

B.Sc. MATHEMATICS

SYLLABUS: 2011

CHOICE BASED CREDIT SYSTEM (CBCS)



St. JOSEPH'S COLLEGE (Autonomous)

Re-accredited with A+ Grade by NAAC

College with Potential for Excellence by UGC

TIRUCHIRAPPALLI - 620 002, TN

B.Sc. MATHEMATICS – COURSE DETAIL-2011

SEM.	Part	Code	Subject	Hours	Credit
I	I	11UGT110001	General Tamil-I / Hindi – I / French - I	4	3
	II	11UGE120101	General English-I	5	3
	III	11UMA130201	Basic Mathematics	7	4
	III	11UMA130202	Integral Calculus	6	4
	III	11UMA130401	Allied :Statistics-I	6	5
	IV	11UFC141001	Value Education-I: Essentials of Ethics, Yoga & Stress Management	2	2
	IV	11UCE140801	Communicative English	--	5
	Total for Semester I				30
II	I	11UGT210002	General Tamil-II / Hindi – II / French – II	4	3
	II	11UGE220102	General English-II	5	3
	III	11UMA230203	Analytical Geometry	6	4
	III	11UMA230204	Differential Equations	5	4
	III	11UMA230402	Allied: Statistics-II	6	5
	IV	11UFC241002	Value Education-II: Fundamentals of Human Rights	2	1
	IV	11UCE240802	Computer Literacy	2	2
Total for Semester II				30	22
III	I	11UGT310003	General Tamil-III / Hindi – III / French – III	4	3
	II	11UGE320103	General English-III	5	3
	III	11UMA330205	Algebra-I	5	4
	III	11UMA330206	Classical Algebra	4	4
	III	11UMA330403A	Allied: Physics-I/ OR	4	4
	III	11UMA330403B	Allied: Accounts I	(6)	(5)
	IV	11UFC341003A	Professional Ethics – I : Social Ethics / OR	2	2
	IV	11UFC341003B	Professional Ethics – I : Religious Doctrine	2	2
	IV	11UCE340901	Environmental Studies	4	2
Total for Semester III				30	22/23

IV	I	11UGT410004	General Tamil-IV / Hindi – IV / French – IV	4	3
	II	11UGE420104	General English-IV	5	3
	III	11UMA430207	Algebra II	4	4
	III	11UMA430208	Sequences and Series	5	4
	III	11UMA430404A	Allied: Physics -II/ OR	4	4
	III	11UMA430404B	Allied: Accounts- II	(6)	(5)
	III	11UMA430405	Allied: Physics Practical	2	2
	III	11UMA430301A	Elective- I: Graph Theory/ OR	4	4
	III	11UMA430301B	Advanced Calculus	4	4
	IV	11UFC441004A	Professional Ethics – II : Social Ethics / OR	2	2
IV	11UFC441004B	Professional Ethics – II : Religious Doctrine	2	2	
Total for Semester IV				30	26/25
V	III	11UMA530209	Linear Algebra	6	4
	III	11UMA530210	Real Analysis	6	4
	III	11UMA530211	Statics	6	4
	III	11UMA530212	Computer Oriented Numerical Methods in 'C' Programming	6	4
	III	11UMA530302A	Elective-II: Automata Theory/or	4	4
	III	11UMA530302B	Combinatorics	4	4
	IV	11UMA540601	Skill Based Elective-I: Mathematics for Competitive Examinations	2	2
Total for Semester V				30	22
VI	III	11UMA630213	Complex Analysis	7	4
	III	11UMA630214	Operations Research	7	4
	III	11UMA630215	Dynamics	6	4
	III	11UMA630303A	Elective III: Astronomy OR	4	4
	III	11UMA630303B	Advanced Differential Equations	4	4
	III	11UMA630304A	Elective –IV: Fuzzy Theory/ OR	4	3
	III	11UMA630304B	Number Theory	4	3
	III	11UMA640602	Skill Based Elective-II: MATLAB	2	2
Total for Semester VI				30	21
I – V	V	11UCE551101	Extension Service: SHEPHERD & Gender Studies		6
Total Credit for all Semester					145

பருவம் -1
11UGT110001

மணி நேரம் - 4
புள்ளிகள் - 3

பொதுத்தமிழ் - I

நோக்கங்கள்

1. சமூக மாற்றச் சிந்தனைகளை உள்ளடக்கிய தற்கால இலக்கியங்களை அறிமுகம் செய்தல்.
2. புதுக்கவிதை, சிறுகதை, உரைநடை ஆகிய இலக்கியங்களின் நயம் பாராட்டுதல்.
3. சந்திப்பிழையின்றி எழுத மாணவர்களைப் பயிற்றுவித்தல்.

பயன்கள்

1. மாணவர்கள் சமூக மாற்றச்சிந்தனைகளை அறிந்துகொள்வர்.
2. சந்திப்பிழைகளை நீக்கி எழுதும் திறன் பெறுவர்.
3. புத்திலக்கியங்களைப் படைக்கும் திறனையும், திறனாய்வு செய்யும் திறனையும் பெறுவர்.

அலகு-1

(10 மணி நேரம்)

மகாகவி பாரதியார் கவிதைகள்
பாரதிதாசன் கவிதைகள்
உரைநடை—முதல் மூன்று கட்டுரைகள்
(கட்டுரைக்களஞ்சியம்)

அலகு-2

(12மணி நேரம்)

கவிமணி தேசிகவிநாயகம் கவிதைகள்
நாமக்கல்கவிஞர் வெ.இராமலிங்கம் கவிதைகள்
இலக்கணம் -வலிமிகும் இடங்கள்

அலகு-3

(10 மணி நேரம்)

கவிஞர் கண்ணதாசன் கவிதைகள்
இலக்கியவரலாறு- மூன்றாம் பாகம்
சிறுகதை- முதல் ஆறு சிறுகதைகள்

அலகு-4

(14 மணி நேரம்)

பாவலரேறு பெருஞ்சித்திரனார் பாடல்கள்
அப்துல் ரகுமான் கவிதைகள்
இலக்கிய வரலாறு – நான்காம் பாகம்
இலக்கணம் - வலி மிகா இடங்கள்

அலகு-5

(14 மணி நேரம்)

கவிஞர் மேத்தா கவிதைகள்
மொழிபெயர்ப்புக்கவிதைகள்
சிறுகதை- 7 முதல் 12 முடிய உள்ள சிறுகதைகள்
உரைநடை- 4முதல் 6 முடிய உள்ள கட்டுரைகள்
(கட்டுரைக்களஞ்சியம்)

பாடநூல்

1. பொதுத்தமிழ் - செய்யுள் திரட்டு- தமிழ்த்துறை வெளியீடு- 2011-2014
2. சமூகவியல் நோக்கில் தமிழ் இலக்கிய வரலாறு, தமிழ்த்துறை வெளியீடு, தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி-2
3. உரைநடை நூல் - தமிழ்த்துறை வெளியீடு, 2011-2014
4. சிறுகதைத்தொகுப்பு
(கட்டுரைக்களஞ்சியம்)

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
செய்யுள்	12 (12 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
இலக்கியவரலாறு	6 (6 வினாக்கள்)	8 (2 வினாக்கள்)	15 (1 வினா)
உரைநடை	-----	-----	15 (1வினா)
இலக்கணம்	2 (2 வினாக்கள்)	4 (1 வினா)	-----
சிறுகதை	-----	-----	15 (1 வினா)

Semester: I
Code:11UGE120101

Hours :5
Credits: 3

GENERAL ENGLISH – I

Objectives:

1. To enable the students to develop their effective communicative skills in English.
2. To empower the students with fluency and accuracy in the use of English Language.
3. To transform them into globally employable persons with placement skills.

UNIT-I 12 Hrs

Prose Education.
Employment.
Unemployment.

Poem William Shakespeare— “All the World’s a Stage.”

Letter Writing Formal and Informal.

Short Story O Henry – Robe of Peace. (Extensive Reading).

Essential English Grammar – 1-6 units

UNIT-II 12 Hrs

Prose Application.
Planning.
Curriculum Vitae.

Poem Ben Jonson—“On Shakespeare”
Reading Comprehension

Short Story Rudyard Kipling—The Miracle of Puran Bhagat
(Extensive Reading).

Essential English Grammar – 7-12 units.

UNIT-III 11 Hrs

Prose Interview.
Reporting.
General Knowledge.

Poem Robert Herrick—“Gather Ye Rosebuds.”
Note Making

Short Story H.G.Wells—The Truth About Pyecraft (Extensive Reading).

Essential English Grammar – 13-18 units

UNIT-IV 20 Hrs

Prose Review.(Super Toys)
Stress.
No Time.

Poem Oliver Goldsmith—“ The Village Schoolmaster”
Developing story from hints

Short Story John Galsworthy—“Quality” (Extensive Reading).

Essential English Grammar – 19-24 units

UNIT-V 15 Hrs

Prose Killers.
Galloping Growth.
A Short Story.

Poem William Blake—“ From Auguries of Innocence”
Précis Writing

Short Story William Somerset Maugham— Mabel
(Extensive Reading).

Essential English Grammar – 25-30 units

Text Books

1. Krishnaswamy. N, Sriraman T. Current English for Colleges. Hyderabad: Macmillan Indian Ltd,2006.
2. Dahiya SPS Ed. Vision in Verse, An Anthology of Poems. New Delhi: Oxford University Press,2002.
3. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge University Press,2009.
4. Seshadri, K G Ed. Stories for Colleges.Chennai: Macmillan India Ltd,2003.

SEMESTER – I
11UMA130201

Hours/ Week : 7
Credit : 4

BASIC MATHEMATICS

Objectives:

- 1 To inculcate the basic knowledge of differentiation, expansion of functions and their applications.
- 2 To introduce the notion of envelopes, curvatures and polar co-ordinates.

UNIT – I

Successive differentiation-envelopes- Curvature-Cartesian formula for the radius of curvature - Drawing the graphs e^x , $\sin x$, $\cos x$, $\tan x$, parabola, ellipse, hyperbola. Book 1, Chap III (full), Chap X - Sec 2.1 and 2.3.

UNIT – II

Expansions of $\sin n\theta$, $\cos n\theta$, $\tan n\theta$, $\sin^n\theta$, $\cos^n\theta$, $\sin\theta$, $\cos\theta$, $\tan\theta$ - Hyperbolic functions - Logarithm of complex quantities. Book 2, Chap III(full), Chap IV(full), Chap V Sec: 5(only).

UNIT – III

Binomial theorem for rational index – some important particular cases of the Binomial expansion – Numerically greatest term – Partial fraction – Application of the Binomial theorem to the summation of series (Proof of the theorem not required). Book 3, Chap 3 : Sec: 5-6,8-10.

UNIT – IV

Exponential series expansion – Logarithmic series expansion and summation of series (Proofs of the theorems not required). Book 3, Chap II (full),Chap 4 : Sec: 3, 5 - 7.

UNIT – V

Polar equation of a straight line - Polar equation of a circle-Polar equation of Conic-Equation of chord-Asymptotes of the conic. Book 4, Chap IX Sec: 1 - 12.

TEXT BOOKS:

1. Calculus Volume I – S.Narayanan and T.K. Manicavachagam Pillay, 2008 – Edition.
2. Trigonometry – S.Narayanan and T.K. Manicavachagam Pillay, 2001– Edition.
3. Algebra volume I - T.K. Manicavachagam Pillay, T.Natarajan and K.S.Ganapathy, 2008 Edition.
4. A Text book of Analytical geometry – Part I – Two Dimension T.K.Manicavachagam Pillay and T. Natarajan, 2002 Edition.

BOOKS FOR REFERENCE:

1. Algebra ,Calculus & Trigonometry-P.R.Vittal & V. Malini, Margham Publications, Chennai.
2. Vector Analysis - P.R.Vittal & V.Malini, Margham Publications, Chennai.
3. Dr.P.R.Vittal and Malini.V: Calculus 3rd Edition(For Polar co-ordinates only) Margham Publications, Chennai.

SEMESTER – I
11UMA130202

Hours/Week : 6
Credits : 4

INTEGRAL CALCULUS

Objectives:

1. To expose the students to various techniques of integration.
2. To study some of the applications of definite integrals.

UNIT – I (18 hours)

Revision of all Integral models including Integration of Rational and Irrational Functions (Articles 1- 9 of Chapter 1)

UNIT – II (18 hours)

Properties of Definite integrals – Integration by Parts – Bernoulli's Formula – Integration as Summation (Articles 10-11, 15 of Chapter 1)

UNIT – III (18 hours)

Reduction Formulae for $x^n e^{ax}$, $\sin(nx)$, $\cos(nx)$, $\sin(mx)\cos(nx)$, $\tan nx$, $\cot nx$, $\sec nx$, $\operatorname{cosec} nx$, $x^m(\log x)^n$, $e^{ax}\cos bx$ (Articles 13-14 of Chapter 1)

UNIT – IV (18 hours)

Area Under Plane Curves – Area of Closed Curves – Length of a Curve – Area of Surface of revolution – Multiple Integrals – Evaluation of Double and Triple Integrals (Cartesian Co-Ordinates only; Articles 1,4,5 of Chapter 2; Articles 1-4 of Chapter 5)

UNIT – V (18 hours)

Improper Integrals– Beta and Gamma Functions– Recurrence formula of Gamma Function – Properties of Beta Functions – Relation between Beta and Gamma Functions – Evaluation of Definite Integrals Using Gamma Function (Articles 2-5 of Chapter 7).

BOOK FOR STUDY:

CALCULUS (Major) Volume – II (For Units I to V)
S. Narayanan and T.K.Manickavasagam Pillai (S.Viswanathan Printers & Publishers – 2007 Edition).

BOOKS FOR REFERENCE:

1. P. Kandasamy and K. Thilagavathy, Allied Mathematics
2. P. R Vittal, Allied Mathematics
3. Dr. M.K Venkataraman Engineering Mathematics, Volume -2, The National Publishing Company.

SEMESTER – I
11UMA130401

Hours/Week : 6
Credit : 5

ALLIED STATISTICS – I

Objectives:

1. To make the students gain wide knowledge in probability which plays a main role in solving real life problems.
2. To apply these techniques to real life problems.

UNIT – I

Short History – Basic Terminology - Axiomatic approach to probability – Some Theorems on Probability - Mathematical Notion - Conditional probability- Multiplication Theorem of Probability – Independent Events- Pairwise Independent Events - Baye's theorem. Ch. 3: Sec 3.2-3.5, 3.8 (Omit 3.8.3, 3.8.4), 3.9 (Omit 3.9.2), 3.10-3.12, 3.15 Ch 4: Sec 4.2 (Omit 4.2.1)

UNIT – II

Random variable - Distribution function - Discrete random variable - Continuous random variable – Two-dimensional random variable. Ch 5 Sec 5.1-5.5 (Omit 5.5.6-5.5.7)

UNIT – III

Mathematical expectation – Expected value of function of a random variable – Properties of expectation – Properties of variance - Covariance - Moment generating function – Cumulants - Chebychev's inequality. Ch 6: Sec 6.1 - 6.6. Ch 7: Sec 7.1 – 7.2.

UNIT – IV

Binomial distribution- Poisson distribution – Geometric distribution. Ch 8: Sec 8.4(Omit 8.4.3,8.4.10-8.4.12),8.5 and 8.7

UNIT -V

Normal distribution - Gamma distribution – Beta distributions of first and second kind – Exponential distribution (Ch 9: Sec 9.2 (Omit 9.2.11-9.2.15), 9.5 -9.8.

BOOK FOR STUDY:

Gupta, S.C. and Kapoor, V.K.: Fundamentals of Mathematical Statistics (11th edition), Sultan Chand and Sons, 1982.

BOOK FOR REFERENCE:

Dr. P.R. Vittal: Mathematical Statistics, Margham Publications, Chennai.

பருவம் -2
11UGT210002

மணி நேரம் - 4
புள்ளிகள் - 3

பொதுத்தமிழ் - II

நோக்கங்கள்

1. சமய நல்லிணக்க உணர்வை வளர்த்தல்.
2. தமிழ்க் காப்பியங்களில் அழகும், அறிவுணர்வும் ஊட்டும் பகுதிகளைப் படித்துப் புரிந்து கொள்ளுதல்.
3. உரைநடைக் கட்டுரை எழுதும் திறன் பெறுதல்.

பயன்கள்

1. தமிழைத் திருத்தமாகப் படிக்கவும், பேசவும், பிழையின்றி எழுதவும் கூடிய திறன் பெறுவர்.
2. இலக்கியங்களில் படித்தவற்றை முறையாக வாழ்க்கையில் கடைப்பிடிப்பர்.

அலகு : 1

(12 மணி நேரம்)

சிலப்பதிகாரம் – அடைக்கலக் காதை - மதுரைக் காண்டம்
இலக்கிய வரலாறு – சைவம் வளர்த்த தமிழ் முதல் புராணங்கள் முடிய.

அலகு : 2

(12 மணி நேரம்)

மணிமேகலை – சிறைக்கோட்டம் அறக்கோட்டம் ஆக்கிய காதை
பெரியபுராணம் – திருநாளைப்போவார் நாயனார் புராணம்
உரைநடை – 7 முதல் 9 முடிய உள்ள கட்டுரைகள்
(கட்டுரைக்களஞ்சியம்)

அலகு : 3

(12 மணி நேரம்)

கம்பராமாயணம் – வாலி வதைப்படலம்
செம்மொழியான தமிழ்மொழியே:1 – 20 பக்கங்கள்
இலக்கணம் – எழுத்திலக்கணம்

அலகு : 4

(12 மணி நேரம்)

தேம்பாவணி – மகன் நேர்ந்த படலம்
சீறாப்புராணம் – அபீறாகு வதைப்படலம்
உரைநடை – 10 முதல் 12 வரையிலான கட்டுரைகள்
செம்மொழியான தமிழ்மொழியே – 21- 37 பக்கங்கள்

அலகு : 5

(12 மணி நேரம்)

இராவண காவியம் – ஆரியப் படலம்
இலக்கிய வரலாறு – தமிழ் இலக்கண நூல்கள் முதல் சிற்றிலக்கியங்கள் முடிய.
இலக்கணம் – சொல்லிலக்கணம்

பாடநூல்கள்

1. செய்யுள் திரட்டு – தமிழாய்வுத்துறை வெளியீடு, 2011 – 2014.
2. இலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு, 2010.
3. உரைநடைநூல், தமிழாய்வுத்துறை வெளியீடு, 2011-2014
4. செம்மொழியான தமிழ்மொழியே, சங்கம் வெளியீடு, மதுரை.2010

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
செய்யுள்	12 (12 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
இலக்கியவரலாறு	4 (4 வினாக்கள்)	4 (1 வினா)	15 (1 வினா)
உரைநடை	-----	-----	15 (1வினா)
இலக்கணம்	2 (2 வினாக்கள்)	4 (1 வினா)	-----
செம்மொழி	2 (2 வினாக்கள்)	4 (1 வினா)	15 (1 வினா)

Sem: II
Code: 11UGE220102

Hours :5
Credits: 3

GENERAL ENGLISH –II

Objectives:

1. To enable the students to develop their effective communicative skills in English.
2. To empower the students with fluency and accuracy in the use of English Language.
3. To transform them into globally employable persons with placement skills.

UNIT-I 12 Hrs

Prose Environment.
A Dead Planet.
Riddles.

Poem William Wordsworth—Nutting.
Shelley- Ozymandias.
Filling Money Order Chalan and Bank Chalan

Short Story G.K.Chesterton – The Hammer of God (Extensive Reading)

Essential English Grammar: -31-36 Units

UNIT-II 12 Hrs

Prose Qahwah
A Dilemma
Computeracy

Poetry John Keats—La Belle Dame Sans Merci
Robert Browning- The Last Ride Together

Short Story Katherine Mansfield—A Cup of Tea (Extensive Reading)

Dialogue Writing

Essential English Grammar:37-42Units

UNIT-III 11 Hrs

Prose Review (Use Your English)
Entertainment
You and Your English

Poetry Walt Whitman- I Celebrate Myself.
Mathew Arnold—Dover Beach.

Short Story Thomas Wolfe—The Far and the Near (Extensive Reading)

Conversations

Essential English Grammar:43-48Units

UNIT-IV 20 Hrs

Prose War Minus Shooting .
Usage and Abusage.

Poetry Sarojini Naidu—The Gift of India..
Robert Frost—Design .

Short Story R.K. Narayan—Half a Rupee Worth (Extensive Reading)
Manohar Malgonkar—Bacha Lieutenant

Story Telling

Essential English Grammar:49-54Units

UNIT-V 15 Hrs

Prose Who's Who.

Poetry Nissim Ezekiel. The Night of The Scorpion

Short Story Anita Desai—A Devoted Son (Extensive Reading)
Ruskin Bond—The Boy Who Broke the Bank(Extensive Reading)
Report Writing

Letter to the Editor

Essential English Grammar: 55-60Units

Text Books

1. Krishnaswamy. N, Sriraman T. Current English for Colleges. Hyderabad: Macmillan Indian Ltd,2006.
2. Dahiya SPS Ed. Vision in Verse, An Anthology of Poems. New Delhi: Oxford University Press,2002.
3. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge University Press,2009.
4. Seshadri, K G Ed. Stories for Colleges.Chennai: Macmillan India Ltd,2003

SEMESTER – II
11UMA230203

Hours/Week : 6
Credits : 4

ANALYTICAL GEOMETRY

Objectives:

1. To study 3 dimensional Cartesian Co-ordinates system.
2. To introduce the basic concepts of Vector Calculus.

UNIT – I

Coordinates in space-Direction cosines of a line in space-angle between lines in space-equation of a plane in normal form. (Chapter I, Sec 1.5 to 1.9, Chapter II Sec 2.1 to 2.3, Pages: 10-31)

Angle between planes-Distance of a plane from a point. (Chapter II Sec 2.4 to 2.8 pages: 32-47)

UNIT – II

Straight lines in space-line of intersection of planes-plane containing a line. Coplanar lines-skew lines and Shortest distance between skew lines-Length of the perpendicular from a point to a line. (Chapter III Sec 3.1 to 3.3 pages: 55-68, Chapter III Sec 3.4 to 3.7 pages: 70-89)

UNIT – III

General equation of a sphere-Section of a sphere by a plane-tangent planes-condition of tangency-system of spheres generated by two spheres-system of spheres generated by a sphere and a plane. (Chapter VI Sec 6.1 to 6.6 pages: 121-143)

UNIT – IV

Gradient, Divergence and Curl-Definitions, identities and simple problems – Directional derivative and Laplacian-Definition and simple problems.

UNIT – V

The line integral-Volume integral-Surface integral-Gauss divergence theorem-Stoke's theorem (Omit proofs of these two theorems). (Chapter VI, page 136-177)

BOOKS FOR STUDY

1. Shanthi Narayanan and Mittal P.K:Analytical Solid Geometry 16th Edition (For units I to III) S.Chand & Co, New Delhi.
2. Narayanan and Manickavasagam Pillay, T.K.: Treatment as in Vector Algebra and Analysis (For UNIT - IV &V), S.Viswanathan (Printers & Publishers) Pvt.Ltd.

BOOK FOR REFERENCE

1. P.Duraipandian& others-Analytical Goemetry 3 Dimensional-Emerald Student Edition.

SEMESTER – II
11UMA230204

Hours/Week : 5
Credit : 4

DIFFERENTIAL EQUATIONS

Objectives:

1. To study DEs and PDEs of first and second order.
2. To study Fourier series and application of Laplace transforms in solving DEs.

UNIT – I

Variables separable, Homogeneous equations, Non- Homogeneous equations of the first degree in x and y- Linear equations - Bernoulli's equation – Exact differential equations – First order DE of higher degree. [Chapter II: Sections 1 - 6.3 & Chapter IV: FULLY]

UNIT – II

Linear DE with constant coefficients – particular integrals – General method of finding P.I - Special methods for finding P.I - When X is of the form x^m - Equations reducible to the linear equations. [Chapter V: Sections 1 – 6]

UNIT – III

Definition of “The Laplace transform” – Properties of Laplace transform – Laplace transform of periodic functions- some general Theorems – The inverse transform – solving linear DE using Laplace transforms. [Chapter IX : Sections 1 – 8]

UNIT – IV

Fourier series – Fourier series for even and odd functions – Half range expansions [Chapter I : Sections – 1,2,6,8,9,10 (omit change of interval, Proofs and derivations)]

UNIT – V

Formation of partial Differential Equations – solution of simple types – First order PDE - Charpit's method – Homogeneous and non Homogeneous

equations – linear PDE with constant coefficients. [Chapter II, omit sections 10,11, numerical problems only].

BOOK FOR STUDY:

1. Differential equations and its applications by S.Narayanan & T.K. Manichavasagam Pillay – S.Viswanathan PVT. LTD –2001 Edition [For units I, II, III]
2. Engineering Mathematics – III year part B by M.K. Venkatraman [For units IV & V]

BOOK FOR REFERENCE:

1. Engineering Mathematics – Volume II by M.K.Venkatraman, National Publishing company, Chennai (for units I & II).
2. Engineering Mathematics – III year part A by M.K.Venkatraman, National Publishing company, Chennai (for UNIT - III).

SEMESTER – II
11UMA230402

Hours/Week : 6
Credit : 5

ALLIED STATISTICS – II

Objectives

1. To introduce the concepts of Sampling and testing of Hypothesis.
2. To apply the concepts of testing of Hypothesis for real life problems.

UNIT – I

Introduction - Types of Sampling - Parameter and Statistic - Tests of significance – Procedure for testing of hypothesis - Test of significance for large samples - Sampling of attributes – Sampling of variables. Ch 14 Full.

UNIT – II

Introduction – Derivation of the chi-square distribution – MGF of chi-square distribution - Application of chi-square distribution. Ch 15 : Sec 15.1-15.3, 15.6 (Omit 15.6.4-15.6.7)

UNIT – III

Introduction – Student's t- distribution - Applications of t-distribution – Distribution of sample correlation coefficient when population correlation coefficient is zero- F-distribution - Applications of F-distribution.
Ch 16: Sec 16.1-16.6

UNIT – IV

Introduction - Characteristics of estimators - Consistency – Unbiasedness- Efficient and Most Efficient Estimators – Sufficiency (Definition only) – Methods of Estimation - MLE (statement of properties and direct simple problems, no theorems) - method of moments. Ch15: Sec 17.1-17.2 (Omit MVU Estimators and Factorisation Theorem), 17.6 (Omit 17.6.2, 17.24)

UNIT -V

Introduction – Meaning of Correlation – Scatter diagram – Karl Pearson's Coefficient of Correlation – Rank Correlation. Ch 10: Sec 10.1 - 10.4, 10.7.

BOOK FOR STUDY

Gupta, S.C. and Kapoor, V.K.: Fundamentals of Mathematical Statistics (11th edition), Sultan Chand and Sons, 1982.

BOOK FOR REFERENCE

1. Dr. P.R. Vittal: Mathematical Statistics, Margham Publications, Chennai.

பருவம் - 3
11UGT310003

மணி நேரம் - 4
புள்ளிகள் - 3

பொதுத் தமிழ் - III

நோக்கங்கள்

1. செம்மொழித் தமிழ்ச்செய்யுள்களான பதினென்மேல் கணக்கு, பதினென்கீழ்க் கணக்குப் பாடல்களைப் படித்துப் பொருள் புரிந்து கொள்ளும் திறன் பெறுதல்
2. பண்டைய இலக்கியங்களில் அமைந்துள்ள சமூகக் கருத்துக்களை உணர்தல்.
3. மரபுக் கவிதை வடிவங்களை அறிதல்.
4. கவிதைகளில் அணிகள் அமைந்துள்ள பாங்கைப்பிரிதல்.
5. புதினம் வழித் தற்காலச் சமுதாயச் சிக்கல்களையும், அதற்கான தீர்வுகளையும் ஆராய்ந்தறிதல்.

பயன்கள்

1. செம்மொழியாம் தமிழ் மொழியின் சிறப்பை அறிந்துகொள்வர்.
2. பண்டைய இலக்கியங்கள் உணர்த்தும் அறக்கருத்துக்களை அறிந்து, மாணவர் ஒழுக்க நெறியில் வாழ்ந்து சமூகத்தை மேம்படுத்துவர்.
3. மாணவர் புதினத்தைக் கற்பதன் மூலம் சமுதாயச் சிக்கல்களை உணர்ந்து அவற்றிற்குத் தீர்வு காண்பர்.

அலகு : 1

(16 மணி நேரம்)

பத்துப்பாட்டு - குறிஞ்சிப்பாட்டு (முழுமையும்)

அலகு : 2

(10 மணி நேரம்)

நற்றிணை, குறுந்தொகை, யாப்பிலக்கணம் (வெண்பா, ஆசிரியப்பா)

அலகு : 3

(10 மணி நேரம்)

இலக்கிய வரலாறு – ‘தமிழ்மொழியின் தொன்மையும் சிறப்பும்’ முதல் ‘சங்கத் தொகை நூல்கள்’ முடிய.

புதினம் – முழுமையும்.

அலகு : 4

(12 மணி நேரம்)

கலித்தொகை, பதிற்றுப்பத்து, புறநானூறு, அணியிலக்கணம்.

அலகு : 5

(12 மணி நேரம்)

திருக்குறள்

இலக்கிய வரலாறு – சங்க இலக்கியங்களின் தனித்தன்மைகள் முதல் இரட்டைக் காப்பியங்கள் முடிய.

பாடநூல்கள்

1. செய்யுள் திரட்டு, தமிழாய்வுத்துறை வெளியீடு (2011 - 2014)
2. சமூகவியல் நோக்கில் தமிழிலக்கிய வரலாறு, தமிழாய்வுத்துறை வெளியீடு, 2010
3. புதினம் (ஒவ்வொரு கல்வியாண்டும் ஒவ்வொரு புதினம்).

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
செய்யுள்	12 (12 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
இலக்கியவரலாறு	6 (6 வினாக்கள்)	8 (2 வினாக்கள்)	30 (2 வினாக்கள்)
புதினம்	-----	-----	15 (1வினா)
இலக்கணம்	2 (2 வினாக்கள்)	4 (1 வினா)	-----

Sem: III
Code: 11UGE320103

Hours :5
Credits: 3

GENERAL ENGLISH -III

Objectives:

1. To enable the students to complete the pre-reading task to comprehend the local and global issues in the lessons..
2. To enable the students to complete the post-reading task centering on Grammar and Skill Development
3. To empower the students with globally employable skills.

UNIT-I

12 Hrs

Larry Collins & Dominique Lapierre
Freedom at Midnight (Extract)
Alfred Uhry
Driving Miss Daisy
Extensive Reading—Robinson Crusoe (Chapters 1-3)
Essential English Grammar—61-66.

UNIT-II

12 Hrs

Alfred Lord Tennyson
Ulysses
Nathaniel Branden
Our Urgent Need for Self-esteem
Extensive Reading—Robinson Crusoe (Chapters 4-6)
Essential English Grammar—67-72.
Reader's Mail :The Hindu

UNIT-III

11 Hrs

Daniel Goleman
Emotional Intelligence
Marcel Junod
The First Atom Bomb.
Extensive Reading—Robinson Crusoe (Chapters 7-9)
Essential English Grammar—73-78.
Job Application.

UNIT-IV

20 Hrs

E.K.Federov
Climate Change and Human Strategy.
Paolo Mauro
Corruption: Cases, Consequences and Agenda for further Research.
Extensive Reading—Robinson Crusoe (Chapters 10-12)
Essential English Grammar—79-84.
Minutes Writing.

UNIT-V

15 Hrs

Anne Frank
The Diary of Young Girl
A.P.J.Abdul Kalam
Wings of Fire
Extensive Reading—Robinson Crusoe (Chapters 13-15)
Essential English Grammar— 85-90.
Resume Writing.

Text Books

1. Elango K. *Insights*. Hyderabad: Orient Blackswan Pvt Ltd,2009.
2. Murphy, Raymond. *Essential English Grammar*. New Delhi. Cambridge University Press India Ltd,2009.
3. Defoe, Daniel. *Robinson Crusoe*. Chennai: MacMillan India Ltd,2009.
4. Stevenson R L. *Treasure Island*. Chennai: MacMillan India Ltd,2009.
5. Ram N Ed. *The Hindu*. Tiruchirappalli.

SEMESTER – III
11UMA330205

Hours/Week : 5
Credits : 4

ALGEBRA - I

Objectives:

- To introduce Algebra from the basic concepts of set theory, Functions, Boolean algebra etc.
- To introduce and delve deeply into the concepts of Group theory.

UNIT – I (15 hrs)
Relations – Equivalence Relations-Partial Order – Functions – Binary Operations. (Chapter 2)

UNIT – II (15 hrs)
Partially ordered sets – Lattices - Distributive Lattices – Modular lattices – Boolean Algebra. (Chapter 9)

UNIT - III (15 hrs)
Groups – Definition and Examples – Elementary Properties of a Group – Equivalent – Definitions of a Group. (Chapter 3 Sections 3.1-3.3)

UNIT - IV (15 hrs)
Permutation Groups-Subgroups-Cyclic Groups. (Chapter 3 Sections 3.4-3.6)

UNIT V (15 hrs)
Order of an Element – Cosets and Lagranges Theorem - Normal Subgroups and Quotient Groups. (Chapter 3 Sections 3.7-3.9)

BOOK FOR STUDY:

Arumugam S and Thangapandi Issac A - Modern Algebra, SCITECH Publications, Chennai, Edition 2003.

BOOKS FOR REFERENCE:

N. Herstein – Topics in Algebra-John Wiley&Sons Student 2nd edition.

SEMESTER – III
11UMA330206

Hours/Week : 5
Credits : 4

CLASSICAL ALGEBRA

Objectives:

- To lay a good foundation for the study of Higher Pure Mathematics.
- To train the students in Operative Algebra.

UNIT – I (12 hours)
Theory of equations -Introduction –Remainder theorem –Roots occurring in pairs. (Chap-6: Sec 1-10 pg282-292).

UNIT – II (12 hours)
Relations between the roots and coefficients of equations – Sum of the r^{th} powers of the roots – Newton's theorem on the sum of the powers of the roots. (Chap-6: Sec11- 14 pg 292 - 317).

UNIT – III (12 hours)
Transformations of equations – Reciprocal equations. To increase or decrease the roots of an equation by a quantity. (Chap-6: Sec-15-18 pg 318-334).

UNIT - IV (12 hours)
Removal of terms – To form an equation whose roots are any power of the roots of a given equation - Transformation in general. (Chap-6: Sec 19-23 pg 334-351).

UNIT – V (12 hours)
Descarte's rule of signs – Rolle's theorem – Sturms theorem – Newtons method of divisors. (Chap-6: Sec 24, 25 (pg 351-358) & Sec 27 – 29 (pg362- 375)).

NOTE: Proof is not expected for any theorem.

BOOK FOR STUDY:

ALGEBRA Volume I - T.K.Manicavachagom Pillai & others
S.Viswanathan Printers and publishers Pvt. Ltd – 2003 Edition

BOOK FOR REFERENCE:

- ALGEBRA - Prof. S. Surya Narayana Iyer.
- ALGEBRA - Prof M.I.Francis Raj.

SEMESTER – III
11UMA330403A

Hours/Week : 4
Credits : 4

ALLIED: PHYSICS - I

Objectives:

- To acquire knowledge about mechanics and moving particles
- To study gravitation and elasticity and acquire knowledge about planets, satellites and their movements.
- To understand the principles of musical sound, sound waves and their application in day- to-day life.
- To study the various optical instruments and learn the method of handling them.
- To know the different types of semiconductor devices and their applications in radio and television system

UNIT – I : Mechanics

SHM-velocity, time, period, frequency, phase-equations of wave motion-compound pendulum- center of suspension-interchangeability center of oscillation and suspension- Moment of Inertia –Radius of gyration – Angular Momentum – torque – Theorems of M.I - M.I. of uniform rod, disc, circular ring, Annular ring, solid sphere –Kinetic energy of rotating energy- Acceleration of a body rolling down on an inclined plane.

UNIT – II : Gravitation and Elasticity

Newton's law of gravitation-verification of G –Kepler's laws-relation of G and g - mass and density of earth-variation of the acceleration due to gravity - orbital velocity - escape velocity - types of moduli - Poission's ratio-relation between ν , n & σ – bending of beams - bending moment - cantilever-cantilever loaded at one end-supported at two ends and loaded in the middle.

UNIT – III : Sound

Velocity of transverse waves along a stretched string-frequency of vibrating string -laws of transverse vibration of strings-verification of laws-

Melde's experiment-ultrasonics- piezo-electric effect-production of ultrasonics- Experiment-detection of ultrasonics-applications-determination of velocity of sound in a liquid-reverberation-absorption

UNIT – IV : Optics

Chromatic aberration-spherical aberration-spectrometer-determination of refractive index-Newton's rings-determination of wavelength and refractive index of liquid-plane transmission grating-resolving power of diffraction grating-determination of wavelength-double refraction Nicol prism-specific rotation-Laurant's polarimeter – Half shade device.

UNIT – V : Basic Electronics

Energy level in solids -intrinsic and extrinsic semi conductors -p-n junction-forward bias, reverse bias-volt-ampere characteristics of p-n junction diode-full wave rectifier- zener diode, tunnel diode, photo diode, LED - transistor-CE and CB characteristics-transistor amplifier.

BOOKS FOR STUDY:

1. A.S.Vasudeva, Modern Engineering Physics, S.Chand and CompanyLtd., 1988.
2. V.K. Mehta, Principles of Electronics, S.Chand and CompanyLtd., 2009.

UNIT	BOOK	SECTIONS
I	1	Part – IV 1.1-1.6,2.3,1.8-1.10. Part – I 4.2,4.3,4.6,4.7,4.9-4.11,4.13-4.16,4.20
II	1	Part – I 2.1-2.5,2.7,2.12,2.13,5.4, 5.9,5.15-5.19.
III	1	Part – IV 4.1-4.4,6.1-6.9
IV	1	Part – III 2.4,2.9,4.25-4.27,5.21,5.27,5.28,6.10,6.16,6.28- 6.30.
V	2	5.1-5.19, 6.1,6.2, 6.11-6.15, 6.17, 6.18, 6.25, 6.27, 7.2-7.10, 7.12, 8.1-8.5, 8.9, 8.12

SEMESTER – III
11UMA330403B

Hours/Week : 6
Credits : 5

ALLIED : ACCOUNTS - I

OBJECTIVES

- * To enable the students to have a thorough knowledge of the fundamental concept basic principles of accountancy.
- * To provide knowledge on the importance of maintaining various book of accounts.

UNIT – I (18 Hours)

Accounting principle concepts- subsidiary books – ledger

UNIT – II (18 Hours)

Trail balance – bank reconciliation statement- rectification of errors

UNIT – III (18 Hours)

Trading, Profit and Loss Accounts – Balance Sheet of a sole trader
(Simple Adjustments)

UNIT – IV (18 Hours)

Non-trading organization – Preparation of income and expenditure account form receipts and payment accounts (simple adjustments)

UNIT – V (18 Hours)

Single entry or Accounts from incomplete records.

TEXT BOOK

Shukla MC, Grewal TS and Gupta SC, (2006), Advanced Accounts Volume I, S.Chand and Company Ltd, New Delhi.

REFERENCES

1. Reddy TS and Murthy A, (2006), Financial Accounting, Margham Publications, Chennai.
2. Gupta RL and Gupta VK, (2006), Financial Accounting, Sultan Chand and Sons, New Delhi.
3. Gupta RL and Radhaswamy, (2006), Advanced Accountancy, Volume I, Sultan Chand and Sons, New Delhi.
4. Jain SP, Narang KL, (2004), Advanced Accountancy Volume I, Kalyani Publishers.
5. Maheshwari SN and Maheshwari SK, (2005), Introduction to Accountancy, Vikas Publishing House PVT. Ltd. New Delhi.

பருவம் - 4
11UGT410004

மணி நேரம் - 4
புள்ளிகள் - 3

பொதுத் தமிழ் - 4

நோக்கங்கள்

1. நாடகத்தின் நோக்கம், அதன் போக்கு, உத்திகள், பாத்திரப் பாங்கு, உரையாடல் முறை, கற்பனைத் திறம் போன்றவற்றை வெளிப்படுத்துதல்.
2. புதிய நாடகங்களைப் படைக்கும் திறனை மாணவர்களிடையே உருவாக்குதல்.

பயன்கள்

1. நாடகவழி அழகியல் உணர்வுகளை வளர்த்துக் கொள்வர்.
2. நாடகங்களைச் சமூகப் பயன்பாட்டிற்கு ஏற்ப உருவாக்கும் திறன் பெறுவர்.

அலகு : 1 (12 மணி நேரம்)
மனோன்மணியம், பாயிரம், அங்கம் - 1, களம் 1 - 5 வரை.

அலகு : 2 (12 மணி நேரம்)
மனோன்மணியம், அங்கம் - 2, களம் 1 - 3 வரை.
உரைநடை நாடகம் - ஈரோடு தமிழன்பன் - ஈர நெருப்பு
(முதல் மூன்று நாடகங்கள்)

அலகு : 3 (12 மணி நேரம்)
மனோன்மணியம், அங்கம் - 3, களம் 1 - 4 வரை.

அலகு : 4 (12 மணி நேரம்)
மனோன்மணியம், அங்கம் - 4, களம் 1 - 5 வரை.

அலகு : 5 (12 மணி நேரம்)
மனோன்மணியம், அங்கம் - 5, களம் 1 - 3 வரை.
உரைநடை நாடகம் - ஈரோடு தமிழன்பன் - ஈர நெருப்பு,
(4, 5, 6 ஆம் நாடகங்கள்)

பாடநூல்கள்

1. சுந்தரனார், பெ. மனோன்மணியம், தமிழாய்வுத்துறை (பதிப்பு), தூய வளனார் கல்லூரி, திருச்சிராப்பள்ளி-2. (அங்கம் - 3 இல்களம் - 4 நீங்கலாக)
2. உரைநடை நாடகம் - ஈரோடு தமிழன்பன் - ஈர நெருப்பு, அய்யா நிலையம், நாஞ்சிக் கோட்டை சாலை, தஞ்சாவூர் - 613 006.

மதிப்பெண் பகிர்வு

பிரிவு	பாகம் -1	பாகம் -2	பாகம்-3
மனோன்மணியம்	20 (20 வினாக்கள்)	20 (5 வினாக்கள்)	60 (4 வினாக்கள்)
உரைநடை நாடகம்	-----	-----	15 (1 வினா)

Sem: IV
Code: 11UGE420104

Hours :5
Credits: 3

GENERAL ENGLISH -IV

Objectives:

1. To enable the students to complete the pre-reading task to comprehend the local and global issues in the lessons..
2. To enable the students to complete the post-reading task centering on Skill Development and Grammar..
3. To empower the students with globally employable soft skills.

UNIT-I

12 Hrs

Life Stories

F.G.Herod
Mother Teresa
R.K.Narayan
Swami and Friends
Treasure Island (1-4)
91—95.

Extensive Reading
Essential English Grammar
Film Review (The Hindu).

UNIT –II

12 Hrs

Imogen Grosberg
See Off the Shine
George Orwell
The Porting Spirit
Treasure Island (5-8)
96-100.

Extensive Reading
Essential English Grammar
Article Writing on Current Issues.

UNIT-III

11 Hrs

Philip Agre
Building an Internet Culture
Satyajit Ray
Odds Against Us
Treasure Island (9-12)
101-105.

Extensive Reading
Essential English Grammar
Mock Interviews

UNIT-IV

20Hrs

Jerzy Kosinski
TV as Babysitter.
E.F.Scumacher
Technology With Human Face.
Treasure Island (13-17)
106-110.

Extensive Reading
Essential English Grammar
Mock Group Dynamics

UNIT-V

15 Hrs

Aluizio Borem, Fabrico
R.Santos & David E.Bower
Advent of Biology
Mark Ratner & Daniel Ratner
Nanotechnology
Treasure Island (18-22)
111-114.

Extensive Reading
Essential English Grammar
Presentation Skills

Text Books

1. Elango K. *Insights*. Hyderabad: Orient Blackswan Pvt Ltd,2009.
2. Murphy, Raymond. *Essential English Grammar*. New Delhi. Cambridge University Press India Ltd,2009.
3. Defoe, Daniel. *Robinson Crusoe*. Chennai: MacMillan India Ltd,2009.
4. Stevenson R L. *Treasure Island*. Chennai: MacMillan India Ltd,2009.
5. Ram N Ed. *The Hindu*. Tiruchirappalli.

SEMESTER – IV
11UMA430207

Hours/Week : 4
Credits : 4

ALGEBRA – II

Objectives:

1. To introduce the concepts of Ring Theory and Ideals in a Ring.
2. To introduce polynomial rings and study their properties.

UNIT – I (12 hours)
Homomorphism and Isomorphism of Groups - Cayley's Theorem - Fundamental theorem of homomorphism. (Chapter 3 Sections 3.10,3.11)

UNIT – II (12 hours)
Rings-Definitions and Examples - Elementary properties of rings – Isomorphism - Types of rings. (Chapter 4 Sections 4.1-4.4)

UNIT – III (12 hours)
Characteristic of a ring-subrings-Ideals-Quotient rings-Maximal and Prime Ideals. (Chapter 4 Sections 4.5-4.9)

UNIT – IV (12 hours)
Homomorphism of rings – Field of quotient of an integral domain – unique factorization domain-Euclidean domain. (Chapter 4 Sections 4.10,4.11,4.13,4.14)

UNIT – V (12 hours)
Polynomial rings – Polynomial rings over U.F.D – Polynomial rings over Q. (Chapter 4 Sections 4.16 - 4.18)

BOOK FOR STUDY:

Arumugam S and Thangapandi Issac A – Modern Algebra, SCITECH Publications, Chennai, Edition 2003.

BOOKS FOR REFERENCE:

1. N. Herstein – Topics in Algebra- Student 2nd edition-John Wiley & Sons (Asia).
2. Elliot Mendeslor - Theory and problems of Boolean Algebra and Switching Circuits – Tata McGraw-Hill, 2004 Edition.

SEMESTER – IV
11UMA430208

Hours/Week : 5
Credits : 4

SEQUENCES AND SERIES

Objectives:

1. To lay a good foundation for classical analysis.
2. To study the behavior of sequence and series.

UNIT – I

Sequences – Bounded sequences – Monotonic Sequences – Convergent sequences – Divergent sequences – Oscillating sequences. (Chap-3: Sec 3.0-3.5 pg 39-55)

UNIT -II

Algebra of limits –Behavior of Monotonic functions. (Chap3: Sec3.6, 3.7 pg 56-82)

UNIT – III

Some theorems on limits- subsequences –limit points: Cauchy sequences. (Chap 3: Sec-3.8-3.11, pg 82-102)

UNIT – IV

Series-Infinite series –Cauchy's general principle of convergence - Comparison test theorem and test of convergence using comparison test(comparison test statement only, no proof). (Chap4: Sec (4.1& 4.2) pg 112-128.

UNIT – V

Test of convergence using D' Alembert's ratio test - Cauchy's root test- Alternating Series –Absolute Convergence (statement only for all tests). (Relevant part of Chap - 4 and Chap 5: sec 5.1&5.2 pg 157-167)

BOOK FOR STUDY:

Dr. S. Arumugam & Mr. A. Thangapandi Isaac **Sequences and Series**
- New Gamma Publishing House – 2002 Edition

BOOK FOR REFERENCE:

1. ALGEBRA - Prof. S. Surya Narayana Iyer
2. ALGEBRA - Prof. M.I.Francis Raj

SEMESTER – IV
11UMA430301A

Hours/Week : 4
Credit : 4

GRAPH THEORY

Objectives:

1. To introduce the notion of graph theory and its applications.
2. To incorporate the techniques of combinatorics in Graph Theory.

UNIT – I : A graph – Applications of graphs – finite and infinite graphs – Incidence and degree – Isomorphism – Sub graphs – Walks, paths and circuits – connected graphs, disconnected graphs and components. (Sec 1.1 to 1.5, 2.1, 2.2, 2.4, 2.5)

UNIT – II : Euler Graphs – Operations on Graphs – More on Euler Graphs – Hamiltonian paths and circuits. (Sec 2.6, 2.7, 2.8, 2.9)

UNIT – III : Trees – some properties of Trees – Pendant vertices in a Tree – Distance and centers in a Tree – Spanning Trees. (Sec 3.1, 3.2, 3.3, 3.4, 3.7)

UNIT – IV : Spanning Trees in a weighted Graph – cut-sets – some properties of cut-sets – All cut-sets in a Graph – Fundamental circuits and cut-sets – connectivity and separability. (Sec 3.10, 4.1, 4.2, 4.3, 4.4, 4.5)

UNIT – V : Planar Graphs – Kuratowski's Graphs – Different representations of a planar Graph – Geometric Dual – Combinatorial Dual. (Sec 5.2, 5.3, 5.4, 5.6, 5.7)

BOOK FOR STUDY:

Graph Theory with applications to Engineering and Computer Science by Narsingh Deo (Prentice Hall of India).

BOOKS FOR REFERENCE

1. Introduction to Graph Theory by Gary Chartrand and Ping Zhang. (Tata McGraw-Hill Edition).
2. A Text Book of Graph Theory by R. Balakrishnan and K. Ranganathan.

SEMESTER – IV
11UMA430301B

Hours/Week : 4
Credit : 4

ADVANCED CALCULUS

Objectives:

1. To study functions of two variables, continuity and differentiability of two variables.
2. To study the geometrical properties of curves including maxima and minima, saddle points etc.

UNIT – I: Functions of Several Variables. (12 hrs)
Limits and continuity, Derivatives, Composite functions, further cases, Differentiable functions.

UNIT – II: Taylor's Theorem. (12 hrs)
Functions of a single variable, Functions of two variables. Jacobians. Implicit functions, the inverse of the transformation, Change of variable.

UNIT – III: Maxima and minima. (12 hrs)
Necessary conditions, sufficient conditions, Points of inflection.

UNIT – IV: Functions of two variables.
Absolute maximum or minimum, Illustrative examples, critical treatment of an elementary problem.

UNIT – V: Sufficient conditions.
Relative extrema, saddle points, Least squares.

BOOKS FOR STUDY:

Advanced Calculus, second edition, Prentice Hall, David V Widder.

- UNIT – I : Chapter 1, Article 3.
UNIT – II : Chapter 1, Article 9 and 10.
UNIT – III : Chapter 4, Article 1.
UNIT – IV : Chapter 4, Article 2.
Unit - V : Chapter 4, Article 3.

BOOKS FOR REFERENCE:

Advanced Calculus -Olmsted - New Delhi: Eurasia, 1970.

SEMESTER – IV
11UMA430404 A

Hours/Week : 4
Credits : 4

ALLIED: PHYSICS - II

Objectives:

- To understand the knowledge of nuclear bomb and X-ray studies.
- For the study of electrostatics, student acquire knowledge about forces in electric field and their applications.
- To understand the knowledge of magnetic field in various conducting media
- To know the information regarding lasers and fiber optics in communication system.
- To know the different types of digital instruments in various electronic devices and digital computer.

UNIT – I : Modern Physics

Liquid drop model – nuclear fission - nuclear fusion – atom bomb- photo electric effect – Einstein’s photo electric equation – experimental verification – Compton effect –theory – X-ray diffraction – Bragg’s law – Bragg’s X-ray spectrometer – structure of KCl and NaCl crystal – Sommerfeld relativistic atom model.

UNIT – III : Electrostatics

Gauss law - proof – force between two point charges in vacuum – applications of Gauss law - electric field due to a line charge, an infinite plane sheet of charge, infinite charged conducting plate, charged spherical shell and charged sphere –Coulomb’s law from Gauss law – capacitors – parallel plate capacitor with dielectric and dielectric with varying thickness.

UNIT – III : Magnetism and Current Electricity

Magnetizing field - intensity of magnetization - flux density – deflection magnetometer – Tan A and Tan B simultaneous method – vibration magnetometer – absolute determination of M and H – hysteresis – energy

loss in hysteresis - Ampere’s law – Biot – Savarts law – magnetic field due to straight conductor carrying current – magnetic field on the axis of a circular coil carrying current – magnetic field due to a solenoid – force between two parallel conductors – Post Office Box – Potentiometer – principle and measurement of resistance and current..

UNIT – IV : Lasers and Fiber Optics

Atomic excitation - excitation by absorption-induced absorption - spontaneous absorption-spontaneous and induced emission - optical pumping-Ruby laser - He-Ne laser-applications of lasers-fiber optics-propagation of light in various media and in optical fiber- optical fiber and total internal reflection-numerical aperture - fiber optic communication-advantages –telephone system and optical fibre.

UNIT – V : Digital Electronics

Binary number system – conversion of binary into decimal, decimal into binary - logic gates and Universal gates – NAND and NOR as a Universal building block – Boolean algebra – De Morgan’s theorem – flip flops: SR, Clocked SR, JK, D-type, T-type.

BOOKS FOR STUDY:

1. A. S. Vasudeva - Modern Engineering Physics, S.Chand and Company Ltd.,1988.
2. Course Material.

UNIT	BOOK	SECTIONS
I	1	2.2,2.3,5.4,6.10-6.13,9.10-9.13,9.17,15.7,15.8
II	1	2.2-2.5,3.1,3.2,3.7,3.8
III	1	3.2-3.4,3.15,3.16,1.2-1.4,1.7-1.10.
IV	1	8.2,8.3,8.8-8.15, 8.17, 8.20, 8.22, 8.24, 8.28, 8.34, 8.35
V	2	Course Material

BOOK FOR REFERENCE:

1. Digital Principles and Applications, leach and Malvino, 5th Edition, Tata McGraw hill Ltd., 2002.

SEMESTER – III & IV
11UMA330405

Hours/Week : 2
Credits : 2

ALLIED: PHYSICS PRACTICAL
(For II B. Sc. CHEMISTRY AND MATHEMATICS)

Any 16 Experiments

1. Young's modulus – Non uniform bending – cantilever
2. Young's modulus – Cantilever
3. S.T. – Method of drops
4. S.T. – Capillary rise.
5. Viscosity – variable pressure head
6. Concave lens - f , R , μ .
7. Air wedge – Thickness of wire.
8. Newton' Rings R
9. Spectrometer – Solid prism
10. Spectrometer – Grating (Normal Incidence)
11. M1/M2 – Tan A and Tan B simultaneous method
12. Absolute determination of M and H .
13. P.O. Box – Temp. Coefficient
14. Potentiometer – Ammeter calibration
15. Potentiometer - R and ρ .
16. Field along the axis of the coil
17. Sonometer – Frequency of turning fork
18. Junction diode characteristics
19. Zener diode characteristics.
20. Logic gates – IC's
21. Jolly's bulb

Semester – IV
11UMA430404B

Hours/Week : 6
Credits : 5

ALLIED : ACCOUNTS - II

OBJECTIVE

- * To impart basic knowledge of partnership and company accounts
- * To help students to know the treatment of account in different situations.

UNIT – 1 (20 Hours)

Partnership accounts I – admission – meaning of goodwill valuation of goodwill – treatment of goodwill – revaluation of assets and liabilities – new profit sharing ratio - capital accounts – balance sheet of after admission.

UNIT – 2 (20 Hours)

Retirement and death of partners – revaluation of assets and liabilities – treatment of goodwill – closing of retiring partner's capital a/c – joint life policy – balance sheet after retirement and death.

UNIT – 3 (20 Hours)

Partnership accounts II – Dissolution – realization account – dissolution of firm – insolvency of partners Garner Vs Murray – Piece meal distribution.

UNIT – 4 (15 Hours)

Company accounts – Principles of company accounts – application – allotment – forfeiture – reissue of share.

UNIT – 5 (15 Hours)

Company Final Account (Simple Adjustments)

TEXT BOOK

Reddy TS and murthy A, (2006), Financial Accounting, Margham Publications, Chennai.

REFERENCES

1. Shukla MC, Grewal TS, (2006), Advanced Accounts Volume I & II, S.Chand and company Ltd, New Delhi.
2. Gupta RL, Gupta V.K, (2006), Finanacial Accounting, Sultan Chand and Sons, New Delhi.
3. Gupta RL, and Radhaswamy M, (2006), Advanced Accountancy, Volume I and II, Sultan Chand and sons New Delhi.
4. Maheshwari SN, Maheshwari SK, (2005), Introduction to Accouny, Vikas Publishing House Pvt.Ltd, New Delhi.

SEMESTER – V
11UMA530209

Hours/Week : 6
Credit : 4

LINEAR ALGEBRA

Objectives:

1. To facilitate a better understanding of Functional Analysis
2. To develop analytical thinking

UNIT – I: Vector spaces:

Vector spaces – Definition and examples – Subspace properties - Quotient space Linear transformations – Fundamental theorem of homomorphism – Span of a set. (Chapter 5, Sec 5.1 to 5.4)

UNIT – II: Basis and Dimension:

Linear Independence – Basis – Dimension – Properties – Rank and Nullity. (Chapter 5, Sec 5.5 to 5.7)

UNIT – III: Matrix and Inner product space:

Matrix of a linear transformation – Vector space of a linear transformation – Inner product space – Definition and examples – Orthogonality - Gram Schmidt orthogonalisation process – Orthogonal Complement. (Chapter 5, Sec 5.8, Chapter 6, Sec 6.1 to 6.3)

UNIT – IV: Characteristic equation and bilinear forms:

Characteristic equation – Cayley -Hamilton theorem – Eigen values and Eigen vectors – properties (Chapter 7, Sec 7.7, 7.8 Chapter 8, Sec 8.1, 8.2)

UNIT – V: Lattices and Boolean Algebra:

Partially ordered sets – Lattices – Distributive and Modular lattices – Boolean Algebra. (Chapter 9, Sec 9.1 to 9.5)

BOOK FOR STUDY:

Arumugam. S and Thangapandi Issac. A - Modern Algebra – SCITECH Publications (India) Pvt. Ltd., Chennai. Edition 2003.

BOOKS FOR REFERENCE:

1. I.N. Herstein – Topics in Algebra-Wiley Student 2nd edition
2. Elliott Mendelson – Theory and problems of Boolean Algebra and Switching Circuits.

SEMESTER – V
11UMA530210

Hours/Week : 6
Credit : 4

REAL ANALYSIS

Objectives:

1. To study the real number system and its properties
2. To study the properties of functions defined on the Real line

UNIT – I

[18 Hours]

Concepts of real numbers – Dedekind theories of irrational numbers – Definitions Dedekind's theorem – Absolute value of real numbers (Chapter 1, Sections 1-5, pages 1-19).

UNIT – II

[18 Hours]

Limit of a function of one variable – Other kinds of limit – Theorems involving limits. (Chapter 4, Sections 4-6, pages. 90-115).

UNIT – III

[18 Hours]

Notion of continuity – Classification of points of discontinuity – Properties of continuous function of one variable. (Chapter 4, Sections 7-9, pages 115-137, 140-148).

UNIT – IV

[18 Hours]

Introduction – Definition of derivatives – Geometrical significance of derivatives – Continuity and existence of derivatives – Mean value theorems of differential calculus. (Chapter 6, Sections 1-4, 13, pages 206-215, 260-280).

Unit – V

[18 Hours]

Riemann theory of integration of a bounded function – Necessary and Sufficient condition for Riemann Integrability – Examples of Riemann integrable function – Mean value theorem for definite integrals-Second Mean value theorem for definite integrals – Fundamental theorem. (Chapter 7, Sections 4 & 8, pages. 312-318, 327-333, 344-352).

BOOK FOR STUDY:

Chatterjee, S.K. – Mathematical Analysis (Real), Oxford & IBH Publishing Co., Edition 1979.

BOOK FOR REFERENCE:

1. S.C. Malik First Course in Real analysis.
2. Gupta and Nisha Rani – Real analysis.

SEMESTER – V
11UMA530211

Hours/Week : 6
Credit : 4

STATICS

Objectives:

1. To provide a basic knowledge of the behaviour of various types of forces.
2. To give enough working knowledge to handle practical problems.

UNIT – I

[18 Hours]

Law of parallelogram of forces-Lami's theorem-Resolution of forces.
(Chapter 2 Sections 1-4 & 6-12 Pages: 9 to 16 & 17 to 51).

UNIT – II

[18 Hours]

Like Parallel forces-Unlike Parallel forces-Moments-Varignon's theorem of Moments-Generalized theorem of Moments-Couples-Definition-equilibrium of couples-resultant of coplanar couples. (Chapter 3 Sections 1-13; Chapter 4 Sections 1-10 Pages: 52-78 & 84-97).

UNIT – III

[18 Hours]

Equilibrium of three forces acting on a rigid body-three coplanar forces-conditions of equilibrium-Coplanar forces-Reduction of coplanar forces-Equation to the line of action of the resultant. (Chapter 5 Sections 1-6; Chapter 6 Sections 1-9 Pages: 98 to 122 & 143-167).

UNIT – IV

[18 Hours]

Forces of Friction-Laws of Friction-Limiting Friction-Limiting equilibrium-Cone of Friction-Angle of Friction. (Chapter 7 Sections 1-13 Pages: 206-234).

UNIT – V

[18 Hours]

Equation to Common Catenary-Tension at any point-Geometrical properties of Common Catenary. (Chapter 11 Sections 1-6 Pages: 375-391).

BOOK FOR STUDY:

Venkataraman M.K. STATICS -: Agasthiar Publishers, Eleventh Edition; July 2005.

BOOKS FOR REFERENCE:

1. STATICS - V. Dharmapadham
2. STATICS - S. Narayanan

SEMESTER – V
11UMA530212

Hours/Week : 6
Credits : 4

**COMPUTER ORIENTED NUMERICAL METHODS WITH
'C' PROGRAMMING**

Objectives:

1. To introduce the techniques of C programming.
2. To solve numerical problems using C.

UNIT – I

Structure of C programs-Constants, Variables and Data types- Operators and Expressions-Mathematical functions-Input and output operators – *Temperature conversion*. (Chapters 1-4)

UNIT – II

Decision making and Branching - IF statements – GOTO statement- *Solving Quadratic equations* -Decision making and looping- WHILE, DO, FOR statements - *Prime number Checking* -Arrays- *series expansions of cos x and sin x*- *Fibonacci's series* - *numbers in ascending order* - *L.C.M.* , *G.C.D.* - *Mean and S.D.* - *Matrix addition, subtraction and multiplication* (Chapters 5-7).

UNIT – III

Handling of character strings-Arithmetic operations on characters- *Palindrome* -String handling functions- *Names in alphabetical order* - User defined functions-Recursion - *nCr and nPr* - (Chapters 8-9).

UNIT – IV

Curve fitting-Linear and parabolic curves by the method of least squares principle-Solving algebraic and transcendental equations-Bisection method, false position method and Newton Raphson method-Solving simultaneous algebraic equations-Gauss- Seidal method-Gauss elimination method. (Chapter 1, Sections 1.7-1.8, Chapter 3, Sections 2, 4 and 5, Chapter 4, Sections 2 and 6).

UNIT – V

Interpolation-Newton's forward and backward difference formulae-Lagrange's interpolation formula-Numerical integration using Trapezoidal and Simpson's one-third rules-solution of ODE s-Euler method and Runge-Kutta fourth order method (Chapter 6,Sections 3,4,Chapter 8,Section 4,Chapter 9,Sections 8,10,Chapter 11,Sections 10,16)

NOTE: 1) For Numerical methods: Problems and Programs only.
2) For topics in italics - programs only

BOOKS FOR STUDY

1. Balagurusamy. E: Programming in ANSI C (Second edition). (For Units I, II and III).
2. M. K. Venkatraman: Numerical methods in Science and Engineering. (V Edn.) (For Units IV and V).

BOOKS FOR REFERENCE

1. Yashavant.P.Kanetkar: Let us 'C'.
2. Rajaraman: Computer oriented numerical methods.

COMPUTER LAB (C-PROGRAMMING)**Objectives**

1. To train the students to run simple C programs.
2. To solve numerical problems using C.

LIST OF PRACTICALS

1. Finding the mean and S.D. of n values.
2. Finding Correlation coefficients.
3. Arranging n numbers in ascending order and finding the median value.
4. L.C.M. AND G.C.D. of two numbers.
5. Prime number Checking.
6. nCr and nPr using functions subprogram.
7. Fibonacci's series.
8. Finding $\cos x$ and $\sin x$ from series expansions.
9. Arranging the names in alphabetical order.
10. Matrix addition, subtraction and multiplication.
11. Palindrome verification.
12. Solving quadratic equations.
13. Newton – Raphson method -Bisection method-False position method of solving equations.
14. Gauss elimination method-Gauss-Seidal method of solving simultaneous equations.
15. Trapezoidal rule and Simpson's rule of integration.
16. R.K.Fourth order method of solving differential equations.
17. Lagrange's method of interpolation.

SEMESTER – V
11UMA530302A

Hours/ Week : 4
Credit : 4

AUTOMATA THEORY

Objectives:

1. To give the students an introduction to automata.
2. To make them understand the relation between grammar and automata

UNIT – I

Definition of an Automaton- Description of Finite Automaton – Transition systems - Properties of transition functions- Acceptability of a string by a finite Automaton - Non deterministic finite automaton- The equivalence of DFA and NFA. (Chapter 2: Sections 2.1 to 2.7)

UNIT – II

Formal Languages- Basic Definitions and examples- Chomsky classification of Languages- Languages and their relation- Recursive and Recursively Enumerable sets- Operations on Languages.
Chapter 3: Sections 3.1 to 3.5

UNIT – III

Regular expressions- Finite Automata and Regular expressions.
Chapter 4: Sections 4.1 and 4.2

UNIT – IV

Pumping Lemma for Regular sets- Applications of Pumping Lemma- Closure Property of Regular sets- Regular sets and Regular grammars.
(Chapter 4: Sections 4.3 to 4.6)

UNIT – V

Context free Languages and Derivation trees- Ambiguity in Context free grammars- Simplification of Context free grammars, (Chapter 5: Sections 5.1 to 5.3)

BOOKS FOR STUDY:

Theory of Computer Science (Automata, Languages and Computation), Second Edition, KLP Mishra, N Chandrasekaran

BOOKS FOR REFERENCES:

1. John E. Hopcroft and J.D. Ullman, Introduction to Automata theory, languages and computation by Narosa Publishing House- Reprint(1997)- Chennai.
2. A.V. Aho and J.D. Ullman, Principles of compiler design by Narosa Publishing House, 2002 - Chennai.

SEMESTER – V
11UMA530302B

Hours/Week : 4
Credit : 4

COMBINATORICS

Objectives:

1. To introduce various combinatorial numbers.
2. To understand the applications of combinatorial techniques in real life problems.

UNIT – I (12)

Basic Combinatorial Numbers – Stirling numbers of the second kind – Recurrence formula for P_n . (Part I: Unit 1) Pages 5-20

UNIT – II (12)

Generating functions – Recurrence relations- Bell's formula. (Part I: Unit 2) Pages 29-48.

UNIT – III (12)

Multinomials – Multinomial theorem- Inclusion and Exclusion principle. (Part I: Unit 4,5) Pages 66-77.

UNIT – IV (12)

Euler function – Permutations with forbidden positions – the Menage Problem. (Part I: Unit 5,6) Pages 77-94

UNIT – V (12)

Problem of Fibonacci – Necklace problem – Burnside's lemma. (Part I: Unit 6, Part II: Unit 1) Pages 95-111

BOOKS FOR STUDY:

Combinatorics Theory and Applications-V. Krishnamurthy, East West Press. 2002. Part I: Unit 1 to 4 Part II: Unit 1.

BOOKS FOR REFERENCES:

Theory and problems of combinatorics- Schaums outline series, McGraw Hill.

SEMESTER – V
11UMA540601

Hours/Week : 2
Credit : 2

SKILL BASED ELECTIVE - I:

MATHEMATICS FOR COMPETITIVE EXAMINATIONS

Objectives:

1. To learn the problem solving techniques for aptitude problems.
2. To enable the students prepare themselves for various competitive examinations.

UNIT – I

H.C.F. and L.C.M. of Numbers-Percentage.
(Chap 2: Pages 25-36, Chap 10: Pages 139-172)

UNIT – II

Profit and Loss-Ratio and Proportion.
(Chap 11: Pages 173-204, Chap 12: Pages 205-230)

UNIT – III

Time and Work-Pipes and Cisterns.
(Chap 15: Pages 257-275, Chap 16: Pages 276-283)

UNIT – IV

Time and Distance-Problems on Trains-Simple Interest-Compound Interest.
(Chap 17: Pages 284-298, Chap 18: Pages 299-313, Chap 21: Pages 334-350, Chap 22: Pages 351-356)

UNIT – V

Area-Volume and Surface Areas.
(Chap 25: Pages 403-432)

BOOKS FOR STUDY:

Quantitative Aptitude by R.S. Aggarwal.

SEMESTER – VI
11UMA630213

Hours/Week : 7
Credit : 4

COMPLEX ANALYSIS

Objectives:

1. To study the behavior of complex - valued functions.
2. To train the students in the operative techniques on complex – valued functions.

UNIT – I **(7 × 3 = 21 hrs)**

Continuous Functions – Differentiability – Cauchy-Riemann Equations – Analytic Functions – Harmonic Functions. (Chapter II, Sections 2.4-2.8, Pages 30-67)

UNIT – II **(7 × 3 = 21 hrs)**

Conformal Mapping - Bilinear Transformations - Cross ratio – Fixed Points of Bilinear Transformations. (Chapter II, Section 2.9, Chapter III, Section 3.2 - 3.4, Pages 67-75, 82-94)

UNIT – III **(7 × 3 = 21 hrs)**

Definite integral - Cauchy's Theorem - Cauchy's Integral Formula - Higher Derivatives. (Chapter VI, Section 6.0 -6.4, Pages132-172)

UNIT -IV **(7 × 3 = 21 hrs)**

Taylor's Series - Laurent's Series - Zeros of Analytic Functions - Singularities. (Chapter VII, Section 7.0-7.4, Pages173-208)

UNIT -V **(7 × 3 = 21 hrs)**

Residues - Cauchy's Residue Theorem - Evaluation of Definite Integrals (poles not lying on the real axis) (Chapter VIII, Section 8.0-8.3, Pages 209-255)

BOOK FOR STUDY:

S.Arumugam, A.Thangapandi Issac, A.Somasundaram: "Complex Analysis", Scitech Publications (India) Pvt.Ltd.

BOOKS FOR REFERENCE:

1. Narayanan, Manicavachagom Pillai, "Complex Analysis", S.Viswanatha (printer and publishers) Pvt.ltd.
2. P.Duraipandian, Laxmi Duraipandian, D.Muhilan,"Complex Analysis", Emerald publishers, Revised Edition (2001).
3. Murray R. Spiegel, "Theory and Problems of Complex Variables", Schaum Outline Series-Mcgraw Hillbook Company.

SEMESTER – VI
11UMA630214

Hours/Week : 7
Credit : 4

OPERATIONS RESEARCH

Objectives:

1. To introduce the various techniques of Operations Research.
2. To make students solve real life problems in Business and Management.

UNIT – I

Linear programming problem - Mathematical formulation - Illustrations on Mathematical formulation on Linear Programming Problems - Graphical solution method - some exceptional cases - Canonical and standard forms of Linear Programming Problem - simplex method. (Chapter 2 Sec 2.1 to 2.4, Chapter 3 Sec 3.1 to 3.3, 3.5, Chapter 4 Sec 4.1,4.3)

UNIT – II

Use of Artificial Variables (Big M method - Two phase method) - Duality in Linear Programming - General primal-dual pair - Formulating a Dual problem - Primal-dual pair in matrix form - Duality and Simplex method - Dual simplex method. (Chapter 4 Sec 4.4, Chapter 5 Sec 5.1 to 5.4, 5.7, 5.9)

UNIT – III

Transportation problem - LP formulation of the TP - Solution of a TP - Finding an initial basic feasible solution (NWCM - LCM - VAM) - Degeneracy in TP - Transportation Algorithm (MODI Method) - some exceptional cases (Unbalanced TPs) - Assignment problem - Solution methods of assignment problem – special cases in assignment problem. (Chapter 10 Sec 10.1, 10.2, 10.8, 10.9, 10.12, 10.13, Chapter 11 Sec 11.1 to 11.4)

UNIT – IV

Queueing theory - Queueing system - Classification of Queueing models - Poisson Queueing systems Model I (M/M/1)(¥/FIFO), Model II (M/

M/1)(N/FIFO), Model V (M/M/C)(¥/FIFO) - Games and Strategies - Two person zero sum - Some basic terms - the maximin-minimax principle - Games without saddle points-Mixed strategies - graphic solution 2'n and m'2 games. (Chapter 21 Sec 21.1, 21.2, 21.7 to 21.9, Chapter 17 Sec 17.1 to 17.6)

UNIT – V

PERT and CPM – Basic components – logical sequencing - Rules of network construction- Critical path analysis - Probability considerations in PERT - Inventory Control - Deterministic inventory problems with no shortages. (Chapter 25 Sec 25.1 to 25.4, 25.6, 25.7 Chapter 19 Sec 19.9(Case 1 and Case 3 only)

BOOK FOR REFERENCE:

1. Sundaresan.V, Ganapathy Subramanian.K.S. and Ganesan.K, Resource Management Techniques, A.R. Publications, 2002.
2. Taha H.A., Operations Research – An introduction, 7th edition, PHI, 2002.

BOOK FOR STUDY:

1. Kanti Swarup., P.K. Gupta and ManMohan: Operations Research - 13th edition, Sultan Chand and Sons, 2007.

SEMESTER – VI
11UMA630215

Hours/Week : 6
Credit : 4

DYNAMICS

Objectives:

1. To provide a basic knowledge of the behavior of objects in motion.
2. To develop a working knowledge to handle practical problems.

UNIT – I

Motion in a plane without air resistance-path of a projectile-Time of flight-Horizontal range-Motion of a projectile up an inclined plane. [Sections 6.1 to 6.10,6.12 to 6.16]

UNIT – II

Fundamental laws of impact - Impact of a smooth sphere on a fixed smooth plane – Direct impact of smooth elastic spheres - oblique impact of smooth elastic spheres.[Sections 8.1 to 8.11]

UNIT – III

Definition - Geometrical representation of S.H.M.-Composition of S.H.M.'S of the same period and in the same line - Composition of S.H.M.'S of the same period and in two perpendicular directions. [Sections 10.1 to 10.8]

UNIT – IV

Radial and transverse components of velocity and acceleration – Differential equation of a central orbit- Given the orbit to find the law of force - Given the law of force to find the orbit. [Sections 11.1 to 11.13]

UNIT – V

Kinetic Energy – Angular momentum – Equation of motion – Conservation of angular momentum – Principle of energy – Compound pendulum – Centers of suspension and oscillation. [Sections 13.1 to 13.8]

NOTE: 50% of the question paper shall be book works and 50% of the questions may be problems.

BOOK FOR STUDY:

Dynamics - Dr.M.K.Venkataraman Agasthiar Publications, 12th Edition
July 2006 Unit 1 – Chapter 6, Unit 2 - Chapter 8, Unit 3 - Chapter 10,
Unit 4 - Chapter 11, Unit 5 – Chapter 13

BOOKS FOR REFERENCE:

1. Dynamics - V. Dharmapatham S.VISWANATHAN Printers and Publishers 2006.
2. Dynamics - M.L. Khanna.

SEMESTER – VI
11UMA630303A

Hours/Week : 4
Credits : 4

ASTRONOMY

Objectives:

1. To introduce the exciting world of astronomy to the students.
2. To help the students to study about the celestial objects.

UNIT – I

Celestial sphere and diurnal motion – Celestial coordinates - Sidereal time. Art. 39 – 76.

UNIT – II

Morning and evening stars – circumpolar stars - zones of earth - perpetual day -twilight. Art. 80 – 83, 87 – 89, 111 - 116.

UNIT – III

Refraction – laws of refraction – tangent formula - horizontal refraction -geocentric parallax – horizontal parallax. Art. 117 – 128, 135 - 144.

UNIT – IV

Kepler's laws - Anomalies – Kepler's equation - Calendar.
Art. 146 – 149, 156 – 159, 175 – 179.

UNIT – V

Moon - sidereal and synodic months – elongation – phase of moon – eclipses -umbra and penumbra – lunar and solar eclipses–maximum and minimum number of eclipses in a year. Art. 229 – 241, 256 – 263, 267, 268, 271 - 275.

BOOK FOR STUDY:

Kumaravel S. and Susheela Kumaravel: Astronomy, 8th Edition, 1993.

BOOKS FOR REFERENCE:

1. Ramachandran, Text Book of Astronomy
2. Subramani Aiyar. H., Text Book on Astronomy (1970).

SEMESTER – VI
11UMA630303B

Hours/Week : 4
Credit : 4

ADVANCED DIFFERENTIAL EQUATIONS

Objectives:

1. To introduce various types of advanced differential equations .
2. To understand the applications of D.E and P.D.E in other branches.

UNIT – I

Picards method of successive approximation-solving simultaneous differential equations with initial conditions. (Part I Chap I. Sec 1.1, 1.2, 1.3)

UNIT – II

Linear equations of second order –complete solution –Integral of complimentary function. (Part I Chap 4. Sec 4.1—4.5).

UNIT – III

Power series solution-ordinary and singular points-Integration in series. (Part I Chap 8.Sec 8.1-8.4)

UNIT – IV

Monge's method- solving equations of the form $Rr + Ss + Tt = V$.
(Part II Chap 5. Sec 5.1, 5.2)

UNIT – V

Boundary value problems-solution of heat equation and wave equation (one and two dimension only). (Part III Chap 1. Sec 1.7 to 1.14, 1.16, 1.17)

BOOKS FOR STUDY:

1. Advanced Differential Equations –M.D. Raisinghania, Sultan Chand.

REFERENCE BOOKS:

1. Ordinary Differential Equations - S.G. Deo, V. Lakshmikantham, V. Raghavendra II Edn Tata McGraw Hill
2. Zafar Ahsan Differential Equations and their Applications II Edn Hall.

SEMESTER – VI
11UMA630304A

Hours/Week : 4
Credits : 3

FUZZY THEORY

Objectives:

1. To expose the students to the concepts of Fuzzy Sets and operations on these sets.
2. To provide comprehensive knowledge of applications of Fuzzy Sets and relations to real life systems.

UNIT – I

Fuzzy Set Theory: Fuzzy sets - Fuzzy set: definition - Different Types of Fuzzy sets - General Definitions and Properties of Fuzzy Sets - Other Important Operations - General Properties: Fuzzy Vs Crisp. (Chapter 1: Sections 1.16 to 1.21)

UNIT – II

Operations on Fuzzy Sets: Introduction - Some Important Theorems - Extension Principle for Fuzzy Sets - Fuzzy Compliments - Further Operations on Fuzzy Sets. (Chapter 2: Sections 2.1 to 2.5)

UNIT – III

Fuzzy Relations and Fuzzy Graphs: Introduction - Projections and Cylindrical Fuzzy Relations - Composition - Properties of Min-Max Composition - Binary Relations on a Single Set - Compatibility Relation. (Chapter 4: Sections 4.1 to 4.6)

UNIT – IV

Possibility Theory: Introduction - Fuzzy Measures - Evidence Theory – Probability Assignment – Combined Evidence - Probability Measure - Possibility and Necessity Measures. (Chapter 5 : Sections 5.1 to 5.7)

UNIT – V

Decision Making in Fuzzy Environment: Introduction - Individual Decision Making – Multi person Decision Making – Multi criteria Decision

Making - Fuzzy Ranking Method - Fuzzy Linear Programming. (Chapter 9: Sections 9.1 to 9.6)

BOOK FOR STUDY:

Fuzzy sets and their Applications – Pundir & Pundir –A Pragati Edition (2006).

BOOKS FOR REFERENCE:

1. Fuzzy set theory and its Applications-Fourth Edition-H. J. Zimmermann-Springer International Edition.Fuzzy logic with engineering Applications-Timothy J. Ross-McGraw Hill, Inc. New Delhi.
2. Fuzzy sets and fuzzy logic theory and Applications-George J. Klir and Bo Yuan-Prentice Hall of India, New Delhi.

SEMESTER – VI
11UMA630304B

Hours/Week : 4
Credits : 3

NUMBER THEORY

Objectives::

1. To highlight the niceties and nuances in the world of numbers.
2. To prepare the students for coding through congruences.

UNIT – I

Euclid's Division Lemma-Divisibility – The Linear Diophantine Equation – The Fundamental Theorem of Arithmetic. (Sec 2.1-2.4 Pages 12-29).

UNIT – II

Permutations and Combinations - Fermat's Little Theorem-Wilson's Theorem – Generating Functions. (Sec 3.1-3.4 Pages 30-44)

UNIT – III

Basic Properties of Congruences-Residue Systems.
Linear Congruences-The Theorems of Fermat and Wilson Revisited.
(Sec 4.1-4.2 Pages 49-55; Sec 5.1-5.2 Pages 58-65)

UNIT – IV

The Chinese Remainder Theorem-Polynomial Congruences – Combinatorial Study of $F(n)$. (Sec 5.3-5.4 Pages 66-74, Sec 6.1 Pages 75-81).

UNIT – V

Formulae for $d(n)$ and $s(n)$ -Multiplicative Arithmetic Function-The Mobius Inversion Formula. (Sec 6.2-6.3 Pages 82-92)

BOOKS FOR STUDY:

Number Theory by George E. Andrews, Hindustan Publishing Corporation-1984, Edition.

BOOKS FOR REFERENCE:

1. Basic Number Theory by S.B.Malik. Vikas Publishing House Private Limited.
2. A First Course Theory of Numbers by K.C. Chowdhury. Asian Books Private Limited - I Edition (2004).

SEMESTER – VI
11UMA6740602

Hours/Week : 2
Credit : 2

SKILL BASED ELECTIVE - III : MATLAB APPLICATIONS

Objectives:

1. To introduce the Mathematical software MATLAB for high-performance numerical computations and visualization.
2. To learn MATLAB built-in functions provided to solve all type of scientific problems.

UNIT – I (6 hrs)

I/P, O/P, Variables, Vectors, Matrices.

UNIT – II (6 hrs)

Interface, Menu, Workspace, Working Directory, Command Window, Diary, Printing.

UNIT – III (6 hrs)

Built-in functions, User-defined functions, Script M-files, Variables in M-files.

UNIT – IV (6 hrs)

Complex Arithmetic, Solving linear systems, Eigen Values and Vectors, Calculus.

Unit – V (6 hrs)

ezplot, 2D plots, 3D plots.

BOOK FOR STUDY:

Getting started with MATLAB 7 (2008)
 Rudra Pratap, Oxford University Press.

SKILL BASED ELECTIVES

BOTANY

11UBO540601 Mushroom Culture
 11UBO640602 Herbal Technology

BUSINESS ADMINISTRATION

11UBU540601 Personality Development
 11UBU640602 Managerial Skills

CHEMISTRY

11UCH540601 Food and Nutrition
 11UCH640602 Everyday Chemistry

COMMERCE

11UCO540601A Accounting for Executives
 11UCO540601B Soft Skills for Managers
 11UCO640602A Total Quality Management
 11UCO640602B Fundamentals of Accounting Packages

COMMERCE (CA)

11UCC540601 Soft Skills
 11UCC640602 Basics of Accounting

COMPUTER APPLICATIONS (Dept of IT)

11UBC540601A Fundamentals of IT
 11UBC540601B Internet Concepts
 11UBC640602A Visual Programming
 11UBC640602B Flash

COMPUTER SCIENCE

11UCS540601A Office Automation
 11UCS540601B Internet Concepts
 11UCS640602A Fundamentals of Computer Networks
 11UCS640602B E-Commerce

ECONOMICS

11UEC540601	Security Analysis
11UEC640602	Economics of Insurance

ELECTRONICS

11UEL540601	DVD Troubleshooting and Assembling
11UEL640602	PC Assembling

ENGLISH LITERATURE

11UEN540601	Business English Writing
11UEN640602	Media Skills

HISTORY

11UHS540601	Indian History for Competitive Exams
11UHS640602	Tourism and Travel Management

MATHEMATICS

11UMA540601	Mathematics for Competitive Exams
11UMA640602	MATLAB

PHYSICS

11UPH540601	Cell Phone Servicing
11UPH640602A	Electrical Wiring
11UPH640602B	Videography

STATISTICS

11UST540601	Data Analysis for Competitive Exams
11UST640602	Statistics for Management

TAMIL

11UTA540601	தமிழ் இலக்கியத்தில் மனித உரிமைகள்
11UTA640602	மைய அரசுப் பணித் தேர்வுத்தமிழ்