
		First Allied Course – II (1AC-II)	Allied Physics Practical	3	3	3	25	5	70	100
		First Allied Course – III (1AC-III)	Allied Physics II	5	3	3	25		75	100
	IV	Environmental Studies	Environmental Studies	2	2	3	25		75	100
	Total			30	24				800	
III	I	Language Course – III (LC-III)	Language	6	3	3	25		75	100
	II	English Language Course-IV(ELC-IV)	English	4	2	3	25		75	100
		Communicative English – V (ELC-V)	Communicative English –II	2	1	3	25	5	70	100
	III	Core Course – IV (CC-IV)	Differential Equations	5	5	3	25		75	100
		Core Course – V (CC-V)	Classical Algebra	2	-	-	-		-	-
		Second Allied Course-I (2AC-I)	Mathematical Statistics – I	5	3	3	25		75	100
		Second Allied Course – II (2AC-II)	Mathematical Statistics II	2	-	-	-		-	-
	IV	Skill Based Elective Course II – (SBEC-II)	Desktop Publishing	2	2	3	25		75	100
Skill Based Elective Course III – (SBEC-III)		Office Automation & Desktop publishing Lab	2	2	3	25		75	100	
	Total			30	18				700	

IV	I	Language Course – IV (LC-IV)	Language	6	3	3	25		75	100
	II	English Language Course–IV(ELC-IV)	English	6	3	3	25		75	100
	III	Core Course – V (CC-V)	Classical Algebra	3	5	3	25		75	100
		Core Course – VI (CC-VI)	Sequences and Series	5	5	3	25		75	100
		Second Allied Course – II (2AC-II)	Mathematical Statistics II	3	3	3	25	5	70	100
		Second Allied Course – III (2AC-III)	Mathematical Statistics III	5	3	3	25		75	100
	IV	Non Major Elective Course–I (NMEC-I)		2	2	3	25		75	100
		Total		30	24					800
V	III	Core Course – VII (CC-VII)	Abstract Algebra	5	5	3	25		75	100
		Core Course – VIII (CC-VIII)	Real Analysis	5	5	3	25		75	100
		Elective Course – I (EC-I)	Operations Research/ Automata Theory	5	4	3	25		75	100
		Elective Course–II (EC-II)	Astronomy/ Discrete Mathematics	4	4	3	25		75	100
		Core Course – IX (CC-IX)	Statics	5	5	3	25		75	100
	IV	Non Major Elective Course –II (NMEC-II)		2	2	3	25		75	100
		Value Education Course – VEC	Value Education	2	2	3	25		75	100
		Soft Skills		2	2	3	25		75	100
		Total		30	29					800
VI	III	Core Course – X (CC-X)	Theory of Transforms	6	5	3	25		75	100
		Core Course – XI (CC-XI)	Complex Analysis	6	6	3	25		75	100
		Core Course – XII (CC-XII)	Dynamics	6	6	3	25		75	100
		Core Course – XIII (CC-XIII)	Numerical Methods	6	6	3	25		75	100
		Elective Course– III (EC-III)	Graph Theory / Stochastic Processes	5	4	3	25		75	100
		Gender Studies		1	1	3	25		75	100
		Total		30	28					600
		V	Extension Activities		--	1	--	--	--	--
		Total		180	140					4200

There will be oral test for all practical examinations and Communicative English Course. The oral test will carry 5 marks in the external component.

nraAs; (, ffhY , yffpæk) > ci uei l > rWfi j > , yffpæ tuyhW > gadKi wj j kp; -

U13T1

gUtk; : l

ghl k; : l

fwgpfFk; fhyk; : 6

j ugGSSp : 3

myF - 1:

ghuj pahu; ftpi j fs;	:] u] ;tj p Nj tpaed; Gfo; ghuj ehL
ghuj gj hrd; ftpi j fs;	:	j kppd; , dpi k , dgj j kp>
		c yfk; c d;Di l aJ> nfhl l KuNr
		gl l fNfhl i l ahu; ftpi j fs;ci ogGk; Nj i t
		, td; NrhW NghLfwhd> mtd; \$W NghLfwhd;
ehkff;fy; ftpQu; ghl y;fs; :		, sej kpDfF
fz z j hrd; ftpi j fs; :		ghLtJ ehdyy

myF - 2:

mgJy; uFkhd;	:	kz ;
i tuKj J	:	ghuj p epi df;fggLfwhd;
Nkj j h	:	nrUgGl d; xU Ngl b
kèh	:	Nt fk> j kpggwW> Ruz l ykhk?>rpt gGehl h>
		fhj Nyh fhj y>goffk; nghyyhj J
, dFyhg;	:	xU Gddi fr; rkpfj fahy;
mKj ghuj p	:	i ` f\$
ehl LgGwg; ghl y;fs; :		xgghug; ghl y; - grpahwg; NghTj pyi y

myF - 3:

ci uei l:

ghuj pahu;	-	j pahdq;fS k; kej µq;fS k;
j pU.tpf.	-	kdj d;
c .Nt.rh	-	vJ j kp>?
uh.gp NrJggps; i s	-	FbAk; gi l Ak;
K.t.	-	nkhop , yyhj epi y
GJi kggj j d;	-	j kph; ehfupfj j py;

fphkthofi f

f;f;fp	-	Gi dfspd; Nti y eWj j k;
rpd; mz z hJ i u	-	gwW
R[hj h	-	fl Ts; , Uffpwhuh?

myF - 4: rWfi j:

tpay; fhyk;	-	Ki dtu; , uh.ghyRgukz pad;
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myF - 5:

, yffpa tuyhW

- , Ugj hk; E}wwhz L
(Gj pdk> ehl fk; eb;fyhf)

gadKi wj j kp;

- tykpFk; tj pfspd; nj hFgG
kpfhi kf;Fupa tj pfs; (eyy j kp;
vOj Ntz Lkh gf;260 - 290.

ghl E)y;

1. nraAs> c i uei l

- fy;Y}up ntspaL

2. rWfi j

- tpbayfhyk>

Ki dtu; , uh. ghyRgukz pad;

3. , yffpa tuyhW

- nghJ

4. gadKi wj j kp;

- eyyj kp; vOj Ntz Lkh>

m.fp guej hkdh> gf;260-290

nraAs; (, i l f;fhy , yffpak> Gj pdk> , yffpa tuyhW

nraAs; - U13T2

gUtk; : ll

ghl k; : ll

fwgpfFk; fhyk; : 6

j ugGssp : 3

myF - 1

1.1 j pUQhdrkgej u; Nj thuk; j pUfNfhhbf;fh j pUj j yk; (11 ghl yfs) , dW..

1.2. j pUehTffuru; Nj thuk; j pUgGfY}u; j pUj j yk; (10 ghl yfs) KUsth..

1.3. Rej uu; Nj thuk; j pUthi df;fh j pUj j yk; (10 ghl yfs); ki wfs;..

1.4. khz pff;fthrfu; j pUthrfk; - j pUntkghi t (10 ghl yfs) Mj pAk;..

myF - 2

2.1. Mz l hs; j pUgghi t (10 ghRuqfs) Xqfp

2.2. nj hz l ubgnghbahothu; j pUkhi y (10 ghRuqfs) gri r

2.3. j pUgghz ho;thu;mkydjh jgphd; (10 ghRuqfs)

2.4. FyNrfuho;thu;ngUkhs; j pUnkhop (11 ghRuqfs) CNdW

myF - 3

3.1. - Kj ;J f;Fkhurhkp gpsi sj j kp; (2 ghl yfs)

3.2. - eej pff;fykgfk; - 5 ghl yfs;

3.3. - Kf;\$l wgsS - 5 ghl yfs;

3.4. - xsi tahu; ghl yfs; - 4 ghl yfs;

3.5. - fhsNkfgGytu; ghl yfs; - 3 ghl yfs;

3.6. - rfj pKj j gGytu; ghl y; - 1 ghl y;

3.7. - fkgu; ghl yfs; - 3 ghl yfs;

myF - 4

Gj pdk;- rKj ha tjj p - eh. ghuj j rhuj p

myF - 5

5.1. , yffja tuyhW

5.1.1. - gfj p , yffjak; [i rtk> i tz tk]

5.1.2. - rwwwyffjak; [gpsi sj j kp> fykgfk>gsS

5.1.3 - Gj pd , yffjak;

fhggjak> ehl fk> , yffjatuyhW - U13T3

gUtk; : III

ghl k; : III

fwgpfFk; fhyk; : 6

j ugGssp : 3

myF - 1

1. rpyggj pfhuk; (, sqNfhtbfs) - tofFi u fhi j

2. kz pNkfi y (rjj i yrrhj j dhu)- Mj pi u gpi rapl j fhi j

myF - 2

3. fkguhkhaz k; (fkgu) - , uhkhtj huk; - fhl rgggl yk;

4. ngupaGuhz k; (Nrf;fphu)- Gryhu; ehadhu; Guhz k;

myF - 3

5. , NaRfhtpak; (fz z j hrd) - ki ygnghopT

6. rwhgGuhz k; (c kWgGytu) - khDfFg; gpi z epdw gl yk;

myF - 4 :

7. j z z B; j z z B; (Nfhky; Rthkpehj d)- ehl fk;

myF - 5

8. , yffjatuyhW - fhggjak> Guhz k> ehl fk;

gz i l , yffjak> , yffja tuyhW> nkhoggawrp - U13T4

gUtk; : IV

ghl k; : IV

fwgpfFk; fhyk; : 6

j ugGssp : 3

myF - 1

1. FWenj hi f - 10 ghl yfs; (8>18>25>40>58>99>131>135>167>196)

2. ewwpi z - 5 ghl yfs; (1> 3> 16> 30> 355)

3. I qfE}W - 10 ghl yfs; (nryT mOqFtj j ggj J)

myF - 2

4. fyj nj hi f - 2 ghl yfs; (FwQrpf;fyp - 15> Kyi yf;fyp
- 11)

5. mfehD}W - 2 ghl yfs; (129> 140)

6. GwehD}W - 10 ghl yfs; (95>165>182>183>184>188>194>195>204)

myF - 3

7. j pJfFws; - mwj J ggghy; 5 mj pfhuq;fs; (11> 13> 14> 43> 47)

myF - 4

8. gj J ggghl L - Kyi ygghl L KOtJk; (egGj dhu)

myF - 5

, yf;fa tuyhW-vl Lj nj hi f> gj J ggghl L> gj pdz ; fb;fz f;F> nkhoggawrp -
nghJ f;f;Li u (nghJ mwT> ehl Lel gG> rKj ha Nehf;F gwwpad)

ENGLISH FOR COMMUNICATION – U13E1

Semester : I

English Language Course: I

Instruction Hours/Week: 6

Credit: 3

Unit I : 1.Civilization and History – C.E.M. Joad
2. The Fun They Had – Issac Asimov

Unit II : 3. Big Numbers and Infinities – George Gamow
4. Oil – G.C. Thornley

Unit III: 5. An Observation and An Explanation – Desmond Morris
6. A Robot about the House – M.W.Thring

Unit IV: 7.A Wrong Man in Worker’s Paradise – Rabindranath Tagore
8. Making Surgery Safe – Horace Shipp

Unit V: 9. Using Land Wisely – L.Dudley Stam

10. The Karuburator – Karel Capek

Text Book: English through Reading, by W.W.S.Baskar and N.S.Prabu, Published by Macmillan Publishers India Ltd.,

ENGLISH THROUGH EXTENSIVE READING - U13E2

Semester : II **English Language Course : II**
Instruction Hours/Week:4 **Credit: 2**

Unit I

R.K.Narayan	An Astrologer's Day
Boman Desai	Between the Mosque and the Temple

Unit II

O.Henry	The Gift Of the Magi
Premchand	The Child

Unit III

R.P. Sisodia	The Last Salvation
Kasturi Sreenivasan	I Prepare to gotoCoimbatore

Unit IV

F.E.B. Gray	A Slip of the Tongue
Ruskin Bond	The Eyes are not Here

Unit V

Rabindranath Tagore	The Cabuliwallah
Guy de Maupassant	The Diamond Necklace

Text book

Glimpses of Life ; An Anthology of Short Stories ; Board of Editors [Orient Longman]

COMMUNICATIVE ENGLISH I – U13CE1

Semester : II **Communicative English Course: I**
Instruction Hours/Week:2 **Credit: 1**

OBJECTIVES

01. To Facilitate communication
02. To expose the students to various levels/types of communication.
03. To help the students achieve communicative competency

- UNIT I** 01. At the College
- 02. on the Campus
- 03. Outside the class
- UNIT II** 04. At the Post office
- 05. For Business and Pleasure
- 06. Review
- UNIT III** 07. Are you Smart?
- 08. Are you creative?
- 09. Is it too hard to improve?
- 10. How to win?
- UNIT IV** 11. View points
- 12. Snakes and ladders
- 13. Your Self
- UNIT V** **Write**
- 14. Circulars, notes-reminders, warnings, farewells, apology;
- 15. Draft invitations – marriage, annual day, inaugural functions of associations, valediction, seminar, workshop.
- 16. Draft Short messages- compliments, birthday wishes, notifications, etc.,
Draft Posters- Slogans, announcements etc.,
- 17. Dialogue writing

Text Book: Creative English for Communication (2nd edition) by Krishnasamy and Sriraman.

Reference: Websites www.english club.com
www.usingenglish.com
 Owl-online writing lab
 MIT-open course ware
 www.eslcaf .com

ENGLISH FOR COMPETITIVE EXAMINATIONS – U13E3

Semester : III

English Language Course : III

Instruction Hours/Week:4

Credit: 2

Unit-I:

- Basics of English
- (a) Parts of speech
- (b) Tenses

- (c) Active and passive voice
- (d) Tag questions

Unit –II:

- (a) Errors and how to avoid them
- (b) Spotting errors
- (c) Reconstructing passages
- (d) Précis writing

Unit –III

Reading comprehension

Unit –IV:

Vocabulary – synonyms, antonyms, prefix & suffix, Homonyms, sentence completion, spelling Phrasal verbs & Idiomatic Expressions.

Unit –V:

- Writing letters and drafting a resume /cv
- Types of essays and how to write them
- Guidance to a group discussion and
- Guidance to attending an interview

Text book :

English for Competitive Examinations by R.P.Bhatnagar & Rajul Bhargava macmillan India Ltd. Delhi.

COMMUNICATIVE ENGLISH II – U13CE2

Semester : III

Communicative English Course : II

Instruction Hours/Week:2

Credit: 1

Unit-I:

Enriching Vocabulary – Register Development; who is who; Synonyms, antonyms, Active and Passive vocabulary, proverbs

Unit –II:

Tense Forms with emphasis on differences between Present and Present Continuous; Past and Present Perfect – Framing questions, Auxiliaries, if clauses; conjunctions, and linkers; Prepositions

Unit –III

Pronunciation, Good Pronunciation habits, R.P., Greetings, Farewells commands etc.,

Unit –IV:

Conversational Skills – Affirmative or Negative Language – idiomatic expressions,
Phrases, Dialogue Writing,

Unit –V:

Writing Skills – Note- taking, note- making, e-mail- Describing an object- narrating a story

Reference Books

- i) A Practical English Grammar by A.J Thomson and A.V. Martinet.
- ii) Remedial English Grammar, by F.T. Wood.
- iii) English for competitive Examinations by R.P Bhatnagar & Rajul Bhargava.

READING POETRY AND DRAMA– U13E4

Semester : IV

English Language Course: IV

Instruction Hours/Week:6

Credit: 3

POETRY:

Unit: I	John Milton	:	On His Blindness
	Oliver Goldsmith	:	The village Schoolmaster
	William Wordsworth	:	The Solitary Reaper
UNIT II	P.B.Shelley: Ozymandias		
	John Keats	:	La Belle Dame Sans Merci
	Browning	:	Incident of the French Camp
UNITIII	John Masfield	:	Laugh and Be Merry
	Robert Frost	:	Stopping By the Woods On a Snow Evening
	John Drink water	:	The Vagabond

DRAMA:

Unit: IV	Anton Chekhov	:	The Bear
	Norman Mckinnel	:	The Bishop’s Candlesticks
Unit: V	Fritz Karinthy	:	Refund
	F.M. Synge	:	Riders to the Sea.

Textbooks:

- 1) **An Introduction to Poetry** edited by A.G.Xavier; [Macmillan]
- 2) **Nine Modern Plays:** ed. B.T Reddy, Oxford University Press

DIFFERENTIAL CALCULUS AND TRIGONOMETRY – U13MS1

Semester: I

Core Course: I

Instruction Hours/Week: 5

Credit: 5

UNIT I

nth derivative of standard functions – Leibnitz’s Theorem - Related problems - Maxima and Minima of function of two Variables –Lagrange multipliers (Related problems only).

UNIT II

Curvature – Radius of curvature in Cartesian and in Polar Coordinates – Centre of curvature – Evolutes & Involutives.

UNIT III

Expansions of $\sin n$, $\cos n$, $\tan n$, – Expansions of \sin^n , \cos^n , $\sin^n \cos^m$ –Expansions of \sin , \cos , \tan in powers of x .

UNIT IV

Hyperbolic functions – Relation between hyperbolic & Circular functions-Inverse hyperbolic functions.

UNIT V

Logarithm of a complex number –Summation of Trigonometric series –Difference method- Angles in arithmetic progression method –Gregory’s Series.

TEXT BOOK(S)

1. T.K.Manickavasagam Pillai & others, Differential Calculus, S.V.Publications, Chennai -1985 Revised Edition. (Units I & II)
2. S.Arumugam & others, Trigonometry, New Gamma Publications -1985 Revised Edition. (Units III, IV & V).

REFERENCE BOOK(S)

1. Arumugam and Isaac, Calculus, Volume1, New Gamma Publishing House, 1991.

2. S. Narayanan, T.K. Manichavasagam Pillai, Trigonometry, S.Viswanathan Pvt Limited, and Vijay Nicole Imprints Pvt Ltd, 2004.

3. P.Duraipandiyan, Laxmi Duraipandiyan and Jayamala Paramasivam, Trigonometry, Emerald Publishers, Chennai, Reprint 1999.

INTEGRAL CALCULUS AND FOURIER SERIES– U13MS2

Semester: I & II

Instruction Hours/Week: 3+3

Core Course: II

Credit: 6

UNIT I

Definite integrals - Integration by parts – reduction formula – related problems.

UNIT II

Double integrals in Cartesian and polar coordinates –changing the order of integration – Triple Integrals –Jacobian concepts - Change of variables in integrals – Simple problems.

UNIT III

Beta and Gamma functions - relation between them –Evaluation of Integrals using Beta and Gamma functions.

UNIT IV

Fourier series- definition - Fourier Series expansion of periodic functions with Period 2π and period $2l$ – Use of odd & even functions in finding Fourier Series.

UNIT V

Half-range Fourier Series – definition- Development in Cosine series & in Sine series - Change of interval – Combination of series.

TEXT BOOK(S)

1. S.Narayanan and T.K.Manickavasagam Pillai, Calculus Volume II, S.V Publications, Reprint 2003. (Unit I, II & III).

2. S. Narayanan, T.K. Manicavachagam Pillai, Calculus, Vol. III, S. ViswanathanPvt Limited, and Vijay Nicole Imprints Pvt Ltd, 2004. (Unit IV & V)

REFERENCE BOOK(S)

1. Shanthi Narayanan, Integral Calculus, S.Chand & Co., 2000.

2. S.Sudha, Calculus, Emerald Publishers, Chennai, 1998 –First Edition.

ANALYTICAL GEOMETRY (3D) & VECTOR CALCULUS– U13MS3

Semester : II

Core Course: III

Instruction Hours/Week: 5

Credit: 5

UNIT I

Skew lines - shortest distance between two skew lines - Equation of the line of shortest distance - Sphere – section of a sphere by a plane - intersection of two spheres – Tangent plane.

UNIT II

Cone – right circular cone – condition for a plane to touch the quadratic cone – cylinder – right circular cylinder.

UNIT III

Vector differentiation –velocity and acceleration-Vector and scalar fields –gradient - directional derivative – divergence & curl– Laplacian operator –related problems.

UNIT IV

Vector integration –Line integral – conservative force field – scalar potential- work done by a force - surface integral- Volume integral – simple problem.]

UNIT V

Gauss Divergence Theorem – Stoke's Theorem- Green's Theorem (statement only) – simple problems and verification of the theorems for simple problems.

TEXT BOOK(S)

1. T.K.Manickavasagam Pillai & T.Natarajan, A Text book of Analytical Geometry (Part II – Three Dimension), S.Viswanathan Pvt. Ltd., Reprint 2002.(Units I & II)
2. M.L. Khanna, Vector Calculus, Jai Prakash Nath and Co., 8th Edition, 1986.(Units III, IV &V)

REFERENCE BOOK(S)

1. P.Duraipandiyan, Laxmi Duraipandiyan, D.Muhilan, Analytical Geometry Three Dimensional, Emerald Publishers, Chennai, Reprint 2003.
2. Shanthi Narayanan and Mittal P.K., Analytical Solid Geometry, 16th Edition, S.Chand & Co., New Delhi.

3. N.Saran and R.S.Gupta, Analytical Geometry of 3D, Pothishala Pvt. Ltd., Allahabad.
4. P.R.Vittal and V.Malini, Vector Analysis, Margham Publications, Chennai, 2000.
5. S. Shanthi Narayanan, A Text Book of Vector Calculus, S.Chand & Co., New delhi.
6. K.Viswanathan and S.Selvaraj, Vector Analysis, Emerald Publishers, Chennai Reprint 1999.

DIFFERENTIAL EQUATIONS– U13MS4

Semester: III

Core Course: IV

Instruction Hours/Week:5

Credit: 5

UNIT-I

Solving Differential equations of the form $Mdx+Ndy=0$ -First order, higher degree Differential equations: solvable for x, solvable for y, solvable for dy/dx , Clairaut's form- simple problems.

UNIT-II

Particular integrals of second order Differential Equations with constant Coefficients – Linear equations with variable coefficients – simultaneous differential equations - Method of variation of Parameters (Omit third & higher order equations)

UNIT-III

Formation of Partial Differential Equation-General, Particular & Complete integrals – Solution of PDE of the standard non-linear PDE forms –Lagrange's Type -Related problems.

UNIT-IV

Homogeneous Linear partial Differential equations with constant coefficients.

UNIT-V

Partial Differential Equations of Second order - Separation of variables - Eigen values and eigen functions - one dimensional and two dimensional diffusion equations (Cartesian form).

TEXT BOOK:

1. M.D.Raisinghania, Ordinary & Partial Differential Equations, S.Chand & Co., 2001 (for Units I & IV)
2. S.Narayanan, & T.K.Manickavasagam Pillai "Differential Equations" S.Viswanathan Publishers 1996(for Units II, III & V).

UNIT I - Chapter 2: Section 2.9, 2.12 (Part I) & Chapter 6: Section 6.1 to 6.12(Part I)

UNIT II - Chapter V (Section 1 to 5), Chapter VI (Section 6) Chapter VIII (Section 4)

UNIT III - Chapter XII : Section 1 to 5.

UNIT IV - Chapter III : Section 3.1 to 3.7 (Part III)

UNIT V - Chapter XIII : Section 1,2,3 &4.

Reference:

1. Dr.S.Arumugam et al "Differential Equations & Applications"
New Gama Publications 2003.
2. M.L.Kanna "Differential Equations" Jaiprakash North 2005

CLASSICAL ALGEBRA– U13MS5

Semester: III & IV

Instruction Hours/Week: 2+3

Core Course: V

Credit: 5

UNIT-I

Relation between roots and coefficients of polynomial equations-Symmetric functions-Sum of the r^{th} powers of the roots.

UNIT-II

Transformation of equations – Diminishing, Increasing and Multiplying the roots by a constant-Forming equations with the given roots-Reciprocal equations-all types-Descartes' rule of Sign (statement only)-simple problems

UNIT-III

Inequalities-elementary principles-Geometric and Arithmetic means-Weierstrass inequalities-Cauchy inequality-Applications to maxima and minima.

UNIT-IV

Theory of numbers-Prime and Composite numbers-Divisors of a given number N-Euler's function $\phi(N)$ and its value-The highest power of a prime p contained in $N!$ -Congruence-Fermat, Wilson's and Lagrange's Theorems.

UNIT V

Rank of a matrix-Consistency-Eigen values, Eigen vectors-Cayley Hamilton's Theorem (statement only)-Symmetric, Skew symmetric, Orthogonal, Hermitian, Skew Hermitian and Unitary matrices-Simple problems only.

TEXT BOOK(S)

1. T.T.K.Manicavachagam pillay & others, Algebra Vol .I S.V.Publications 2008
 2. T.K.Manickavasagam pillay & Others, Algebra Vol.II, S.V.Publications 2008.
- Unit I - Chapter 6 Sections 11 to 14 of (1)
Unit II- Chapter 6 Sections 15 to 21 & 24 of (1)
Unit III- Chapter 4 of (2)
Unit IV – Chapter 5 of (2)

Unit V - Chapter 6 sections 1, 6,9,11 & 16 of (2).

REFERENCES

1. S.Arumugam & A.Thangapandi Issac, Modern Algebra, New Gamma Publishing House, 2003
2. H.S.Hall and S.R.Knight, Higher Algebra, Prentice Hall of India, New Delhi.

SEQUENCES AND SERIES– U13MS6

Semester : IV

Instruction Hours/Week:5

Core Course: VI

Credit: 5

UNIT I

Sequence (definition)-Bounded sequences-monotonic sequence – Convergence sequences – Divergence & Oscillation sequences – The Algebra of limits – Behavior of monotonic sequences- Simple problems.

UNIT II

Sub Sequence – Limit points – Cauchy’s general principal of convergence – The upper and lower limits of Sequence – Infinite series – simple problems.

UNIT III

Comparison test – Geometric series - Harmonic series –D’Alembert’s ratio test Raabe’s test – Gauss’s test. Simple problems based on above tests.

UNIT IV

Cauchy’s condensation Test – Cauchy’s root test – Alternative series – Leibnitz’s test – Absolute convergence – simple problems based on above.

UNIT V

General summation of series including successive difference and recurring series.

TEXT BOOK(S)

1. Dr.S.Arumugam, Sequences & Series, New Gamma Publishers, 1999.
2. T.K.Manicavachagam Pillai, T.Natarajan, K.S.Ganapathy, Algebra, Vol I, S.Viswanathan Pvt Ltd., Chennai, 2004.

UNIT I - Chapter 3 Sections 1 to 7 of (1)

UNIT II - Chapter 3 Sections 9 to 12 of (1)

UNIT III - Chapter 4 Sections 4.2, 4.3 of (1)

UNIT IV - Chapter 4 Sections 4.4 & Chapter 5 Sections 5.1, 5.2 of (1)

UNIT V - Chapter 5 Sections 2 to 7 of (2)

REFERENCE(S)

1. M.k.Singal & Asha Rani Singal, A first course in Real Analysis R.Chand & Co., 1999.

ABSTRACT ALGEBRA – U13MS7

Semester : V
Instruction Hours/Week:5

Core Course: VII
Credit: 5

UNIT I

Groups – Subgroups – Cyclic groups – Order of an Element –Cosets and Lagrange’s Theorem.

UNIT II

Normal Subgroups and Quotient groups – Isomorphism & Homomorphisms.

UNIT III

Rings-Definition and Examples –Elementary Properties of Rings- Isomorphism-Types of Rings- Characteristic of a Ring-Sub rings- Ideals-Quotient rings-Maximal & Prime Ideals-Homomorphism of Rings.

UNIT IV

Vector Spaces-Definition & Examples-Subspaces-Linear Transformation-Span of a set – Linear independence.

UNIT V

Basis & Dimension – Rank & Nullity- Matrix of a Linear Transformation.

TEXT BOOK(S)

1. S.Arumugam & A.Thangapandi Isaac, Modern Algebra, Scitech Publication (India) Pvt Limited – August 2003.

UNIT I - Chapter 3 section 3.05 to 3.8

UNIT II - Chapter 3 section 3.9 to 3.11

UNIT III - Chapter 4 section 4.1 to 4.9 & 4.10

UNIT IV - Chapter 5 section 5.1 to 5.5

UNIT V - Chapter 5 section 5.6 to 5.8

REFERENCE(S)

1. T.K.Manickavasagam Pillai. T.Natarajan, K.S.Ganapathy, Algebra, Vol.1, S.Viswanathan Pvt Ltd, Chennai, 2004.

2. M.L.Santiago, Modern Algebra, Arul Publication, Madras 1988.

3. M.L.Santiago, Modern Algebra, Tata McGraw Hill, 2003.

REAL ANALYSIS– U13MS8

Semester : V
Instruction Hours/Week:5

Core Course: VIII
Credit: 5

UNIT I

Real number system – Field axioms – Order relation in R.Absolute value of a real number & its properties – Supremum & Infimum of a set- Order completeness property-countable & Uncountable sets.

UNIT II

Continuous functions-Limit of a function-Algebra of limits – Continuity of a function-Type of discontinuities – Elementary properties of continuous functions-Uniform continuity of a function.

UNIT III

Differentiability of a function- Derivability &Continuity-Algebra of derivatives-Inverse function theorem-Daurboux’s Theorem on derivatives.

UNIT IV

Rolle’s theorem-Mean value theorems on derivatives-Taylor’s theorem with remainder-Power series expansion.

UNIT V

Riemann integration-definition-Daurboux’s theorem conditions for integrability-Integrability of continuous & Monotonic functions-Integral functions-Properties of Integrable functions- Continuity & derivability of integral functions-The first Mean value theorem and the Fundamental theorem of Calculus.

TEXT BOOK(S)

1. M.K.Singhal & Asha Rani Singhal, A First course in Real Analysis, R.Chand & Co., June 1997 Edition (Unit I,II,III & IV)
2. Shanthi Narayan, A Course of Mathematical Analysis, S.Chand & Co., 1995 (Unit V)
 UNIT I – Chapter 3
 UNIT II - Chapter 7
 UNIT III - Chapter 8
 UNIT IV - Chapter 9
 UNIT V - Chapter 6

References

1. Gold Berge, Richard R, Methods of Real Analysis, Oxford & IBHP Publishing Co., New Delhi, 1970.

OPERATIONS RESEARCH – U13MS9E

Semester: V

Major Based Elective – I

Instruction Hours/Week: 5

Credit:4

(In all the Units No Book Work need to be proved – Only applications of the Book works need to be taught)

UNIT I

Introduction to Operations Research – Elementary treatment of Linear Programming – Simplex Method for $<$, $=$, $>$ constraints.

UNIT II

Application to Transportation problem – Transportation algorithm – Degeneracy algorithm – Degeneracy in Transportation Problem, Unbalanced transportation problem – Assignment algorithm – Unbalanced Assignment problem.

UNIT III

Sequencing : Introduction-Sequence for n Jobs on 2 machines – Processing n Jobs on 3 machines – Processing n Jobs on m machines. Replacement Models.

UNIT IV

PERT CPM network – Critical & sub Critical jobs – Determining the Critical Path – Network Calculation of PERT networks – Probability of PERT.

UNIT V

Inventory theory – Variables in an inventory problem – Techniques of Inventory Control with known demand.

- [1] Purchasing Model with No shortage
- [2] Purchasing Model with shortage
- [3] Manufacturing Model with No shortage
- [4] Manufacturing Model with Shortage

TEXT BOOK(S)

[1] Kanti Swaroop, Gupta.P.K & Manmohan, Operations Research, Sultan Chand & Co.

UNIT-I - Chapter 0 sections 0.1 to 0.9., Chapter 2 Sections 2.1 to 2.5, Chapter 3 Sections 3.1 to 3.4, 3.8

UNIT –II - Chapter 9 Sections 9.1 to 9.9 & Chapter 10 Sections 10.1 to 10.3

UNIT-III - Chapter 16 Sections 16.1 to 16.4 & Chapter 18 Sections 18.1 to 18.3

UNIT –IV - Chapter 20 Sections 20.1 to 20.8

UNIT – V - Chapter 17 Sections 17.1, 17.2, 17.4 to 17.6, 17.8, 17.9

REFERENCE(S)

[1] Hamdy A. Taha, Operations Research (7th Edn.), Prentice Hall of India, 2002.

[2] Richard Bronson, Theory and Problems of Operations Research, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1982.

AUTOMATA THEORY – U13MS9E

Semester : V

Instruction Hours/Week:5

Major Based Elective Course: I

Credit: 4

UNIT I : Finite Automata and Regular Expressions

Definitions and examples-Deterministic and Non deterministic finite Automata-Finite Automata with λ – moves-Regular expressions and their relationship with automation.

UNIT II: Context free grammar

Grammar-ambiguous and unambiguous grammars-derivation trees-Chomsky Normal form-Greibach normal form.

UNIT III:

Push down Automation-definition and examples- Relation with context free languages – Pumping lemma for CFLs.

UNIT IV:

Finite Automata and lexical analyzer-Minimizing the number of states of a DFA-Implementation of a lexical analyzer.

UNIT V: Basic parsing techniques

Parsers-Top down-Bottom up-Shift reduce-Operator precedence-Recursive descent-Predivine Parsing.

TEXT BOOK(S)

1. Introduction to Automata theory, languages and combinatorics by John E.Hopcroft and J.D.Ullman, Narosa Publishing House-Chennai.(Units I,II & III)
2. Principles of Compiler Design by A.V.Aho and J.D.Ullman, Narosa Publishing House-Chennai (Units IV & V)

- Unit I - Chapter 2 sections 2.1 to 2.5
- Unit II - Chapter 4 sections 4.1 to 4.3, 4.5 to 4.6
- Unit III - Chapter 5 sections 5.2, 5.3, Chapter 6 section 6.1
- Unit IV - Chapter 3 sections 3.1 to 3.8
- Unit V - Chapter 5 sections 5.1 to 5.5

ASTRONOMY – U13MS10E

Semester: V
Instruction Hours/Week:4

Major Based Elective Course: II
Credit: 4

UNIT I

Relevant properties of a sphere & relevant formulae in spherical trigonometry (All with out proof) – Celestial sphere – Diurnal motion.

UNIT II

Earth-Dip of the horizon – Astronomical refraction – Tangent & Cosine’s formula – Properties & Simple problems applying them.

UNIT III

Keplar’s Laws of Planetary motion (statement only) – Three anomalies of the Earth and relation between them – Time – Equation of time – Seasons.

UNIT IV

Years and Calendar – Geocentric Parallax – Simple problems in the above – Aberration of light (195, 196, 197 only)

UNIT V

Moon (229 to 241, 250) – Motions of Planet (285 – 289, 292 – 299, 301, 302)- Eclipses. (256 to 269).

TEXT BOOK(S)

1. S.Kumaravelu and Prof.Susheela Kumaravelu, Astronomy, SKV Publication, 2004.

UNIT I - Chapters 1 & 2

UNIT II - Chapters 3 Sections 1,2,5,6 & Chapters 4 sections 117 to 120, 129,130.

UNIT III - Chapters 6

UNIT IV - Chapters 7 Section 1,3,4 & Chapters 8 Sections 190 to 193.

REFERENCE (S)

1. V.Thiruvengkatacharya, A Text Book of Astronomy, S.Chand and Co., Pvt Ltd., 1972.

DISCRETE MATHEMATICS – U13MS10E

Semester: V

Instruction Hours/Week: 4

Major Based Elective : II

Credit: 4

UNIT I

Relations on Sets – Some operations on Sets – Types of Relations in a Set – Properties of Relations – Representation of Relations – Composition of Relations – Closure of Relations.

UNIT II

Function – Classification of Functions – Types of Functions – Composition of Functions – Recursively Defined Function – Some Special Functions – Growth of Functions.

UNIT III

Partially Ordered Sets – Lattice – Lattice as Algebraic System – Sublattices – Some Special Lattices – Finite Boolean algebra.

UNIT IV

Algorithm – Time Complexity of Algorithm – Searching and Sorting.

UNIT V

Group Codes – Parity-check and Generator Matrix – Hamming Codes.

TEXT BOOK(S)

Swapan Kumar Sarkar – A Text Book of Discrete Mathematics, S.Chand & Company – 2003.

UNIT I: Sections 7.1 to 7.8

UNIT II: Sections 8.2 to 8.6

UNIT III: Sections 9.2 to 9.7

UNIT IV: Sections 17.2 to 17.4

UNIT V: Sections 19.2 to 19.5

REFERENCE(S)

1. J.P.Trembly and R.Manohar, Discrete Mathematical Structures with Applications to Computer Science, McGraw Hill book Co., 1997.
2. J.E.Hopcroft and J.D.Willman, Introduction to Automata Theory, Nicosia publishing House.
3. C.L.Liu, Elements of Discrete Mathematics, McGraw-hill Book Co., 1986.

STATICS – U13MS11

Semester : V

Instruction Hours/Week: 5

Core Course: IX

Credit: 5

UNIT I

Forces & Equilibrium – Forces – Resultant of two forces –Three forces related to a triangle – Equilibrium of a particle under three or more forces.

UNIT II

Forces on a rigid body-Moment-Equivalent systems of forces-Parallel forces – Varignon’s Theorem-Forces along a Triangle-Couples-Resultant of several coplanar forces.

UNIT III

Friction-Laws of Friction – Coefficient of Friction, Angle & Cone of Friction-Limiting equilibrium of a particle on a rough inclined plane, Tilting of a body – Simple Problems.

UNIT IV

Virtual work-Principle of Virtual work-applied to a body or a system of bodies in equilibrium – Equation of Virtual work-Simple Problems.

UNIT V

St rings-Equilibrium of Strings under gravity-Common Catenary-Suspension bridge.

TEXT BOOK(S)

P.Duraipandiyar, Mechanics (Vector Treatment), S.Chand & Co., June 1997

UNIT I - Chapter 2 & Chapter 3 section 3.1

UNIT II - Chapter 4 section 4.1, 4.3 to 4.7

UNIT III - Chapter 2 section 2.1, Chapter 3 section 3.2, Chapter 5 section 5.2

UNIT IV - Chapter 8

UNIT V - Chapter 9

REFERENCE(S)

1. M.K.Venkataraman, Statics, Agasthiyar Publications, 2002
2. A.V.Dharmapadham, Statics, S.Viswanathan Publishers Pvt Ltd, 1979
3. S.L.Lony, Elements of Statics and Dynamics, Part I, A.I.T.Publishers, 1991.

THEORY OF TRANSFORMS – U13MS12

Semester : VI
Instruction Hours/Week:6

Core Course: X
Credit: 5

UNIT I

Laplace Transforms – properties of Laplace Transforms – $L[f(t)] - L\left[\frac{f(t)}{t}\right]$ Models – Problems using shifting property – Laplace Transform of periodic functions – problems.

UNIT II

Inverse Laplace Transforms - Solving ODE with constant coefficient by using Laplace Transforms.

UNIT III

Z-Transforms – Elementary properties – Inverse – Z Transforms – convolution theorem – Formation of difference equations – solution of difference equations using Z-Transforms. Fourier integral theorem – Fourier Transform Pair-sine and cosine transforms – properties – Transforms of simple functions –convolution theorem – Parse Val's Identity.

UNIT V

Application to Boundary value problems using Fourier Transforms – using sine and cosine transforms – Finite Fourier transforms.

TEXT BOOK

1. Differential Equation for S.Narayanan & T.K.Maivachagam Pillay, S.Viswanathan Publishers, Delhi-2006.
2. Dr.P.Kandasamy-Mathematics –volume III, S.Chand & Co.,2001.

UNIT I : Chapter 9 section 1 to 5

UNIT II : Chapter 9 section 6 to 10

UNIT III : Chapter 5 in P.Kandasamy.

UNIT IV : Chapter 4 in P.Kandasamy.

UNIT V : Chapter 4 in P.Kandasamy

References:

1. Integral Transforms by A.R.Vasishtha and Dr.R.K.Gupta –KRISHNA Prakashan MEDIA (p) Ltd.,
2. Grewel B.S., 'Higher Engineering Mathematics" 40th edition,Khanna Publishers, Delhi-2007.
3. M.K.Venkataraman"Engineering Mathematics" ,S.V.Publication Volume 3 Revised Edn.

COMPLEX ANALYSIS– U13MS13

Semester : VI
Instruction Hours/Week: 6

Core Course: XI
Credit: 6

UNIT I

Functions of a Complex variable – Limits-Theorems on Limits- Continuous functions- Differentiability-Cauchy-Riemann equations- Analytic functions-Harmonic functions.

UNIT II

Elementary transformations-Bilinear transformations-Cross ratio-fixed points of Bilinear Transformation-Some special bilinear transformations.

UNIT III

Complex integration-definite integral-Cauchy's Theorem- Cauchy's integral formula-Higher derivatives.

UNIT IV

Series expansions-Taylor's series-Laurent's Series –Zeroes of analytic functions Singularities.

UNIT V

Residues-Cauchy's Residue Theorem-Evaluation of definite integrals.

TEXT BOOK(S)

S.Arumugam, A.Thangapandi Isaac & A.Somasundaram, Complex Analysis, New Scitech Publications (India) Pvt Ltd, 2003.

UNIT I - Section 2.1 to 2.8

UNIT II - Section 3.1 to 3.5

UNIT III - Section 6.1 to 6.4

UNIT IV - Section 7.1 to 7.4

UNIT V - Section 8.1 to 8.3

REFERENCE(S)

1.P.P.Gupta-Kedarnath & Ramnath, Complex Variables, Meerut Delhi

2.J.N.Sharma, Functions of a complex variable, Krishna Prakasan Media (P) Ltd, 13th Edition, 1996-97.

3. T.K.Manickavachaagam Pillai, Complex Analysis, S.Viswanathan Publishers Pvt Ltd., 1994.

DYNAMICS– U13MS14

Semester : VI

Instruction Hours/Week: 6

Core Course: XII

Credit: 6

UNIT I

Kinematics Velocity – Relative Velocity - Acceleration – Coplanar Motion -components of Velocity & Acceleration – Newton's Laws of Motion.

UNIT II

Projectile – Maximum height reached, range, time of flight –Projectile up / down an inclined plane .

UNIT III

Impulsive force – conversion of linear momentum – Impact of a sphere & a plane - Direct & Oblique Impact of two smooth spheres –Kinetic energy and Impulse.

UNIT IV

Central Orbit – Central force – Differential equation to a central orbit in polar & pedal coordinates - Given the central orbit , to find the law of force–Kepler’s Laws of Planetary motions .

UNIT V

Moment of Inertia of simple bodies –Theorems of Parallel and Perpendicular axes.

TEXT BOOK(S)

[1] P.Duraipandiyar, Vector Treatment as in Mechanics, S.Chand & Co. -June 2009 Edition .

UNIT – I -Chapter 1 & Chapter 2 Sections 2.1, 2.1.1

UNIT – II -Chapter13

UNIT – III -Chapter 14

UNIT –IV -Chapter 16

UNIT – V -Chapter 17

REFERENCE(S)

[1] M.K.Venkataraman, Dynamics, Agasthiar Book Depot, 1990.

[2] A.V.Dharmapadam, Dynamics, S. Viswanathan Publishers, 1981

NUMERICAL METHODS-U13MS15

Semester : VI

Instruction Hours/Week: 6

Core Course: XIII

Credit: 6

UNIT I

Different methods to find the solutions of algebraic and transcendental equations-The Bisection method – The Iteration method – The method of False Position – Newton-Raphson method – Generalized Newton’s method.

UNIT II

Finite Differences – Forward differences – Backward differences – central differences – symbolic relations and separation of symbols – Newton’s forward and backward difference formula – Lagrange’s interpolation formula – Newton’s interpolation divided difference formula.

UNIT III

Numerical Differentiation: Newton’s forward and backward difference formula – Numerical Integration: Trapezoidal rule – Simpson’s rule (1/3 and 3/8).

UNIT IV

Solutions to linear systems-direct methods and indirect methods-Gaussian Elimination method-Gauss Method to find the Inverse-Method of factorisation-Iterative Methods.

UNIT V

Numerical solution of ordinary differential equations-Taylor series method-Picard's method-Euler's method - Euler's modified method – Runge – Kutta method-Adams-Moulton method-Milne's method(Only Problems).

TEXT BOOK:

S.S.Sastry, Introductory Methods of Numerical Analysis, Prentice Hall of India Private Limited,2010.

UNIT I - Chapter 2: Section 2.1,2.2,2.3-2.3.1, 2.4, 2.5 – 2.5.1

UNIT II - Chapter3: Section 3.3-3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.6, 3.10 - 3.10.1

UNIT III – Chapter 5:Section 5.1,5.2, 5.4-5.4.1, 5.4.2,5.4.3

UNIT IV – Chapter 6: Section 6.3-6.3.2, 6.3.3, 6.3.4, 6.4, 6.5

UNIT V - Chapter 7: Section 7.1,7.2,7.3, 7.4-7.4.2, 7.5,7.6-7.6.1, 7.6.2

REFERENCES:

1. S.Narayanan & Others, Numerical Analysis, S.Viswanathan Publishers, 1994.
2. A.Singaravelu, Numerical Methods, Meenachi Agency, June 2000.

GRAPH THEORY – U13MS16E

Semester : VI

Major Based Elective Course: III

Instruction Hours/Week: 5

Credit: 4

UNIT I: Basics and different graphs:

Basic definitions & application of graphs – Isomorphism – sub graphs – walks, paths & circuits – Connected & disconnected graphs – Euler graphs – Hamiltonian paths & circuits.

UNIT II: Trees:

Definition and properties of trees – pendent vertices in a tree – distance & centre in a tree – Rooted & binary trees – Spanning trees – Fundamental circuits – Finding all spanning trees of a Graph.

UNIT III: Cut sets and cut vertices:

Cut sets – Properties of a Cut set – all cut sets in a graph – Fundamental circuits & Cut sets – Connectivity & separability –network flows.

UNIT IV: Planar graphs and coloring:

Planar graphs – Kuratowski's 2 graphs – different representations of planar graphs – detection of planarity-chromatic number – chromatic polynomial.

UNIT V: Matrix representation of graphs:

Incidence matrix – Circuit Matrix – Fundamental Circuit Matrix – Cut set matrix – path & adjacency matrix and the related theorems.

Text Books

1.Narsingh Deo, Graph Theory with applications to Engineering & Computer Science, Prentice Hall of India, New Delhi, 1997.

UNIT I - Chapter 1 Sections 1.1 to 1.5 & Chapter 2 sections 2.1 to 2.9

UNIT II - Chapter 3 Sections 3.1 to 3.9

UNIT III – Chapter 4 Sections 4.1 to 4.6 (excluding theorem 4.4)

UNIT IV - Chapter 5 Sections 5.2 to 5.5 & Chapter 8 Section 8.1, 8.3

UNIT V - Chapter 7 Sections 7.1, 7.2, 7.3, 7.4, 7.6, 7.8, 7.9

REFERENCE(S)

1. Dr.S.Arumugam & Dr.S.Ramachandran, Invitation to Graph Theory, SciTech Publications India Pvt Limited, Chennai 2001.

2. K.R.Parthasarathy, Basic Graph Theory, Tata McGraw Hill Publishing Co., New Delhi 1994

3. G.T.John Clark, Derek Allan Holten, A First Look at Graph Theory, World Scientific Publishing Company, 1995.

STOCHASTIC PROCESSES – U13MS16E

Semester : VI

Instruction Hours/Week:5

Major Based Elective – III

Credit: 3

UNIT I

Generating function – Laplace transforms – Laplace transforms of a probability distribution function Difference equations – Differential difference equations – Matrix analysis.

UNIT II

Stochastic process – notion – specification – stationary process – Markov chains – Definition and examples – Higher transition probabilities.

UNIT III

Classification of states and chains – Determination of Higher transition probabilities – stability of Markov system – limiting behavior.

UNIT IV

Poisson process and related distributions – generalization of Poisson process – Birth and death process.

UNIT V

Stochastic process in queuing and reliability – queuing systems, m/m/1 models – Birth and death process in queuing theory – Mutti channel models – Bulk Queues.

TEXT BOOK:

Scope and treatment as in “Stochastic Process” by J. Medhi, Chapters 1, 2, 3 (omitting 3.6, 3.7 & 3.8), 4(omitting 4.5 and 4.6) and Chapter 10 (omitting 10.6, 10.7)

Book for Reference:

1. First course in Stochastic Process by Samuel Kartin.
2. Stochastic Process by Srinivasan and Metha (TATA Mc Graw Hill)
3. Elements of Applied Stochastic Process by V. Narayanan.

ALLIED PHYSICS – I – U13APH1

Semester : III

First Allied Course: 1

Instruction Hours/Week: 5

Credit: 3

Objectives:

To study the concepts of Properties of Matter, Sound.

To study the concepts of Surface tension and Viscosity and Thermal Physics.

To study Electromagnetic Spectrum, Raman Effect and Fiber Optic Communication.

UNIT-I: PROPERTIES OF MATTER

Stress – strain, Hooke’s Law – Elastic behavior of a material – Relation between elastic constants – Work done per unit volume in longitudinal strain - Poisson Ratio - Expression for bending moment – Experimental determination of Young’s modulus by Non-uniform Bending (Pin and Microscope method).

UNIT-II: SOUND

Simple Harmonic Motion – Composition of two simple harmonic motion - along a straight line and at right angles to each other – Lissajou’s figures and their applications.
Acoustics of buildings- Reverberation – Reverberation time – Sabine’s formula- Conditions for Good Acoustics – Law of vibration of Stretched Strings – Sonometer.

UNIT-III: SURFACE TENSION & VISCOSITY

Definition and dimension of surface tension – Variation of surface tension with temperature – Experiment to determine the surface tension of given liquid by Drop weight method
Co-efficient of Viscosity and its dimension – Poiseuille’s formula – Experiment to determine the Co-Efficient of Viscosity (Poiseuilles Method).

UNIT-IV: THERMAL PHYSICS

Newton’s law of cooling – Verification – Specific Heat Capacity of liquid by Cooling – Bomb Calorimeter.

Conduction- Coefficient of thermal conductivity – Good and bad Conductor. Stefan’s law of radiation – Solar Constant – Angstrom’s Pyroheliometer - Temperature of the Sun.

UNIT-V: OPTICS

Electromagnetic Spectrum – Spectral response of human eye – UV and IR spectroscopy – Raman Effect – Experimental Arrangement – Applications of Raman Effect.

Fiber Optic communication: Introduction – Optic Fiber – Numerical Aperture – Coherent bundle – Fiber optic communication system and its advantages – Multimode Fibre - Optic Sensors.

BOOKS FOR STUDY AND REFERENCE

1. Text book of Sound – Brij Lal and N.Subrahmanyam,Vikas Publications Pvt. Limited (2000)
2. Elements of Properties of matter – D.S.Mathur, Shyam Lal Charitable Trust, New Delhi (2005)
3. Properties of matter – R.Murugesan. S.Chand and Co. New Delhi.(1999)
4. Heat and Thermodynamics – Brij Lal and N.Subrahmanyam-S.Chand(1999).
5. Text Book of Optics – Brij Lal and N.Subrahmanyam. S.Chand and Co. Delhi.(2010)
6. Optics – Ajoy Ghatak – Tata Mc Graw Hill, Delhi(2004)-2nd edi.
7. Modern Physics- R.Murugesan, S.Chand and company Ltd., New Delhi (2006).
8. Allied Physics – I – A. Sundaravelusamy. Priya Publications.

Unit	Book	Section
I.	3	8.15, 8.16.
	4	1.1, 1.2, 1.4, 1.6, 1.7, 1.14, 1.15, 1.21.
II.	1	1.3, 2.1, 2.2, 2.8, 2.9, 10.14, 10.15, 10.16, 10.22, 7.4
III.	3	3.1, 3.12, 3.17, 2.1, 2.3, 2.7.
IV.	5	3.5, 3.15, 8.1, 8.2, 8.18, 8.25, 8.43, 8.44, 8.45
V.	6	11.15, 11.14, 11.13.
	8	19.11, 19.12, 19.13, 19.14.
	7	24.1, 24.2, 24.3, 24.4, 24.5, 24.6, 24.7, 24.10, 24.11, 24.11.1.

ALLIED PHYSICS PRACTICAL – U13APH2P

Semester : III & IV

First Allied Course: II

Instruction Hours/Week:2+3

Credit: 3

(At the end of the Even Semester-Any twelve expts.)

1. Non-Uniform Bending – Pin and Microscope method.
2. Sonometer – Verification of laws of transverse vibrations.

3. Specific heat capacity of a liquid – Newton’s law of cooling method.
4. Thermal conductivity of a bad conductor – Lee’s disc method.
5. Meter Bridge – Specific Resistance of a material of a coil.
6. Carey Foster Bridge- Specific Resistance of a material of a coil.
7. Newton’s Rings –determination of Radius of Curvature(R).
8. Spectrometer – Refractive Index of a (μ) of solid prism.
9. Spectrometer- Determination of wavelength using Grating.
10. Air wedge – thickness of insulation of a wire.
11. Characteristics of a Junction Diode.
12. Co-efficient of Viscosity a liquid- Poiseuille’s method.
13. Surface Tension and Interfacial Tension of a liquid-Drop Weight method.
14. Construction of Full Wave Rectifier.
15. Study of Logic Gates-using ICs.
16. Figure of Merit-B.G.

ALLIED PHYSICS – II – U13APH3

Semester : IV

First Allied Course: III

Instruction Hours/Week: 5

Credit: 3

Objectives:

To study Gauss law and its applications and also the principle and types of Condensers.

To study Kirchhoff’s laws, Wheatstones Bridge and their applications.

To learn atomic and nuclear physics.

To acquire knowledge about modulation and digital electronics.

UNIT –I: ELECTROSTATICS

Coulomb’s Law- Gauss law and its applications- Intensity at a point due to charged sphere and cylinder-Principle of capacitor- capacity of the spherical- cylindrical condenser -Energy of a charged capacitor- sharing of charges and loss of energy.

UNIT -II: ELECTRICITY

Kirchoff’s law- Applications- Wheatstone Bridge- Carey Foster’s Bridge-Laws of Electromagnetic induction- Expression for induced E.M.F- Self inductance- Determination of coefficient of self

inductance – Rayleigh’s method-Mutual inductance of solenoid- Experimental determination of mutual inductance.

UNIT- III: ATOMIC PHYSICS:

Sommerfield, Vector Atom models-quantum numbers in vector atom model- Pauli’s exclusion principle - Continuous and characteristic X-Rays-Moseley’s law and its importance- Bragg’s law- Miller indices- Determination of crystal structure-powder crystal method.

UNIT –IV: NUCLEAR PHYSICS

Nuclear Size-charge – mass- spin- nuclear models- liquid drop model- shell model – Particle detectors- cloud chamber-bubble chamber- photographic emulsion technique-Elementary particles (fundamental ideas only).

UNIT- V: ELECTRONICS AND DIGITAL ELECTRONICS

Modulation- necessity of modulation-Methods of modulation- Amplitude Modulation- junction diode detector for AM signal.

Number systems –Decimal, Binary, Octal, Hexadecimal and their mutual conversions-binary arithmetic operations. Basic logic gates- AND, OR, NOT, NOR NAND – NOR and NAND gate as universal gates. Laws of Boolean Algebra- De Morgan’s theorems.

BOOKS FOR STUDY AND REFERENCE

1. Text book of Electricity and Magnetism- Brij Lal and N.Subrahmanyam, Ratan prakasan Mandir Publisher London. (1997).
2. Modern Physics-Murugesan, S.Chand & Co - New Delhi (2010).
3. Basic Electronics- B.L. Theraja , S.Chand & Co - New .Delhi(2008)

Unit	Book	Section
I	1	6.1-6.3, 7.1-7.4
II	1	13.21, 13.22, 13.32, 18.1,18.6, 18.9, 18.11, 18.13, 18.15
III	2	6.11-6.15, 7.11-7.13, 7.6, 7.3, 7.8
IV	2	27.3, 27.10, 27.11, 29.7, 29.9, 29.11, 38.1,
V	3	30.5, 30.8, 30.9, 30.30, 32.2-32.4, 32.7, 32.19, 32.28, 32.9- 32.11, 33.3, 33.10, 33.15, 33.19-33.22, 34.3, 34.5

MATHEMATICAL STATISTICS – I – U13AST1

Semester : III

Instruction Hours/Week: 5

Second Allied Course: I

Credit: 3

UNIT I

Measures of Dispersion: Range –Quartile Deviation –Mean Deviation- Standard Deviation- Coefficients of Dispersion –Coefficients of Skewness and Kurtosis –Problems.

UNIT II

Theory of Probability-Definition of Probability-Sample Space – Probability of an event – Independence of events –Theorems on Probability-Conditional Probability –Baye’s Theorem.

UNIT III

Tchebychev’s inequality and weak law of large numbers – Simple form of Central limit theorem for i.i.d random variables.

UNIT IV

Random variables –Distribution function –Discrete and continuous Random variables – Probability mass and density functions –Joint Probability Distribution function –Moments – Expectation –Variance – Covariance –Moment Generating function –Theorems on moment generating function.

UNIT V

Theoretical Distributions: Binomial , Poisson and Geometric Distributions –MGF of these Distributions –Additive properties – Recurrence relations for the moments about origin and mean –Relation between Binomial and Poisson Distributions – Fitting of Binomial and Poisson Distributions.

TEXTBOOK(S)

Gupta S.C and Kapoor V.K, Fundamentals of Mathematical Statistics, Sulthan Chand and Sons, New Delhi – 2002 edition.

UNIT I - Chapter 2 sections 2.12 to 2.16 (except 2.15)

UNIT II - Chapter 3 sections 3.3 to 3.5, 3.8 to 3.15, Chapter 4 section 4.2

UNIT III - Chapter 7sections 7.5 to 7.7, Chapter 9 section 9.13

UNIT IV - Chapter 5 sections 5.1 to 5.5, Chapter 6 sections 6.2 to 6.6, Chapter 7 section7.1

UNIT V - Chapter 8 sections 8.4 ,8.5,8.7

MATHEMATICAL STATISTICS II – U13AST2P

Semester : III & IV

Instruction Hours/Week:2&3

Second Allied Course: II

Credit: 3

UNIT I

Quartile deviation, Mean Deviation, Standard deviation and co-efficient of variation. Calculation of moments. and Pearson’s and Bowley’s co-efficient of Skewness.

UNIT II

Calculation of mean deviation, standard deviation for discrete probability distributions, marginal and conditional expectations, covariance and correlation for bivariate discrete probability distributions.

UNIT III

Fitting of binomial, Poisson and normal distributions (Area method only).

UNIT IV

Curve fitting: Linear, quadratic and exponential; correlation and regression lines.

UNIT V

Interval estimation and tests of significance based on normal and 't' distributions for mean, correlation and proportion, tests of significance based on chi-square and F distribution of variance. Tests for goodness of fit and independence of attributes.

Text Book

Fundamental of Mathematical Statistics-S.C.Gupta, V.K.Kapoor.

Reference Book:

(Course II & III)

1. Mood A.M.Graybill, F.A. and Boes, O.C.-Introduction to theory of statistics, McGraw Hill (1974)
2. Hogg.R.V. and Craig, A.T-Introduction to Mathematical statistics, Collier Macmillan, 1978-4th Edition.
3. Raghatgi,U.K-An introduction of probability theory and Mathematical statistics, Wiley Eastern 1984.

MATHEMATICAL STATISTICS III – U13AST3

Semester : IV

Second Allied Course: III

Instruction Hours/Week:5

Credit: 3

UNIT I

Normal distribution – constant, m.g.f, binomial, poisson, and chi-square distribution tending to normal, statement of central limit theorem. Characteristics functions and its properties. Statement of uniqueness theorem and continuity.

UNIT II

Continuous distributions – rectangular, Exponential, Beta,Gamma Distributions.

UNIT III

Sampling distributions, 't', 'f' and chi-square distributions.

UNIT IV

Correlation – Rank Correlation, Karl Pearson's Correlation coefficient and its properties. Linear Regression and its properties.

UNIT V

Internal Estimation. Test of Hypothesis – Null and alternative hypothesis (concept only) one tail and two tail test, test of significance based on normal and 't' distribution for mean, simple correlation and proportion – Test of significance based on chisquare and F Distribution for variance, test for goodness of fit and independence of attributes.

TEXTBOOK

Gupta S.C and Kapoor V.K, Fundamentals of Mathematical Statistics, Sulthan Chand and Sons, New Delhi – 2002 edition.

Reference Book:

1. Mood A.M., Graybill F.A, and Boes O.c. – Introduction to theory of Statistics, McGraw Hill (1974)
2. Hogg R.V. and Craig, A.t. – Introduction of Mathematical Statistics, Colliar Macmillan, 1978 – 4th Edition.
3. Gupta S.C. and Kapoor, V.K. – Fundamentals of Mathematical Statistics, Sultan Chand and Sons.

OFFICE AUTOMATION - U13SBE1

Semester : I

Skill Based Elective Course- I

Instruction Hours/Week: 2

Credit: 2

Unit - I

MS- Word- Introduction to Computers - Hardware - Software, Operating System: Windows XP -MS-Paint, Notepad, WordPad, Introduction to MS-Word, Creating, Editing and Formatting Document - Working with Drawing objects - Text Manipulation

Unit-II

Working with Tables – Columns – Labels - Plotting, editing and Filling drawing objects- Bookmark – Header & Footer - Checking and Correcting a document - Creating Labels –Envelops – Mail Merge – Formatted output and Report generation Printing Documents, Working with Internet.

Unit-III

Ms – Excel - Ms – Excel: Introduction – Data Entry – Cell Formatting - Plotting Graphs – Workbook Features – Library Functions

Unit-IV

Conditional Functions and Data Sorting – Limit the data on a worksheet - Data Validation –Data consolidation - Chart creation - Checking and Correcting Data - Tracking and Managing Changes- Advanced Features

Unit-V

Ms – PowerPoint- Introduction - Creating, Editing and Formatting Presentation – Applying Transition and Animation Effects - Applying Design Templates - Viewing and Setting up a Slide Show - Navigating among Different Views - Ms Outlook: Introduction to Folder List – Address

Book.References

1. Jill Murphy, Microsoft Office Word- Comprehensive Course, Labyrinth Publications, 2003.
2. McGraw-Hill/Irwin-Deborah Hinkle, Microsoft Office 2003 PowerPoint: A Professional Approach, Comprehensive w/ Student CD, New Delhi, 2003.
3. Nellai Kannan, C., MS-Office, Nels Publications, Tamil Nadu, 2002.

DESKTOP PUBLISHING - U13SBE2

Semester: III

Skill Based Elective Course: II

Instruction Hours/Week: 2

Credit: 2

PHOTOSHOP:

UNIT – I

Photoshop Tools :

Move, Type, Marquee, Lasso, Crop, Shapes, Healing, Brush, Patch, Cloning Stamp, Eraser, Gradient, Blur, Smudge, Dodge, Pen, Eye Dropper, Patch selection and Zoom tool.

Layer:

New layer, Layer set, Duplicate layer, Rasterize and Merge down

Layer Styles:

Drop shadow, inner shadow, outer glow & inner glow, Bevel and Emboss, Gradient overlay, Stroke. Text formatting

UNIT – II

File:

Save, File formats, Page set up.

Edit:

Check spelling, Copy merged, Fill, Transform, Define pattern.

Image:

Motion blur, Twirl, lens flare, Glowing edges, lighting effects, solarize, water paper, Stained glass, Mosaic Tiles.

Window:

Character and Paragraph settings.

COREL DRAW:

UNIT – III

Drawing Tools:

Pick, Shape, Knife, eraser, Smudge, Roughen brush, free transform, Zoom ,hand, Free hand, Bezier, Artistic, Pen, Poly line, Point, Interactive connective, Spiral tool.

Colour Tool:

Paint Bucket Tool, Eye Dropper, Fill Tools. Fill Options, Stroke Options.

UNIT – IV

Special Effects:

3D effects, Add perspective, Blend, Contour, Artistic media, lens, and Power clip.

Shaping Options:

Weld, trim, Intersect.

Text Effects:

Format text, bullet, and fit text to path, align and straighten, spell check.

File Menu:

Save, Save as, Import, Page set Up.

PAGE MAKER:

UNIT – V

Page Maker Tools:

Pointer, Rotate, Line, Rectangle, Ellipse, Polygon, Hand, Text, Crop, Rectangle frame tools. Text layout, Style and Objects: Alignments, Styles, fill, frame options, Stroke, Group, Lock, unlock, mask, polygon settings character and paragraph settings.

Text Editing:

Edit story: Undo, Redo, Cut, Copy, Paste, paste Special, Spelling check and Find.

File:

Page set up, save, Save as.

Reference Book:

CorelDraw

CorelDraw IN Simple Steps – Shalini Gupta Corel DRAW Bible - DEBORAH MILLER

PhotoShop

Teach Yourself Adobe Photoshop – Rose Carla Adobe Photoshop Cs Classroom in a Book by Adobe Press

PageMaker

Using Microsoft Word - Asmita Bhatt Pagemaker In Easy Steps - Scott Basham Ctoa Material By Genesis.

OFFICE AUTOMATION & DESKTOP PUBLISHING LAB - U13SBE3P

Semester : III

Skill Based Elective Course : III

Instruction Hours/Week: 2

Credit: 2

Unit – I (Office Automation)

- 1) Ms – Word : Text Formatting , Mail Merge,
- 2) Ms – Excel : Implement the Statistical & Mathematical Function
(Using Min ,Max, Median, Average, Standard Deviation, Correlation, Logical ‘if’ Condition) for the given data, Prepare a Chart for a given Data using Pie diagram / Histogram

Unit – II (Photoshop)

- 3) Design a College Broacher / Birthday Card.
- 4) Cropping, rotating and Overlapping the image.
- 5) Create a single image from Multiple image.
- 6) Creating an image with multilayer’s.

Unit – III (Corel Draw)

- 7) Design a Visiting Card \ Greeting Card using Draw & Text tools.
- 8) Create a logo for a Company \ College .

Unit – IV (Page Maker)

- 9) Type and format a letter using text tool.
- 10) Prepare a Invitation for College Day \ Sports Day.

ENVIRONMENTAL STUDIES - U13ES

Semester : II

Environnemental Studies Course

Instruction Hours/Week: 2

Credit: 2

Unit 1 :

Environment and Natural Resources :

Definition, scope, importance of Environmental Studies - Need for public awareness. Natural resources — classification - Associated problems

- a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
- b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
 - Role of an individual in conservation of natural resources.
 - Equitable use of resources for sustainable lifestyles.

Unit 2: Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following ecosystem:
 - a. Forest ecosystem
 - b. Grassland ecosystem
 - c. Desert ecosystem
 - d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 3: Biodiversity and its conservation

- Introduction — Definition : genetic, species and ecosystem diversity.
- Biogeographical classification of India
- Value of biodiversity: consumptive use,productive use,social,ethical,aesthetic and option values
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation
- Hot-spots of biodiversity.
- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity In-situ and Ex-situ conservation of biodiversity.

Unit 4: Environmental Pollution

Definition

- Cause, effects and control measures of
 - a. Air pollution
 - b. Water pollution
 - c. Soil pollution
 - d. Marine pollution
 - e. Noise pollution
 - f. Thermal pollution
 - g. Nuclear hazards
- Solid waste Management : Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management floods, earthquake, cyclone and landslides.

Unit 5 : Social Issues and the Environment

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case Studies
- Environmental ethics : Issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- Wasteland reclamation.
- Consumerism and waste products.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

REFERENCE

- a) Agarwal, K.C. 2001 Environmental Biology, Nidi Pubi. Ltd. Bikaner.
- b) Sharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad — 380 013,, India, Email:mapin@icenet.net (R)
- c) Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p

- d) Clark R.S., Marine Pollution, Clarendon Press Oxford (TB)
- e) Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
- f) De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- g) Down to Earth, Centre for Science and Environment (R)
- h) Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- i) Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- j) Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- k) Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- l) Mckinney, M.L. & School, R.M. 1996. Environmental Science systems & Solutions, Web enhanced edition. 639p.
- m) Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
- n) Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- o) Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- p) Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Pubi. Co. Pvt. Ltd. 345p. q) Sharma B.K., 2001. Environmental Chemistry. Geol Pubi. House, Meerut
- r) Survey of the Environment, The Hindu (M)
- s) Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB) t) Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Stadards, Vol I and II, Enviro Media (R)
- u) Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB) v) Wanger K.D., 1998 Environmental Management. W.B. Saunders Co.Philadelphia, USA 499p (M) Magazine
- (R) Reference
- (TB) Textbook

VALUE EDUCATION - U13VE

Semester :V

Value Education Course

Instruction Hours/Week: 2

Credit: 2

UNIT 1: PHILOSOPHY OF LIFE

Human Life on Earth (Kural 629), Purpose of Life (Kural 46) Meaning and Philosophy of Life(Kural 131, 226) The Law of Nature (Kural 374) Glorifying All form of Life in this Universe (Kural 322, 327) – Protecting Nature /Universe (Kural 16, 20, 1038)

UNIT 2: INDIVIDUAL QUALITIES

Basic Culture (Kural 72, 431) Thought Analysis (Kural 282, 467, 666) Regulating desire (Kural 367), Guarding against anger (Kural 158, 305, 306, 314), To get rid of Anxiety (Kural 629), The Rewards of Blessing (Kural 3), Benevolence of Friendship (Kural 786), Love and Charity (Kural 76), Self – tranquility/Peace (Kural 318)

UNIT 3: SOCIAL VALUES (INDIVIDUAL AND SOCIAL WELFARE)

Family (Kural 45), Peace in Family (Kural 1025), Society (Kural 446), The Law of Life (Kural 952), Brotherhood (Kural 807) , The Pride of Womanhood (Kural 56) Five responsibilities/duties of Man : a) to himself, b) to his family, c) to his environment, d) to his society, e) to the Universe in his lives (Kural 43, 981), Thriftness (Thrift)/Economics (Kural 754), Health (Kural 298), Education (Kural 400), Governance (Kural 691), People’s responsibility/ duties of the community (Kural 37), World peace (Kural 572)

UNIT 4: MIND CULTURE

Mind Culture (Kural 457) Life and Mind - Bio - magnetism, Universal Magnetism (God – Realization and Self Realization) - Genetic Centre – Thought Action – Short term Memory – Expansiveness – Thought – Waves, Channelising the Mind, Stages - Meditation (Kural 261, 266, 270), Spiritual Value (Kural 423)

UNIT 5: TENDING PERSONAL HEALTH

Structure of the body, the three forces of the body, life body relation, natural causes and unnatural causes for diseases (Kural 941), Methods in Curing diseases (Kural 948, 949)
The Five units, simple physical exercises.

Books for Reference:

1. Philosophy of Universal Magnetism (Bio-magnetism, Universal Magnetism) The World Community Service Centre Vethatri Publications (for Unit IV)
2. Pope, G.U., Dr. Rev., Thirukkural with English Translation, Uma Publication, 156, Serfoji Nagar, Medical College Road, Thanjavur 613004 (for All Units)
3. Value Education for Health, Happiness and Harmony, The World Community Service Centre Vethatri Publications Rs 35/- (for All Units)

SOFT SKILLS - U13SS

Semester :V

Soft Skills

Instruction Hours/Week: 2

Credit: 2

Learning objective

Today’s world is all about relationship, communication and presenting oneself, one’s ideas and the company in the most positive and impactful way. This course intends to enable students to achieve excellence in both personal and professional life.

Unit I

Know Thyself / Understanding Self

Introduction to soft skills self discovery – Developing positive attitude – Improving perceptions – Forming values.

Unit II

Interpersonal Skills/ Understanding Others

Developing interpersonal relationship –Team building –group dynamics –Net working- Improved work relationship

Unit III

Communication Skills/ Communication with others

Art of Listening –Art of reading –Art of speaking –Art of writing –Art of writing emails-e mail etiquette

Unit IV

Corporate Skills/ Working with Others

Developing body language –Practising etiquette and mannerism – Time management – Stress management.

Unit V

Selling Self/ Job Hunting

Writing resume /cv-interview skills – Group discussion –Mock interview Mock GD –Goal setting –Career planning

TEXT BOOKS

Meena. K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills: A Road Map to Success) P.R. Publishers & Distributors, No, B-20 &21, V.M.M Complex, Chatiram Bus Stand, Tiruchirapalli

-620 002.

(Phone No: 0431-2702824: Mobile No: 94433 70597, 98430 7442)

Alex K. (2012) Soft Skills – Know Yourself & Know the World, S.Chand & Company LTD, Ram Nagar, New Delhi -110 055.

Mobile No: 94425 14814(Dr.K.Alex)

REFERENCE BOOKS

(i) Developing the leader within you John C Maxwell

(ii) Good to Great by Jim Collins

- (iii) The Seven habits of highly effective people Stephen Covey
- (iv) Emotional Intelligence Daniel Goleman
- (v) You can Win Shive Khera
- (vi) Principle centred leadership Stephen Covey

GENDER STUDIES - U13GS

Semester :VI

Gender Studies Course

Instruction Hours/Week:1

Credit: 1

Objectives

To make boys and girls aware of each other strengths and weakness

To develop sensitivity towards both genders in order to lead an ethically enriched life.

To promote attitudinal change towards a gender balanced ambience and Women empowerment

Unit-I

Concepts of Gender: Sex-Gender-Biological Determinism- Patriarchy- Feminism -Gender Discrimination -Gender Division of Labour -Gender Stereotyping-Gender Sensitivity - Gender Equity —Equality-Gender Mainstreaming Empowerment

Unit-II

Women’s Studies Vs Gender Studies: UGC’s Guidelines - VII to XI Plans- Gender Studies: Beijing Conference and CEDAW-Exclusiveness and Inclusiveness.

Unit III

Areas of Gender Discrimination: Family Sex Ratio-Literacy -Health -Governance Religion Work Vs Employment- Market - Media - Politics Law Domestic Violence — Sexual Harassment — State Policies and Planning

Unit-IV

Women Development and Gender Empowerment: Initiatives International Women’s Decade - International Women’s Year - National Policy for Empowerment of Women - Women Empowerment Year 2001- Mainstreaming Global Policies.

Unit-V

Women’s Movements and Safeguarding Mechanism:— In India National / State Commission for Women (NCW) - All Women Police Station Family Court- Domestic Violence Act - Prevention of Sexual Harassment at Work Place Supreme Court Guidelines - Maternity Benefit Act

- PNDT Act - Hindu Succession Act 2003 Eve Teasing Prevention Act - Self Help Groups 73 and 74 Amendment for PRIS.

References

Bhasin Kamala, Understanding Gender: Gender Basics, New Delhi: Women Unlimited 2004

Bhasin Kamala, Exploring Masculinity: Gender Basics, New Delhi: Women Unlimited, 2004

Bhasin Kamala, What is Patriarchy? : Gender Basics, New Delhi: Women Unlimited, 1993

Pernau Margrit Ahmad Imtiaz, Reifeld Hermut (ed.,) Family and Gender: Changing Values in Germany and India, New Delhi: Sage Publications, 2003

Agarwal Bina, Humphries Jane and Robeyns Ingrid (ed.,)Capabilities, Freedom, and Equality: Amartya Sen's Work from a Gender Perspective, New Delhi: Oxford University Press, 2006

Rajadurai.S.V, Geetha.V, Themes in Caste Gender and Religion, Tiruchirappalli: Bharathidasan University, 2007

Misra Geetanjali, Chandiramani Radhika (ed.,) Sexuality, Gender and Rights: Exploring Theory and Practice in South and Southeast Asia, New Delhi: Sage Publication, 2005

Rao Anupama (ed.,) Gender &Caste: Issues in Contemporary Indian Feminism, New Delhi: Kali for Women, 2003

Saha Chandana, Gender Equity and Gender Equality: Study of Girl Child in Rajasthan, Jaipur: Rawat Publications, 2003

Krishna Sumi,(ed.,) Livelihood and Gender Equity in Community Resource Management New Delhi: Sage Publication, 2004

Wharton .S Amy, The Sociology of Gender: An Introduction to Theory and Research, USA: Blackwell Publishing, 2005.

Mohanty Manoranjan (ed.,) Class, Caste, Gender: Readings in Indian Government and Politics- 5, New Delhi: Sage Publications,2004.

Arya Sadhna, Women, Gender Equality and the State, New Delhi: Deep & Deep Publications,2000.
