

**A.VEERIYA VANDAYAR MEMORIAL SRI PUSHPAM COLLEGE
(AUTONOMOUS),
POONDI, THANJAVUR DIST.**

**Question Pattern for UG and PG Programmes for students to
be admitted during 2014 – 2015 and afterwards**

Total Marks: 75

QUESTIONS PATTERN

**SECTION – A
(Question 1 to 10)**

10 x 2 = 20 Marks

1. Short Answer Questions
2. Two Questions from each units (All are answerable)

**SECTION – B
(Question 11 to 15)**

5 x 5 = 25 Marks

1. 5 Paragraph type questions with “either / or” type choice.
2. One question from each unit of the Syllabus.
3. Answer all the questions.

**SECTION – C
(Question 16 to 20)**

3 x 10 = 30 Marks

1. 5 Essay type questions – any three are answerable.
2. One questions from each unit of the Syllabus.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
I	14U1MAT1	$\sqrt{\mathfrak{R}} \mid \zeta \vdash \sqrt{\mathfrak{R}} \mid B\Delta$ $(\chi \mid \leftrightarrow \Sigma \mid f, E \rightarrow \mid \mid >, \Sigma \zeta f \mid \Delta,$ $\sqrt{\mathfrak{R}} \mid B \kappa \leftrightarrow \zeta \rightarrow)$	6	3

$\{ \rightarrow: 1 \quad \neg \otimes \Phi \infty \perp$

... $\Sigma \leftrightarrow \Delta$: 18

$$1. \sqrt{\leftrightarrow} \zeta \therefore o \equiv \mid \partial \mid \mid \zeta \zeta \mid \square \mid \mathfrak{k} \zeta \mid \otimes \wp \zeta \square \mid \zeta \otimes E \heartsuit \neg \wp \zeta \tau > \Delta$$

$$(\mathfrak{k} o > \zeta B \Delta \quad \xi \neg \kappa \mu \Delta)$$

$$2. \Sigma \zeta \therefore \mathfrak{R} \mid _ \mid \sigma \Theta \zeta \mid \square > \tau \infty \uparrow \dots > [$$

$$(\wp \mid \kappa \uparrow \square \mid > \lambda [E \oplus \heartsuit A)$$

$$3. \wp \zeta \leftrightarrow] B \zeta \zeta \mid \square \bullet > \subseteq] \leftrightarrow \heartsuit \wp \zeta f _ \mid \perp$$

$$(\bullet > \subseteq] \leftrightarrow \heartsuit \neg \wp \mathfrak{k} \mid \therefore, \bullet > \subseteq] \leftrightarrow \heartsuit \wp \lambda \zeta \mid \bullet > \subseteq] \leftrightarrow \uparrow > \zeta \mid \Delta,$$

$$\bullet > \subseteq] \leftrightarrow \dots > \sigma \lambda [\mu])$$

$$4. \wp \zeta \leftrightarrow] > \zeta \otimes [\square T \leftrightarrow \uparrow > \zeta \Phi$$

$$5. \wp \otimes \mathfrak{R} \dots \mid \zeta \otimes \mid f \mid _ B \zeta \square \bullet \subseteq > \leftrightarrow \Delta \square \Sigma \zeta \mid$$

$$(\diamond \equiv \dots \mid \chi \mathfrak{J} \mid \therefore \diamond [\Sigma \zeta \dots f, \diamond \equiv \mid \perp \Sigma \zeta \mid (> \tau \infty \Sigma \zeta \mid, \gamma \subseteq] \leftrightarrow \zeta \Sigma \zeta \mid,$$

$$\mid [\spadesuit f \Sigma \zeta \mid, \therefore \mid \mathfrak{B} \zeta \langle \Sigma \zeta \rangle))$$

$$6. \mid \kappa \leftrightarrow \xi \uparrow \mu \square \mid \sigma \leftrightarrow \zeta \leftrightarrow [\mid \mid > (\mid \zeta \vee \rightarrow \Delta \mid \sigma \Theta \angle \Delta \therefore \neg \heartsuit \wp] _ \mid \mathfrak{T})$$

$\{ \rightarrow: 2 \quad \chi \mid \leftrightarrow \Sigma \mid f$

... $\Sigma \leftrightarrow \Delta$: 18

$$1. \dots \mid \otimes \mid \sigma \square \sqrt{\leftrightarrow} \zeta \mid \wp \zeta \kappa \Delta (1 \xi > _ 15 \kappa \mid \leftrightarrow)$$

$$2. \dots \mid \otimes \mid \sigma \square \wp B \square \equiv \mid \perp \neg > \zeta f \mid \Delta$$

$\{ \rightarrow: 3 \quad E \rightarrow \mid \mid >$

... $\Sigma \leftrightarrow \Delta$: 18

$$1. \dots \mid \otimes \mid \sigma \square \zeta \leftrightarrow _ \neg \mid \zeta \mid \mathfrak{R} \zeta \Delta \kappa \zeta \spadesuit \Delta \wp \zeta \mid (1 \xi > _ 10 \kappa \mid \leftrightarrow)$$

$$2. \dots | \textcircled{R} | \sigma \square \therefore \dots \spadesuit \zeta \leftrightarrow \Rightarrow E > \Delta \xi \dashv \kappa \mu \Delta$$

$$\{ \rightarrow : 4 \ \Sigma \zeta f | \Delta$$

$$\dots \Sigma \leftrightarrow \Delta : 18$$

$$\zeta . \neg \kappa . \wp \zeta \ulcorner \bullet \heartsuit \div \leftrightarrow \therefore \setminus B [\square \neg | \langle > \therefore A \Uparrow > \lceil$$

$$\{ \rightarrow : 5 \ \sqrt{\Re} | B \kappa \leftrightarrow \lceil \zeta \rightarrow$$

$$\dots \Sigma \leftrightarrow \Delta : 18$$

$$E \rightarrow || > , A] \spadesuit \Delta , \Sigma \zeta f | \Delta , | \sigma | > , \chi | \leftrightarrow \Sigma | f$$

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
I	14U1MAE1	PART – II ENGLISH PROSE, POETRY AND COMMUNICATION SKILLS	6	3

Objective

- To initiate the Students to understand English through Prose, Poetry and Basic Communicative Grammar

Unit – I

- 1) The Running Rivulets of Man,
- 2) Parliament is Marking Time,
- 3) The Lady in Silver Coat,
- 4) Mr. Applebaum at Play.

Unit – II

- 1) The Feigning Brawl of an Imposter,
- 2) Thy Life Is My Lesson,
- 3) Solve The Gamble,
- 4) The Stoic Penalty.

Unit – III

- 1) Nobility In Reasoning,
- 2) Malu the Frivolous Freak,
- 3) Bharath! Gird Up Your Loins!
- 4) Honesty is the Cream Of Chastity

Unit – IV

John Milton – On His Blindness.

Oliver Goldsmith – The Village Schoolmaster.

William Wordsworth – The Daffodils.

P.B.Shelley – Ozymandias.

Keats – La Belle Dame Sans Merci.

Hopkins – Thou Art Indeed, Just Lord.

Unit – V

Parts of Speech, Nouns, Pronouns, Conjunctions, Adjectives, Articles, Verbs, Adverbs, Interjection – sentence.

B.Sc. Mathematics

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
I	14U1MAC1	Core - DIFFERENTIAL CALCULUS AND TRIGONOMETRY	4	4

Unit I**12 Hrs**

Successive differentiation- Leibnitz theorem without proof- problems. Curvature, Evolute.

Unit II**12 Hrs**

Partial derivatives of a function, Maxima and Minima for functions of two variables- Lagrange multiplier method- series expansion for function of two variables.

Unit III**12 Hrs**

Trigonometry- Expansions of $\sin n\theta, \cos n\theta, \tan n\theta, \sin^n \theta, \cos^n \theta, \tan^n \theta, \sin \theta, \cos \theta, \tan \theta$ - problems. Hyperbolic functions- Relation between circular and hyperbolic functions separation of real and imaginary parts of hyperbolic functions.

Unit IV**12 Hrs**

Inverse hyperbolic functions- separation of real and imaginary parts of hyperbolic functions- Logarithm of complex numbers- problems.

Unit V**12 Hrs**

Summations of Trigonometric series: (I) Difference method (II) Angles in A.P Method (III) C+ iS Method (IV) Gregory Method.

Text Book:

Calculus and Trigonometry: T.K. M. Pillai (Relevant Portions only)

Unit I : Chapter 3:(3.9, 3.10)

Unit II : Chapter 8

Unit III : Chapter 3 & 4

Unit IV : Chapter 4 & 5

Unit V : Chapter 5

General Reference:

- 1) *Trigonometry Arumugam and Isaac.*
- 2) *Engineering Maths Volume I: A. Singaravelu.*

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No.of Credits
I	14U1MAC2	Core - ANALYTICAL GEOMETRY 3D AND INTEGRAL CALCULUS	5	4

Unit I**15 Hrs**

Analytical Geometry 3D- plane- straight line- skew lines S.D.

Unit II**15 Hrs**

Sphere- tangent plane- intersection of a sphere by a plane- orthogonality of spheres.

Unit III**15 Hrs**

Properties of definite integrals- Reduction formulae of the types:
 $\int x^n e^{ax} dx, \int x^n \cos ax \, dx, \int x^n \sin ax dx, \int \cos^m x \cos x \, dx, \int \tan x \, dx, \int \sin x \, dx$.

Unit IV**15 Hrs**

Beta and Gamma integrals

Unit V**15 Hrs**

Multiple integral- Double and triple integrals- change the order of integration. Differentiation under the integral sign. Application of multiple integrals, Arc length, Volume, Surface area.

Text Book:

Analytical geometry and Calculus Vol II: T.K. M. Pillai (Relevant Portions only)

Unit I	:	Chapter 2 & 3
Unit II	:	Chapter 4
Unit III	:	Chapter 1(1.11, 1.13)
Unit IV	:	Chapter 7 (2.1, 2.2, 2.3)
Unit V	:	Chapter 5

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
I	14U1MAPHA1	Allied Physics –I	5	4

Unit – Gravitation

Newton's law of gravitation – determination "G"- Boys method – density of earth – gravitational potential and field intensity due to a solid sphere at a point inside the sphere – outside the sphere.

Elasticity: Twisting couple on a cylinder–determination of coefficient of Rigidity modulus–Static Torsion method–Bending of beams–Bending moment–Uniform bending–experimental method for the determination of Young's modulus– I section of girders.

Unit – II Sound

Composition of two simple harmonic motions (1) along a straight line and (2) at right angles – Lissajous figures and applications. Acoustic of buildings –Reverberation–intensity measurement by hotwire microphone method.

Unit – III Thermal Physics

Low temperature Physics – Production of low temperature – liquefaction of gases – liquefaction of helium – adiabatic demagnetization (qualitative)only – super conductivity –.Newton's law of cooling –verification–specific heat capacity of a liquid by cooling – Bomb calorimeter.

Conduction: Coefficient of thermal conductivity–good and bad conductors–Searle's method for good conductors –Lees disc method for bad conductors. Stefan's law Of radiation–solar constant – Angstroms pyroheliometer.

Unit – IV Optics

Interference- thin film – reflection air wedge - Diffraction –fresnel's and fraunhofer diffraction- Transmission grating -theory .

Polarization - Elliptically and circularly polarized light - quarter wave plate – half wave plate-Babinet compensator -optical activity – Laurent's half shade polarimeter.

Unit – V Relativity

Frames of reference - Galilean transformation – inertial and non - inertial frames– Michelson-Morley Experiment–negative result – postulates of special theory of relativity– Lorentz transformation equations–time dilation–length contraction. Wave mechanics- De Broglie's concept of matter waves – Davisson and Gemmer experiment- G.P.Thomson experiment - Uncertainty principle.

Reference:

1. Allied physics – A. Sundaravelusamy, Priya publications, Karur-2.
2. Allied physics - R. Sabesan and others, Popular Book Depot, Madras-15.

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
I & II	14U2MAPHAPL	Allied - Physics Practical (NS)	3	-

Any Sixteen Experiment:-

1. Young's modulus – non uniform bending.
2. Rigidity modulus –Static Torsion
3. Coefficient of viscosity – Graduated burette method.
4. Specific heat capacity of liquid - Newton's law of cooling
5. Newton's rings-Radius of curvature.
6. Air wedge – Thickness of wire
7. Spectrometer prism – A and D
8. Spectrometer grating – normal incidence
9. Field along the axis of the coil
10. Carey Fosters Bridge – specific resistance
11. P.O Box-Specific Resistance
12. Potentiometer – ammeter calibration
13. Figure of merit of a galvanometer –Half deflection method – B.G
14. Diode – characteristics
15. S.T and interfacial – drop weight method
16. Logic gates – using Discrete Components.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
II	14U2MAT2	$\forall f \mathcal{R} \zeta \vdash \sqrt{\mathcal{R}} B \Delta -$ $\wp B[\xi] \oplus \uparrow > \tau \alpha - \sqrt{\mathcal{R}} \square \kappa \leftrightarrow \vdash \zeta \rightarrow$	6	3

$\{ \rightarrow: 1$

... $\Sigma \leftrightarrow \Delta: 18$

1. $\vdash \Theta \zeta \spadesuit \otimes \Delta \wp \subseteq \vdash \square \dots > \kappa \zeta \leftrightarrow \Delta \square \dots | \zeta \langle \rightarrow \vdash \heartsuit \wp \rangle | \Delta$
2. $\vdash \Sigma \zeta \Upsilon \mathcal{R} | \leftrightarrow \otimes \vdash \square \dots > \kappa \zeta \leftrightarrow \Delta \square \wp \gamma \Delta \vdash \xi | \oplus \square \vdash \uparrow > \zeta \downarrow f | \Delta \square$
 $\vdash \mathcal{R} | \vdash \zeta \wp \vdash \wp \rangle | \Delta$
3. $\bullet \subseteq \leftrightarrow \vdash \square \dots > \kappa \zeta \leftrightarrow \Delta \square \vdash \kappa \zeta^{\text{TM}} \vdash \wp \rangle | \Delta (\forall \oplus | \dots \langle \zeta | | \otimes \subseteq \sqrt{[\wp \Delta \dots]})$
4. $\therefore \zeta \setminus \mathcal{R} | \kappa \zeta \otimes | \vdash \square \vdash \kappa \zeta \otimes | \Delta \square \wp \wp \otimes \wp \uparrow \mu$

$\{ \rightarrow: 2$

... $\Sigma \leftrightarrow \Delta: 18$

1. $\neg \wp \setminus B \zeta \alpha \kappa \zeta \vdash \square \vdash \neg \therefore \zeta \alpha \square$ 4. $\therefore \zeta \setminus \mathcal{R} | \equiv | \otimes |$
2. $\Sigma \Delta \therefore \zeta \alpha \kappa \zeta \vdash \square \vdash \kappa \zeta \Phi \neg \therefore \zeta \alpha \square$
 $(\chi B \vdash \kappa \oplus \Upsilon B \vdash \Sigma \vdash \Delta \dots \xi > _ 10 \wp \zeta f _ | \perp)$
3. $\gamma \downarrow f \zeta \perp \square \vdash \vdash \heartsuit \wp \zeta | \kappa$
 $(\therefore \zeta | \alpha \uparrow \vdash | \perp \dots \xi > _ 10 \wp \zeta f _ | \perp)$
4. $\vdash \therefore \equiv | B \zeta \alpha \kappa \zeta \vdash \square \neg \wp \setminus B \vdash \neg \therefore \zeta \alpha (\xi > _ 10 \wp \zeta f _ | \perp)$

$\{ \rightarrow: 3$

... $\Sigma \leftrightarrow \Delta: 18$

1. $\vdash \wp \vdash \square \vdash \vdash \therefore \subseteq \rangle \leftrightarrow \Delta \square (\xi > _ > \subseteq \rangle \leftrightarrow \Delta \square | _ \sigma: 10 \wp \zeta f _ | \perp)$
2. $\zeta \therefore \leftrightarrow \zeta \vdash \wp \leftrightarrow \vdash \square * \spadesuit \zeta \otimes E B \Delta \vdash \therefore \div \perp | \langle \uparrow > \tau \alpha (\xi \downarrow \kappa \mu \Delta)$
3. $\rangle \wp f \leftrightarrow \zeta \otimes \heartsuit \wp \mathcal{R} | \sigma \leftrightarrow \zeta B \vdash \square \zeta \cup \oplus \zeta \vdash \mathcal{R} \zeta \oplus \kappa \Rightarrow E \square \Sigma \zeta \otimes | \kappa \langle \Delta$
4. $T \leftrightarrow \therefore \zeta \xi M \kappa \vdash \square \vdash \mathcal{R} | \zeta \kappa \wedge \vdash \vdash \Delta \wp | \Delta \square A B \kappa \zeta \heartsuit A$
5. $\zeta \square \equiv \zeta | \therefore \rangle > \zeta [\otimes \zeta] A \square \xi | \psi [\otimes > | \Delta (1 \xi > _ 4 \wp \zeta f _ | \perp)$

$\{ \rightarrow: 4 \wp B[\xi] \oplus \uparrow > \tau \alpha$

... $\Sigma \leftrightarrow \Delta: 18$

$\kappa \zeta \mathcal{R} | B \wp \therefore \heartsuit A \square A \square \downarrow E \kappa | | \perp \square \kappa \otimes \zeta \Delta, \kappa \otimes \tau | \zeta \sqrt{f \equiv} | \perp \square \blacklozenge \downarrow \uparrow \mu \heartsuit \div | \omega$
 $\aleph \mathcal{R} | \Delta \vdash | \leftrightarrow, \langle | \leftrightarrow, \omega | \leftrightarrow \dots \kappa \rightarrow \wp \zeta | \perp \square \neg \otimes \zeta \cup | | \langle \heartsuit \div \rangle \uparrow \mu \heartsuit \neg \wp \zeta \perp | \zeta \beta \Delta \xi | \oplus \square \Omega \rightarrow \uparrow$
 $> \cup \zeta \Xi | \perp \square \otimes \setminus B \zeta \spadesuit > \tau \alpha \kappa | \kappa \Delta \wp > _.$
 $\neg \otimes \zeta _ \otimes B _ \square \neg \otimes \zeta _ \kappa | \square \sqrt{\mathcal{R}} | \square \kappa | \square \sqrt{\mathcal{R}} | B \kappa | \square \neg \wp B \vdash \downarrow \neg \otimes \zeta _ \square \sqrt{\zeta} \square |$
 $\zeta \leftrightarrow \square \Delta \square \wp \rightarrow \neg \wp \zeta \wp \neg \wp B \vdash (\neg \wp \zeta \perp, \sqrt{f \Delta}, \downarrow \Delta, E | \spadesuit, \zeta \square \Delta, \neg > \zeta \alpha _) \square \sigma | \spadesuit \downarrow \neg \otimes \zeta _$
 $\square \sqrt{f \downarrow \neg \otimes \zeta _ \square \chi \setminus \downarrow \neg \otimes \zeta _ \square \xi \cup \rightarrow \square \blacklozenge \downarrow \otimes \Delta \square \sigma \zeta | \perp \square \sqrt{f \Omega} | \square > [\sigma | \spadesuit \square \div \oplus \sigma | \spadesuit \square$
 $\neg > \setminus \Omega | \sigma | \spadesuit \square \zeta \heartsuit A \sigma | \spadesuit \square \kappa \downarrow \kappa | \therefore].$

$$\begin{aligned} \{ \rightarrow: 5 \quad \sqrt{\mathfrak{R}} | \square \kappa \leftrightarrow \lceil \varsigma \rightarrow \\ \dots \Sigma \leftrightarrow \Delta: 18 \\ \sqrt{\mathfrak{R}} | \square \kappa \leftrightarrow \lceil \varsigma \rightarrow \square > \tau \infty \uparrow \uparrow \mu | \oplus \neg \kappa \neq \Xi|. \end{aligned}$$

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
II	14U2MAE2	PART – II ENGLISH EXTENSIVE READERS AND COMMUNICATIVE SKILLS	6	3

Objective

- To impart language and communicative skills through short stories, one act plays and communicative grammar

Unit – I

K.A.Abbas – The Sparrows
O’Henry – The Cop and the Anthem.
Guy de Maupassant – The Necklace.
R.K.Narayan – Engine Trouble.

Unit – II

Anton Chekov – The Proposal
O’Henry – While the Auto Watts

Unit - III

Saki – The Death Trap
Mahesh Dattani –The Girl who touched the stars
Claudia I.Haas – The Cell phone Epidemic

Unit – IV

Tense, Question Tag, Dialogue Writing, Paragraph Writing, Adjectives, Adverb.

Unit – V

Voices, Degrees of Comparison, Direct and Indirect.

Book Prescribed:

Unit IV & V – Communicative grammar by the Department of English.

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No.of Credits
II	14U2MAC3	Core - CLASSICAL ALGEBRA	4	5

Unit I **12 Hrs**

Binomial, exponential and logarithmic series- Summation problems only.

Unit II **12 Hrs**

Theory of equations- Relation between roots and coefficients- symmetric functions of the roots in terms of the coefficients- imaginary roots and irrational roots- sum of the powers of the roots of an equation.

Unit III **12 Hrs**

Transformation of equations- Reciprocal equations- standard forms to increase and decrease the roots of a given equation by a given quantity- Removal of terms- Descartes' rule of sign.

Unit IV **12 Hrs**

Theory of numbers- Divisibility Algorithm- unique factorization theorem- g.c.d.

Unit V **12 Hrs**

Theory of numbers: Congruences- Chinese remainder theorem- Fermat's theorem- Wilson's theorem- Lagrange's theorem- problem.

Text Book:

Algebra Volume I and II: T.K.M. Pillai. (Relavant problem only)

Unit I	:	Chapter 3 &4
Unit II	:	Chapter 4
Unit III	:	Chapter 4
Unit IV	:	Chapter 5
Unit V	:	Chapter 5

General References:

- Theory of equations and Trigonometry: Dr. S. Arumugam and A. Thangapandi Isaac.*
- Engineering Maths Volume I A. Singaravelu.*

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No.of Credits
II	14U2MAC4	Core - SEQUENCE AND SERIES	5	5

Unit I**15 Hrs**

Sequence, Limits, Convergence- Cauchy's general principle of convergence- Cauchy's first theorem on Limits- Bounded sequences- monotonic sequence always tends to a limit, finite or infinite- Limit superior and Limit inferior.

Unit II**15 Hrs**

Infinite series- Definition of convergence, Divergence and Oscillation- Necessary condition for convergence- convergence of $\sum \frac{1}{n^p}$ and Geometric series. Comparison test, D¹ Alembert's ratio test and Raabe's test- simple problems.

Unit III**15 Hrs**

Cauchy's condensation test, Cauchy's root test and their simple problems- Alternative series with simple problems.

Unit IV**15 Hrs**

General Summation of series including successive difference and recurring series.

Unit V**15 Hrs**

Inequalities- Geometric and Arithmetic means- Weirstrass inequalities- Cauchy's inequality.

Text Book:

Algebra Volume I & II T.K.M. Pillai. (Relavant problem only)

Unit I	:	Chapter 2 (4.7) Vol -I
Unit II	:	Chapter 2 (8 - 14, 16, 18, 19) Vol -I
Unit III	:	Chapter 2 (15, 17, 21-24) Vol -I
Unit IV	:	Chapter 5
Unit V	:	Chapter 4 Vol -II

General Reference

Sequence and series: Arumugam and Isaac

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
II	14U2MAPHA2	Allied Physics –II	5	4

Unit – I Magnetism

Poles and dipoles - Gauss's law for Magnetism - Para magnetism - dia Magnetism- Ferromagnetism. Electromagnetism: Biot- Savart's law –Magnetic field due to a straight conductor - circular conductor - field along the axis of a coil-solenoid-ampere's theorem.

Unit – II Electricity

Kirchhoff's law and their applications - Kirchhoff's law –Whetstone's Bridge-Carey Foster's Bridge. Electromagnetic induction: Laws of electromagnetic induction - expression for induced e.m.f -self inductance of a solenoid - Rayleigh's method- Mutual inductance of solenoid - Determination of coefficient of coupling –Eddy currents and its applications.

Unit - III Atomic Physics

Vector atom model-quantum numbers in vector atom model-Pauli's exclusion principle- Periodic classification of elements - Photoelectric effect-Einstein's photo electric equation-experimental verification - Photomultiplier tube.

X - rays: continuous and characteristic X- rays -Mosley's law and its importance -Bragg's Law - Bragg 's spectrometer-crystal structure.

Unit – IV Nuclear Physics

Nuclear size -mass - charge - spin magnetic moment - packing fraction - stability and binding energy .Liquid drop model - shell model - nuclear fission-multiplication factor - critical size - chain reaction - nuclear fusion -stellar energy Thermonuclear reaction - controlled thermonuclear reaction - nuclear reactor.

Unit – V: Electronics

Necessity of modulation - Different types of modulation -junction Diode Detector - Ionosphere and propagation of radio waves - AND,OR,NOT,NOR,NAND GATES-Laws of Boolean algebra Demorgan's theorems - Universal building block.

Reference:

1. Allied physics – A. Sundaravelusamy, Priya publications, Karur-2.
2. Allied physics - R. Sabesan and others, Popular Book Depot, Madras-15.

Semester	Subject Code	Title of the Paper	Hours of Teaching/ Week	No. of Credits
I & II	14U2MAPHAPL	Allied - Physics Practical (NS)	3	2

Any Sixteen Experiment:-

1. Young's modulus – non uniform bending.
2. Rigidity modulus –Static Torsion
3. Coefficient of viscosity – Graduated burette method.
4. Specific heat capacity of liquid - Newton's law of cooling
5. Newton's rings-Radius of curvature.
6. Air wedge – Thickness of wire
7. Spectrometer prism – A and D
8. Spectrometer grating – normal incidence
9. Field along the axis of the coil
10. Carey Fosters Bridge – specific resistance
11. P.O Box-Specific Resistance
12. Potentiometer – ammeter calibration
13. Figure of merit of a galvanometer –Half deflection method – B.G
14. Diode – characteristics
15. S.T and interfacial – drop weight method
16. Logic gates – using Discrete Components.

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
III	14U3MAT3	$ _{\zeta \heartsuit \div B \equiv \perp, \textcircled{R} \leftrightarrow \perp, \sqrt{\mathfrak{R}} \rfloor B \kappa \leftrightarrow \lceil \zeta \rightarrow$	6	3

$\{ \rightarrow: 1 \quad |_{\zeta \heartsuit \div B \equiv | \perp} 1$

... $\Sigma \leftrightarrow \Delta: 18$

1. $E \lceil \heartsuit \wp \rfloor |_{\zeta \leftrightarrow \Delta} \square A |_{\zeta} \lceil \mathfrak{R} \rfloor \zeta \rfloor f \Delta \square |_{\zeta \spadesuit} _ \kappa \rfloor$

2. $\therefore \setminus \dots \therefore || \lceil \square \therefore \lceil \lceil \kappa \spadesuit \Delta A \mathfrak{R} \rfloor |_{\zeta} \rangle$

3. $(\kappa | E \subseteq \zeta \therefore \setminus \square \sigma \therefore \lceil B \lceil \sqrt{\Delta} \wp | \Delta$

4. $| \Delta \wp \leftrightarrow \zeta \therefore \zeta B \square \Delta \square \bullet \subseteq \leftrightarrow |_{\zeta} \rfloor f \Delta \square \lceil f \zeta \therefore \setminus \heartsuit \wp f \lceil \Delta (84 \wp \zeta f _ | \perp)$

$\{ \rightarrow: 2 \quad |_{\zeta \heartsuit \div B \equiv | \perp} 2$

... $\Sigma \leftrightarrow \Delta: 18$

1. $\neg \wp \rfloor B A \leftrightarrow \zeta \square \Delta \square \sqrt{\lceil B \zeta [\zeta \rfloor \therefore \zeta \oplus \Sigma \zeta B \spadesuit \zeta \lceil A \leftrightarrow \zeta \square \Delta (27 \wp \zeta f _ | \perp)$

2. $\Sigma \langle \neg \kappa \rfloor \wp \zeta \square \bullet B \Delta \kappa \leftrightarrow |_{\zeta} \rfloor f \Delta (\xi > _ 20 \wp \zeta f _ | \perp)$

3. $\dots > \Delta \wp \zeta \kappa \setminus \square \Sigma \zeta \textcircled{R} | \heartsuit \wp f \lceil \Delta (\xi > _ 10 \wp \zeta f _ | \perp)$

4. $(\oplus \zeta \heartsuit A \leftrightarrow \zeta \square \Delta \square \sigma \lceil \zeta > \uparrow \mu \mathfrak{R} |_{\zeta} \rfloor f \Delta \square \Sigma \div \partial \kappa > \zeta \leftrightarrow \heartsuit \wp f \lceil \Delta (\xi > _ 10 \wp \zeta f _ | \perp)$

$\{ \rightarrow: 3 \quad | \textcircled{R} | \leftrightarrow \uparrow \neg > \zeta \zeta \heartsuit A$

... $\Sigma \leftrightarrow \Delta: 18$

$| \textcircled{R} | \leftrightarrow \uparrow \neg > \zeta \zeta \heartsuit A \square > \tau \alpha \uparrow \mu | \oplus \neg \kappa \neq \Xi |$

$\{ \rightarrow: 4 \quad \neg \wp \zeta \mu \mathfrak{R} | \textcircled{R} | \leftrightarrow, \neg \therefore \zeta \alpha \neg \wp B \lceil \heartsuit A \heartsuit \wp \lambda \nu E$

... $\Sigma \leftrightarrow \Delta: 18$

1. $\sqrt{[> \tau \alpha \mathfrak{R} \rfloor \textcircled{R} | \leftrightarrow | \textcircled{C} \Delta, | | > \equiv | \textcircled{C} \Delta \square A \lceil \kappa \lceil \therefore \zeta \dots \wp \div \otimes \dots \leftrightarrow \zeta \leftrightarrow \zeta, \wp \zeta | \kappa \wp \heartsuit \neq \dots | \uparrow []$

$| \textcircled{R} | \leftrightarrow \heartsuit \wp \lambda \nu E \square 10 \therefore] \heartsuit \neg \wp \rfloor$

$\neg \therefore \zeta \alpha \neg \wp B \lceil \heartsuit A \heartsuit \wp \lambda \nu E \square 5 \therefore] \heartsuit \neg \wp \rfloor$

$$||\ulcorner\Downarrow\lrcorner\otimes\varsigma\lrcorner\urcorner\varsigma\Re|\Delta$$

$$\{\rightarrow:5$$

$$\dots\Sigma\leftrightarrow\Delta:18$$

$$\partial.\sqrt{\Re}\rfloor B\kappa\leftrightarrow\urcorner\varsigma\rightarrow$$

$$\wp\Re]\sqrt{\Re}\rfloor B\equiv|\perp\ \square\ |\varsigma\heartsuit\div B\sqrt{\Re}\rfloor B\equiv|\perp\ \square\ \text{Ev}\sqrt{\Re}\rfloor B\equiv|\perp$$

Semester	Subject Code	Title Of The Paper	Hours Of Teaching/ Week	No. of Credits
III	14U3MAE3	PART – II ENGLISH SHAKESPEARE, EXTENSIVE READERS AND COMMUNICATIVE SKILLS	6	3

Objective

- To introduce the language of the world renowned dramatist and novelist to enhance the vocabulary and communicative skills of the learners.

Unit – I

Funeral Oration – Julius Caesar

Trial for a Pound of Flesh – The Merchant of Venice

Unit – II

He Kills Sleep – Macbeth

A Real Love at First Sight – Twelfth Night

Unit – III

When the Moor Kills, "So Good a wife" – Othello

In Love is a "Midsummer Madness" – Tempest

Unit – IV

The Mayor of Casterbridge (Abridged) – Thomas Hardy

Unit – V

Note making, Hints Developing, Expansion of Ideas and Proverbs, Sequence of Sentences Synonyms, Antonyms.

Book Prescribed:

Unit-I : II & III: Selected scenes from Shakespeare.

Unit IV: The Mayor of Casterbridge Abridged by E.F.Dodd

Unit V : Communicative Grammar.

Semester	Subject Code	Title of the Paper	House of Teaching / Week	No. of Credits
III	14U3MAC5	Core – DIFFERENTIAL EQUATIONS AND ITS APPLICATIONS	4	5

Unit I

12 Hrs

First order, higher degree differential equations solvable for $x, y \frac{dy}{dx}$ - Clairaut's form.

Unit II

12 Hrs

Ordinary differential equations: Second order differential equations with constant coefficients and variable coefficients.

Unit III

12 Hrs

Variation of parameters- Exact differential equation $Mdx + Ndy = 0$ Total differential equation $Pdx + Qdy + Rdz = 0$

Unit IV

12 Hrs

Partial differential equation- Four standard types- Lagrange's method for solving $Pp + Qq = R$

Unit V

12 Hrs

Application of partial differential equations- Boundary value problems- vibration of strings- Heat flow- one dimension- two dimension (Cartesian only)

Text Book

Relevant portions in Calculus volume III- T.K.M. Pillai for units I to IV.

Unit I : Chapter 1

Unit II : Chapter 2 (up to Sec.9)

Unit III : Chapter 2 (Sec. 10), Chapter 3

Unit IV : Chapter 4

Unit V : Relevant portions in Chapter 3, Engineering Mathematics

Volume III- P. Kandasamy and K. Thilagavathy.

Reference Books

1. *Engineering Mathematics- A. Singaravelu.*
2. *Ordinary and partial differential equations- M.D. Ravisinghania and R.S. Aggarwal S.Chand & Company Ltd, New Delhi.*

Semester	Subject Code	Title of the Paper	House of Teaching / Week	No.of Credits
III	14U3MAC6	Core - VECTOR CALCULUS, LAPLACE TRANSFORMS AND FOURIER SERIES.	5	5

Unit I**15 Hrs**

Vector differentiation- gradient- divergence- curl- Laplacian operator- Standard results- problems.

Unit II**15 Hrs**

Vector integration- Line integral- surface integral- volume integral- Problems using Gauss divergence theorem and stokes theorem (No proof for the theorems).

Unit III**15 Hrs**

Laplace transform- Inverse Laplace transform- Solving second order differential equations using Laplace transform- Convolution theorem for Laplace transform- problems.

Unit IV**15 Hrs**

Fourier series- Periodic functions- Dirichlet conditions (without proof)- Odd and even functions.

Unit V**15 Hrs**

Fourier series- Half range series- change of interval.

Text Book:

- | | | |
|-------------|---|---|
| Unit I & II | : | Chapter 4- Vector Algebra and Analysis- T.K.M. Pillai. |
| Unit III | : | Chapter 5- Calculus Volume III- T.K.M. Pillai. |
| Unit IV | : | Chapters 6 (Sections 6.1 to 6.3)- Calculus Volume III- T.K.M. Pillai. |
| Unit V | : | Chapter 6 (Sections 6.4 to 6.6)- Calculus Volume III- T.K.M. Pillai. |

Reference Books:

1. *Engineering Mathematics- A. Singaravelu.*
2. *Engineering Mathematics- P. Kandasamy, K. Thilagavathy, K.Gunavathi.*
3. *Higher Engineering Mathematics- Gravel.*

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No.of Credits
III	14U3MAMSA1	Allied- MATHEMATICAL STATISTICS- I	5	4

Objective:

- To make the student to gain wide knowledge in probability since probability plays a main role in solving real life problems
- To apply these techniques to real life problem

Unit I

15 Hrs

Random variables- distribution function- discrete random variable – continuous random variable- joint probability law- Marginal Distribution Function.

Unit II

15 Hrs

Mathematical Expectations- addition and multiplication theorems of expectation- expectation of continuous random variables (all inequalities excluded)-variance of a linear combination of random variable-moments of bivariate probability distribution- conditional expectation and variance

Unit III

15 Hrs

M.G.F, Cumulants, Characteristic Functions, Binomial, Poisson, Negative-Binomial, Geometric – Distributions

Unit IV

15 Hrs

Normal, Rectangular, Gamma, Beta - distribution

Unit V

15 Hrs

Correlation and Regression

Text book

"Fundamentals of Mathematical statistics" S.C. GUPTA, V.K. KAPOOR Sultan Chand & Sons 2002 (11th revised edition)

- Unit I : Chapter 5 (5.1 to 5.5.5)
- Unit II : Chapter 6 (6.1 – 6.9)
- Unit III : Chapter:7.1-7.3.1,Chapter:8(8.1–8.7)
- Unit IV : Chapter 9 (9.2-9.3 & 9.5-9.7)

B.Sc. Mathematics

Unit V : Chapter 10 (10.2-10.5 & 10.7) Chapter 11 (11.1-11.4)

General Reference

Dr. P.R. Vittal "Mathematical Statistics" Margham Publications Chennai.

B.Sc. Mathematics

Semester	Subject Code	Title of the Paper	Horse of Teaching / Week	No.of Credits
III & IV	14U4MAMSAPL	Allied - Mathematical Statistics Practical (NS)	3 + 3	-

1. Measures of Central Tendencies & Measures of dispersions
2. Moments, Skewness and kurtosis
3. Fitting of Binomial distribution
4. Fitting of Poisson distribution
5. Fitting of Normal distribution
6. Correlation and Regression
7. Goodness of fit
8. Large sample tests
9. T- test
10. Variance tests confidence intervals

Semester	Subject Code	Title Of The Paper	Hours Of Teaching / Week	No. of Credits
IV	14U4MAT4	$\otimes \equiv \sqrt{\mathfrak{R}} B\Delta - \partial \oplus \sqrt{\mathfrak{R}} B\Delta - \neg \otimes \Delta \neg \therefore \varsigma \alpha - \sqrt{\mathfrak{R}} B \kappa \leftrightarrow \lceil \varsigma \rightarrow$	6	3

$\{ \rightarrow: 1$

... $\Sigma \leftrightarrow \Delta: 18$

$\zeta \rightarrow \subseteq \neg \rightarrow \zeta |$

1. $\zeta \Rightarrow E \square \dots \rightarrow \varsigma \alpha \{ \nu \rightarrow (\wp \varsigma. \blacklozenge. 1)$ 2. $\xi _ | \square \neg \otimes \sigma o \uparrow \triangleright \varsigma \Phi \{ \nu \rightarrow (\wp \varsigma. \blacklozenge. 167)$

3. $\therefore \cdot \triangleright \Delta \square \triangleright | \lceil \sigma \{ \nu \rightarrow (\wp \varsigma. \blacklozenge. 181)$ 4. $\neg \Sigma \Phi \triangleright _ \square \triangleright | \lceil \sigma \{ \nu \rightarrow (290)$

5. $\wp \zeta | \lceil \square \triangleright | \lceil \kappa [\{ \nu \rightarrow (347)$

$\Sigma \nu | \square$

1. $\zeta \Rightarrow E \square (\wp \varsigma. \blacklozenge. 1)$ 2. $\xi _ | \lceil \square (\wp \varsigma. \blacklozenge. 69)$ 3. $\therefore \cdot \triangleright \Delta \square (\wp \varsigma. \blacklozenge. 70)$

4. $\neg \Sigma \Phi \triangleright _ \square (\wp \varsigma. \blacklozenge. 74)$ 5. $\wp \zeta | \lceil \square (\wp \varsigma. \blacklozenge. 79)$

$| o \uparrow \neg \rightarrow \zeta |$

1. $\wp \zeta | \lceil \square (\wp \varsigma. \blacklozenge. 2)$ 2. $\zeta \Rightarrow E \square (\wp \varsigma. \blacklozenge. 37)$

$\partial | \Sigma \zeta \lceil \rightarrow$

1. $\wp \zeta | \lceil \square (\wp \varsigma. \blacklozenge. 5)$ 2. $\therefore \cdot \triangleright \Delta \square (\wp \varsigma. \blacklozenge. 6)$

$\{ \rightarrow: 2$

... $\Sigma \leftrightarrow \Delta: 18$

$\nu \equiv \zeta \rightarrow \pm \rightarrow$

$\zeta \Rightarrow E \square \zeta [\oplus \mathfrak{R} \zeta \oplus \kappa [\wp \uparrow \mu$

$A \oplus \Sigma \zeta \lceil \rightarrow$

$\wp \varsigma f _ \blacklozenge J | \perp 4, 30, 34, 47, 112, 165, 186, 191, 192, 242$

$\wp] \nu \rightarrow \heartsuit \wp \uparrow \mu$

$\sqrt{\leftrightarrow} J f \varsigma \Delta \wp \uparrow \mu \wp \varsigma f _ \blacklozenge J. 4 (\Omega \lceil \Delta, \aleph \lceil, \kappa \neq, \sigma \bullet \Delta A)$

$\wp \setminus \wp \varsigma f _$

$\wp \uparrow \triangleright \varsigma \Delta \wp \varsigma f _ \square | \kappa | B$

$\{ \rightarrow: 3$

... $\Sigma \leftrightarrow \Delta: 18$

$\wp \textcircled{R} | \spadesuit \heartsuit \wp \zeta | \lceil$

$\xi \neg \kappa \mu \Delta$

$] \mathfrak{R} \zeta \oplus \perp$

1. $\therefore \cdot \lceil \subseteq \mu$ 2. $\approx \mathfrak{R} | \xi | f | \therefore$ 3. $\chi \omega \Upsilon$

$\{\rightarrow: 4$

$\dots \Sigma \leftrightarrow \Delta: 18$

$\neg \otimes \Delta \neg \therefore \zeta \alpha \kappa \leftrightarrow \neg \zeta \rightarrow$

$\neg \therefore \zeta \alpha \sqsubseteq \sigma(\mathfrak{R} \mid \Delta \sqsubseteq \neg \therefore \zeta \alpha \mathfrak{R} \zeta \mid \Delta \wp \equiv \mid \perp \sqsubseteq \chi \mid \downarrow \neg \otimes \Delta \neg \therefore \zeta \alpha \mid \perp \sqsubseteq \sqrt{\subseteq} \mathbf{B} \downarrow \neg \otimes \Delta \neg$
 $\therefore \zeta \alpha \mid \perp \sqsubseteq \neg \otimes \Delta \neg \therefore \zeta \alpha \uparrow \neg \zeta \mid \perp \sqsubseteq \kappa \mid \leftrightarrow \mathbf{B} \mid \oplus \mid \perp \sqsubseteq \kappa \zeta \neg \Delta > \tau \infty \downarrow \neg \otimes \Delta \neg \therefore \zeta \alpha \sqsubseteq \neg > \zeta \mid \therefore \sqsubseteq$
 $> \tau \alpha \mid \mathbf{E} \oplus \heartsuit \mathbf{A} \mid \perp \sqsubseteq > \tau \infty \downarrow \neg \otimes \Delta \neg \therefore \zeta \alpha \pm \mid \perp$

$\{\rightarrow: 5$

$\dots \Sigma \leftrightarrow \Delta: 18$

$\partial. \sqrt{\mathfrak{R}} \mathbf{B} \kappa \leftrightarrow \neg \zeta \rightarrow$

$\otimes \equiv \mid \sqrt{\mathfrak{R}} \mathbf{B} \equiv \mid \perp, \wp \neg \spadesuit \mathbf{J} \sqsubseteq \infty \mathfrak{R} \mid \sqsubseteq \mathfrak{R} \zeta \pm \mid \perp$

Semester	Subject Code	Title of The Paper	Hours of Teaching/ Week	No. of Credits
IV	14U4MAE4	PART – II ENGLISH ENGLISH FOR COMPETITIVE EXAMINATIONS	6	3

Objective

- To prepare the learners for competitive examinations and to know the fundamentals of practical communication.

Unit – I

Grammar – Number, Subject, Verb, Agreement, Articles, Sequence of Tenses, Common Errors.

Unit – II

Word Power - Idioms & Phrases, one word substitutes, Synonyms, Antonyms, Words we often confuse, foreign words & phrases, spelling.

Unit – III

Reading & Reasoning – Comprehension, Jumbled Sentences.

Unit - IV

Writing Skills – Paragraph, Precis Writing, Expansion of an idea, Report Writing, Essay, Letters, Reviews (Film & Book)

Unit – V

Speaking- Public speaking, Group Discussion, Interview, Spoken English.

Prescribed Text:

1. V.Saraswathi, English for Competitive Examinations, Chennai, Emerald Publishers, 2000

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No. of Credits
IV	14U4MAC7	Core – STATICS	4	4

Unit I **12 Hrs**

Forces acting at a point: Definitions:- Resultant and Components- Parallelogram of forces- Analytic expression for the resultant of the forces acting at a point- Triangle of forces- Perpendicular Triangle of forces- Converse- The polygon of forces- Lami's theorem- Extended form of the parallelogram law of forces.

Unit II **12 Hrs**

Parallel forces and Moments:- Resultant of two like parallel forces- Resultant of two unlike and unequal parallel forces- Resultant of number of parallel forces- conditions of equilibrium of three coplanar forces- Moment of a force- Varignon's theorem of moment- principle of moments. – Moment of a force about an axis.

Unit III **12 Hrs**

Couples:- Definition- Equilibrium of two couples- Equivalence of two couples- couples in parallel planes- Resultant of Coplanar forces- Resultant of a couple and a force and related theorems.

Unit IV **12 Hrs**

Friction:- Definition- Laws of frictions- co-efficient of friction- Angle of friction- Cone of friction- Equilibrium of a particle on a rough inclined plane- Equilibrium of a body on a rough inclined plane under a force parallel to the plane- Equilibrium of a body on a rough inclined plane under any force.

Unit V **12 Hrs**

Equilibrium of Strings: Equation of a common catenary- important formulae- Geometrical properties of common catenary- Approximations to the shape of catenary- the parabolic catenary- suspension bridges.

Text Book:

Dr. M.K. Venkatraman: "Statics" Agasthiar Publication, Trichy.

Unit I	:	Chapter 2 (Sec 1 to Sec 10)
Unit II	:	Chapter 3 (Sec 1 to Sec 14)
Unit III	:	Chapter 4
Unit IV	:	Chapter 7 (Sec 1 to Sec 12)
Unit V	:	Chapter 11

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No. of Credits
V	14U4MAC8	Core – DYNAMICS	5	5

Unit I **15 Hrs**

Projectiles: The path of projectiles characteristics of the motion- range- the velocity- direction of the projectiles- Given the magnitude of the velocity of projection there are two directions of projection for the particle so as to reach a given Range on an inclined plane- Motion on the surface of a smooth inclined plane- Enveloping parabola.

Unit II **15 Hrs**

Collision of Elastic bodies: Definitions- Fundamental laws of impact- impact of a smooth sphere on fixed smooth plane- Direct impact of two smooth spheres- Loss of K.E. due to direct impact of smooth spheres-Dissipation of energy due to impact-compression and Restitution.

Unit III **15 Hrs**

Simple Harmonic Motion (SHM): SHM in straight line- General solution of SHM equation- Geometrical representation of a SHM- Composition of two SHMS of the same period and in the same straight line- composition of two SHM's of the same period in two perpendicular directions- motion of a particle suspended by a spiral spring- Horizontal oscillations of a particle tied to an elastic spring- period of oscillations of simple pendulum- Equivalent simple pendulum- the seconds pendulum- Loss or gain in the number of oscillations made by pendulum.

Unit IV **15 Hrs**

Motion under the action of central forces: Velocity and acceleration in polar Coordinates. Differential equation of Central orbits- Perpendicular from the pole in the tangent- Formulae in polar coordinates- Pedal equation of the central orbits- velocities in a central orbit- Given the law of force to the pole find the orbit.

Unit V **15 Hrs**

Moment of Inertia and motion of a rigid body about a fixed axis: Definitions- Theorem of parallel axes- theorem of perpendicular axes- M.I in some particular cases- motion of a rigid body about a fixed axis- Introduction- K.E of a rigid body rotating about a fixed axis- Angular momentum of a rigid body about the axis of rotation- motion of a rigid body about a axis of rotation- conservation of angular momentum- compound pendulum.

Text Book

Dynamics- Dr.M.K.Venketraman, Agasthiar Publication, Trichy. (Twelfth Edition)

Unit I	:	Chapter 6 (Sec 6.1 to 6.17)
Unit II	:	Chapter 8 (Sec 8.1 to 8.11)
Unit III	:	Chapter 10 (Sec 10.1 to 10.6)
Unit IV	:	Chapter 11 (Sec 11.1 to 11.13)
Unit V	:	Chapter 12 (Sec 12.1 to 12.5)
		Chapter 13, (Sec 13.1 to 13.7)

General References:

Dynamics - Dr. K.Viswanath Naik and Dr. M.S.Kasi.

Semester	Subject Code	Title of the Paper	House of Teaching / Week	No.of Credits
IV	14U4MAMSA2	Allied- MATHEMATICAL STATISTICS- II	5	4

Objective:

- To study about some distributions which are useful in testing of different hypothesis.
- To study types of sampling and Estimators.

Unit I**15 Hrs**

Types of sampling- test of significance- null hypothesis- error in sampling- Critical regions and level of significance- test of significance for large- samples- sampling of attributes- unbiased estimates from mean variance- standard error of sample mean- test of significance for single mean, difference of mean and difference of standard deviations.

Unit II**15 Hrs**

χ^2 - variates- derivation of the χ^2 distribution (Method of M.G.F only)- M.G.F, C.G.F- mode and skewness- additive property - distribution- χ^2 probability curve-Theorems on χ^2 distribution - Application of χ^2 - distribution.

Unit III**15 Hrs**

Derivation of t- distribution- constants of t- distribution- limiting of t- distribution- application of t- distribution- test of single mean, difference of mean and observed sample correlation coefficient. Observed regression coefficient.

Unit IV**15 Hrs**

Derivation of F- distribution- constant of F- distribution- mode of F- distribution- application of F- distribution- test for equality of population variance (only simple problems of F- distribution). – relation between t and F and relation between F and χ^2 tests F. Analysis of variance- one way, two way classification models.

Unit V**15 Hrs**

Characteristics of estimators- consistency- unbiasedness- Cramer- Rao Inequality- Methods of Estimation. M.L.E (Statements of properties and direct simple problem- No- theorems)- M.M.V- Method of moments.

Text Book:

1. S.C and Kapoor V.K. "Fundamentals of mathematical statistics -S.C and Kapoor V.K. (11th edition)- Sultan Chand & Sons 2002.
Vol. II 'Statistical Methods' By Dr. S.P. Gupta [for Unit IV only]- Statistical Sultan Chand & Sons 2005.
Unit I : Chapter: 14
Unit II : Chapter: 15 (15.1- 15.4, 15.6(15.6.1-15.6.3))
Unit III : Chapter: 16 (16.2,16.3,)
Unit IV : Chapter: 16 (16.5- 16.8) & Chapter: 5 of Text Book 2
Unit V : Chapter 17 (17.1- 17.3, 17.6(17.6.1-17.6.3))

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No.of Credits
III & IV	14U4MAMSAPL	Allied - Mathematical Statistics Practical (NS)	3 + 3	2

1. Measures of Central Tendencies & Measures of dispersions
2. Moments, Skewness and kurtosis
3. Fitting of Binomial distribution
4. Fitting of Poisson distribution
5. Fitting of Normal distribution
6. Correlation and Regression
7. Goodness of fit
8. Large sample tests
9. T- test
10. Variance tests confidence intervals

Semester	Subject Code	Title of the Paper	House of Teaching / Week	No.of Credits
V	14U5MAC9	Core – ABSTRACT ALGEBRA	6	6

Objective

- ❖ To give an introductory knowledge of the basic abstract system of Mathematics
- ❖ To develop analytical thinking

Unit I

18Hrs

Sub Groups- counting principle- Normal subgroups and Quotient groups.

Unit II

18Hrs

Homomorphism- Automorphism

Unit III

18Hrs

Cayley's Theorem- Permutation group- Another Counting principle- applications.

Unit IV

18Hrs

Ring Theory: Definition and Examples of Rings- Some special classes of Rings- Homomorphisms- ideals and Quotient Rings- More ideals and Quotient Rings- Euclidean Rings.

Unit V

18Hrs

Vector Space: Elementary Basic concepts- Linear independence and Bases, Dual spaces- Inner product spaces.

Text Book:

"Topic in Algebra" By I.N.Herstein (Second edition)

- Unit I : Chapter 2 (2.4 to 2.6)
- Unit II : Chapter 2 (2.7 to 2.8)
- Unit III : Chapter 2 (2.9 to 2.11)
- Unit IV : Chapter 3 (3.1 to 3.5 & 3.7)
- Unit V : Chapter 4 (4.1 to 4.4)

General References:

- 1. Modern Algebra - A.R.Vasistha
- 2. Modern Algebra - Dr. S.Arumugam

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No.of Credits
V	14U5MAC10	Core – REAL ANALYSIS	6	6

Objective

- ❖ To study basic topological concepts and about sequences and series.
- ❖ To study the theoretical concepts of continuity differentiability and integration.

Unit I

18Hrs

Basic Topology: - Finite, countable and uncountable sets- Metric spaces- Compact spaces- perfect sets- connected sets.

Unit II

18Hrs

Numerical Sequences and Series: - convergent sequences- Subsequences- Cauchy Sequences- Upper and Lower limits- Some special sequences- Series- Series of Nonnegative terms- The Number e- The Root and Ratio Tests- Power series- Summation by parts- Absolute convergence- Addition and Multiplication of series.

Unit III

18Hrs

Continuity: - Limits of functions- continuous functions- continuity and compactness- Continuity and Connectedness- Discontinuity- Monotonic functions- infinite limits and limits at infinity.

Unit IV

18Hrs

Differentiation: - The derivative of a real function- Mean value theorems- The continuity of Derivatives- L' Hospital's Rule- Derivatives of Higher order- Taylor's theorem.

Unit V

18Hrs

The Riemann- Integrals: - Definition and Existence of the integral- Properties of the integral- integration and Differentiation.

Text Book

Principles of Mathematical Analysis by Walter Rudin. Mc Graw Hill.

Unit I	:	Chapter 2
Unit II	:	Chapter 3
Unit III	:	Chapter 4
Unit IV	:	Chapter 5
Unit V	:	Chapter 6

General References:

1. *Real Analysis* - *Bartle and Schuhest.*
2. *Real Analysis* - *Albert smith E.E.*

Semester	Subject code	Title of the paper	Hours of Teaching / Week	No.of Credits
V	14U5MAC11	Core –COMPLEX ANALYSIS	6	6

Objective:

- To study the nature of complex number system.
- To learn the properties of function defined on the complex systems.
- To study the related famous theorems on complex theory.

Unit I**18 Hrs**

Functions of a complex variable- Complex numbers, set of points in the Argand diagram, Function of a complex variable, Regular functions, Conjugate functions, power series, the elementary functions, Many- Valued functions.

Unit II**18 Hrs**

Conformal Representation- Isogonal and conformal transformations, Harmonic functions, the bilinear transformation, Geometrical inversion, the critical points, Coaxal circles, invariance of the cross- ratio, Some special Mobius transformations.

Unit III**18 Hrs**

The complex integral calculus-complex integration, Cauchy's theorem, the Derivative of a regular function, Taylor's theorem, Liouville's theorem, Laurent's theorem.

Unit IV**18 Hrs**

Zeros and singularities, Rational function, the complex integral Calculus- Analytic continuation, poles and zeros of meromorphic functions, Rouché's theorem, the maximum- modulus principle.

Unit V**18 Hrs**

The calculus of residue-the Residue theorem- integration round the unit circle. Evaluation of a type of infinite integral, Jordan's lemma, integrals involving many- valued functions, integrals deduced from known integrals, Expansion of a meromorphic function. Summation of series.

Text Book:

"Functions of a complex variables with applications" by E.G. Phillis (1968)-Oliver & Boyd D, Edinburg.

Unit I	:	Chapter 1:1- 1.9
Unit II	:	Chapter 2:2. 10-2
Unit III	:	Chapter 4:4.30- 4.35
Unit IV	:	Chapter 4:4.36- 4.42
Unit V	:	Chapter 5:43-5.50

General References:

1. "Foundations of complex Analysis" by S.Ponnusamy- Narosa Publishing House- New Delhi Chennai.
2. "Complex Analysis" by S.Arumugam, A.Thankapandi isaae, A.Soma Sundaram, New Gamma Publishing House.

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No.of Credits
V	14U5MAEL1A	Major Elective - I NUMERICAL METHODS	4	3

Objective

- ❖ To introduce popular numerical methods to students.
- ❖ To introduce Numerical differentiation, integration and solution of Ordinary differential equations.

Unit I**12 Hrs**

The solution of numerical algebraic and Transcendental Equations. The Bisection Method- iteration method- Order of convergence- Regular False method- Newton Raphson Method- order of convergence.

Unit II**12 Hrs**

Solution of simultaneous linear algebraic equation. Gauss elimination method- Gauss Jordan method- inversion of a matrix using Gauss elimination method- Gauss Jacobi method- Gauss- Seidel method.

Unit III**12 Hrs**

Finite differences. First and higher order differences- Forward difference and backward differences- Properties of operator- interpolation- Gregory- Newton forward interpolation formula, Backward interpolation formula- Equidistant terms with one or more missing values- Gauss forward interpolation formula Backward interpolation formula.

Unit IV**12 Hrs**

Numerical Differentiation and integration- Newton's forward and backward difference method to compute derivatives- the trapezoidal- Ramberg's method- Simpson's one third rule- Simpson's 3/8 rule- weddle's rule.

Unit V**12 Hrs**

Numerical Solution of ordinary Differential Equations-Power series approximation- solution by Taylor's series- Picard's method of successive approximations- Euler method- modified Euler method- Runge- Kutta method- orders 2 and 4.

Text Book:

"Numerical methods" (2001), P.Kandasamy, K.Thilagavathy K.Gunavathy, S.Chand & Company Ltd., New Delhi.

- | | | |
|----------|---|---|
| Unit I | : | Chapter: 3 (3.1.1 to 3.4.3). |
| Unit II | : | Chapter: 4 (4.1- 4.3 and 4.7 - 4.9). |
| Unit III | : | Chapter- 5 (5.1 only) & Chapter (6.1-6.7),
Chapter-8 (8.1- 8.8). |
| Unit IV | : | Chapter- 9 (9.1- 9.3, 9.6- 9.15)) |
| Unit V | : | Chapter- 11 (11.1- 11.15) |

General References:

1. S.Sastri - Introduction methods of Numerical Analysis
2. M.K.Ventataraman- Numerical methods in science and Engineering- Third Editor.
3. A.Singaravelu - Numerical methods.

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No.of Credits
V	14U5MAEL1B	Major Elective – I NUMBER THEORY	4	3

Objectives:-To introduce the theoretical concepts of Number theory.
To enlighten the students with the famous theory on number theory.

Unit I

12 Hrs

The Fundamental Theorem of Arithmetic: Introduction- Divisibility- Greatest Common divisor- Prime numbers- The fundamental theorem of arithmetic- The series of reciprocals of the primes- The Euclidean algorithm- The greatest Common divisor of more than two numbers.

Unit II

12 Hrs

Arithmetical Functions and Dirichlet multiplication: - The motions function $\mu(n)$ - The Euler totient function- A relation connecting ϕ and μ - A product formula for $\mu(n)$ - the Dirichlet product of arithmetical functions- Dirichlet inverses and the Mobius inversion formula- the Mangold t function $\Lambda(n)$ - multiplicative functions- Multiplicative function and Dirichlet multiplication- The inverse of a completely multiplicative function- Liovilles function $A(n)$ - the divisor functions $\sigma_\alpha(n)$ - Generalized convolutions- formal power series- the Bell series of an arithmetical function- Bell series and Dirichlet multiplication- Derivatives of arithmetical functions- the selberg identity.

Unit III

12 Hrs

Averages of Arithmetical Functions: - The big oh notation Asymptotic equality of functions- Eulers summation formula- some elementary asymptotic formulas- the average order of $d(n)$ - the average order of the divisor functions $\sigma_\alpha(n)$ - the average order of $\phi(n)$ - An application to the distribution of lattice points visible from the origin- the average order of $\mu(n)$ and $\Lambda(n)$ - the partial sums of a Dirichlet product.

Unit IV

12 Hrs

Congruences: Definition and basic properties of congruence's- Residue classes complete residue systems- Linear congruence's Reduced revised systems- Ruler Fermat's Theorem- Polynomial congruence's module Lagranges theorem- Applications of Lagranges Theorem- Chineses Remainder theorem.

Unit V

12 Hrs

Quadratic Residues and the Quadratic laws: Quadratic residues- Legendre's symbol and its properties- Evaluation of $(-1/p)$ and $(2/p)$ - Gauss's Lemma - The quadratic reciprocity law- the Jacobi symbol- application to Diophantine equation- Gauss- sums and the quadratic law the reciprocity law for Gauss sums.

Text Book:

Analytic Number Theory by Tom. M.Apostol.

Unit I	Chapter 1 (1.1- 1.8)
Unit II	Chapter 2 (2.1- 2.19)
Unit III	Chapter 3 (3.1- 3.10)
Unit IV	Chapter 5 (5.1- 5.8)
Unit V	Chapter 9 (9.1- 9.10)

General References:

1. *Number Theory* - George E.Andrews
2. *Introduction to theory of Number* - G.H.Hardy and E.M.Wright.
3. *Basic Number Theory* - S.B.Malilk
4. *Elements of Number Theory* - S.Kumaravelu and Susheela Kumaravelu.

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No. of Credits
V	14U5MAEL2A	Major Elective - II GRAPH THEORY	4	3

Objectives:

- ❖ To give a rigorous introduction to the basic concepts of graph Theory.
- ❖ To give applications of graph Theory in other disciplines.

Unit I

12 Hrs

Introduction- Application of graphs-Finite and infinite graphs-Incidence and Degree-Isolated vertex, pendent vertex and Null graph - Path and circuits- Isomorphism-Subgraphs- Walks, paths and circuits- connected graphs, Disconnected graphs and components-Euler graphs- operation on graphs-More on Euler graphs-Hamiltonian paths and circuits.

Unit II

12 Hrs

Tress and fundamental circuits- Trees-some properties of trees-pendent vertices in a Tree- Distance and centers in a Tree-Rooted and Binary Trees-On counting trees-spanning trees

Unit III

12 Hrs

Cut –Sets and cut –vertices- Cut-sets-some properties of a cut set-All cut sets in a graph- Fundamental circuits and cut-sets.

Unit IV

12 Hrs

Planar and Dual graphs: Combinatorial vs. Geometric graphs- planar graphs-Kuratowsk's two graphs – Different representations of a Planar graph.

Unit V

12 Hrs

Coloring chromatic number- chromatic Partitioning- Chromatic Polynomial.

Text Book:

Graphs Theory with Applications to Engineering and computer science By Narsingh Deo Printice- Hall of India Private Ltd-1997.

- | | | |
|----------|---|--|
| Unit I | : | Chapter 1.1 to 1.5 and 2.1,2.2,2.4 - 2.9 |
| Unit II | : | Chapter 3.1 to 3.7 |
| Unit III | : | Chapter 4.1 to 4.4 |
| Unit IV | : | Chapter 5.1 to 5.4 |
| Unit V | : | Chapter 8.1 to 8.3 |

General References:

1. *Graph Theory – Dr.S.A. Choudam, Macmillan.*
2. *Graph Theory- F.Harary, Narosa.*
3. *An invitation to Graph theory- Dr.S. Arumugam & S. Ramachandran*

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No.of Credits
V	14U5MAEL2B	Major Elective – II MATHEMATICAL MODELING	4	3

Objectives:

- To introduce the basic concepts of Mathematical Modelling.
- To learn the real life models.

Unit I

12 Hrs

Simple situation requiring Mathematical modeling and technique-Classification of mathematical models-some characteristics of mathematical models-Modelling through Geometry-Modelling through Algebra-Modelling through Trigonometry-Modelling through Calculus-Limitations of Mathematical modeling.

Unit II

12 Hrs

Mathematical Modelling through differential Equations-Linear Growth and Decay Models-Non-Linear Growth and Decay models-Compartment models-Modelling in Dynamics through Ordinary differential equations of first order- Mathematical modeling of Geometrical problems through ordinary differential equations of first order.

Unit III

12 Hrs

Mathematical Modelling in Population Dynamics-Modelling of Epidemics through systems of Ordinary differential equations of first order-Compartment models through systems of ordinary differential equations-Modelling in Economics through systems of ordinary differential equations of first order.

Unit IV

12 Hrs

Mathematical models in Medicine, Arms Race, Battles and International Trade in terms of systems of ordinary differential equations-Modelling in Dynamics through systems of Ordinary Differential equations of first order.

Unit V

12 Hrs

Mathematical modeling of Planetary motions – Modelling of Circular motion and motion of Satellites.

Text Book:

"Mathematical Modelling' by J.N.Kapur

Unit I	:	Chapter 1.1-1.9
Unit II	:	Chapter 2.1-2.6
Unit III	:	Chapter 3.1-3.4
Unit IV	:	Chapter 3.5-3.6
Unit V	:	Chapter 4.1-4.2

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No. of Credits
VI	14U6MAC12	Core – OPERATIONS RESEARCH	6	6

Unit I **18 Hrs**

Operations Research- An overview: Nature and characteristic Features of OR- Models in OR- OR and Decision Making- Applications and Limitations of OR- Linear Programming Problem: Formulation and Graphical methods- Simplex Method.

Unit II **18 Hrs**

M- technique- Two phase- Simplex Method-Duality in Linear Programming: Formulation of Primal Dual Pairs- Duality Theorem- LPP using duality- Dual- Simplex Method.

Unit III **18 Hrs**

Revised Simplex Method - Network Scheduling by PERT/ CPM: Critical path Method and PERT calculations.

Unit IV **18 Hrs**

Transportation Problem and Assignment Problem.

Unit V **18 Hrs**

Game Theory: Optimal solution of two person zero- sum games- games with mixed strategies - The graphical method- Dominance property- general solution of $m \times n$ rectangular games (LPP only)

Text Book:

Problem in operations Research: PK Gupta & ManMohan (Relevant portions only)

Unit I	:	Chapters 0-4
Unit II	:	Chapters 5,6,8
Unit III	:	Chapters 1 2 and 27
Unit IV	:	Chapters 15 and 16
Unit V	:	Chapters 20

Reference:

Operations Research: Kantiswarup, PK. Gupta and ManMohan.

Semester	Subject code	Title of the paper	Hours of Teaching / Week	No.of Credits
VI	14U6MAC13	Core - PROGRAMMING IN C	6	5

Objectives:

- To introduce the techniques of C- Programming.
- To solve the numerical problems using C.

Unit I

18 Hrs

Constants, variables and Data Types- Operators and Expressions- Input and Output Operators.

Unit II

18 Hrs

Decision Making and Branching- Decision Making and Looping.

Unit III

18 Hrs

Arrays- handling of Character Strings.

Unit IV

18 Hrs

User Defined functions.

Unit V

18 Hrs

Structures and Unions.

Text Book:

Programming in Ansi C by E.Balagurusamy; Second Edition, 1992, Tata Mc Graw-Hill Publishing Company Limited, New Delhi.

Unit I	:	Chapters 2,3 & 4.
Unit II	:	Chapter 5 & 6
Unit III	:	Chapter 7 & 8.
Unit IV	:	Chapter 9
Unit V	:	Chapter 10

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No.of Credits
VI	14U6MAPL	PROGRAMMING IN C PRACTICAL	6	3

Programs for the following problems only
(For both theory and practical)

Programs:

1. Pay bill calculation
2. Mark List
3. Ascending and Descending orders
4. Test for polyndrome word
5. a) Mean, Standard deviation and Co- efficient of variation for raw data.
b) Sorting a list and find its Median.
6. Coefficient of correlation and Regression Equations
7. Matrix multiplication
8. Lagrange's interpolation
9. Range- Kutta method (IV Order)
10. Trapezoidal rule and Simpson rule.

Reference:

Chapter 2 to 7, 8 (8.1, 8.2 & 8.8), 9 (9.4 to 9.5), 10, 11 (11.1 to 11.8), 12 (12.1 to 12.4, 12.6) - Treatment as in 'Programming in Ansi C' by E.Balagurusamy, Second Edition, 1992. Tata McGraw Hill Publishing Company Limited, New Delhi.

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No.of Credits
VI	14U6MAEL3A	Major Elective- III DISCRETE MATHEMATICS	5	4

Objective

- To introduce logical Concepts to students.
- To study the concepts of lattice and Boolean algebra, generating functions.

Unit I

15 Hrs

Recurrence relations and generating function: Recurrence-an introduction-polynomials and their evaluations- Recurrence relations- solution of finite order Homogeneous (linear) Relations- Solution of Non-Homogeneous relations.

Unit II

15 Hrs

Logic: If- statements: connectives- atomic and compound statements-well formed (statements) Formulae.

Unit III

15 Hrs

Logic: Truth table of a formula- Tautology- Tautological Implications and Equivalence of Formulae. Replacement process- Functional Complete set of connectives and Duality law.

Unit IV

15 Hrs

Lattices and Boolean Algebra: lattices- some properties of lattices- New lattices- Modular and distributive lattices.

Unit V

15 Hrs

Finite Automata - Deterministic and Non-deterministic finite automata.

Text Book:

"Discrete Mathematics" by Dr. M.K.Vengatraman Dr.N.Sridharan, N.Chandrasekeran.

Unit I	:	Chapter: 5 Sec 1-5 (Pages 5.01- 5.19)
Unit II	:	Chapter: 9 Sec 1- 5 (Pages 9.1- 9.20)
Unit III	:	Chapter: 9 Sec 6- 10 (Pages 9.21- 9.42)
Unit IV	:	Chapter: 10: Sec 1- 4 (Pages 10.1- 10.32)
Unit V	:	Chapter: 12: Sec 1 -7 (Page 12.1- 12.16)

General References:

Koleman and Bushy- Discrete mathematical structures, prentice Hall of India, New Delhi- 2002

Semester	Subject Code	Title of the Paper	Hours of Teaching / Week	No.of Credits
VI	14U6MAEL3B	Major Elective - III FORMAL LANGUAGES AND AUTOMATA THEORY	5	4

Unit I **15 Hrs**

The theory of Automata- Definition of an Automaton- Description of a finite Automaton- Transition system- properties of transition functions- Acceptability of a string by a finite automaton- Non deterministic finite state Machine- The Equivalence of DFA and NDFA- Mealy and Moore Models- Minimisation of finite Automata.

Unit II **15 Hrs**

Formal Language- Basic definition and examples- Chomsky classification of Languages- Language and their relation- Recursive and Recursively Enumerable sets- operations on Languages- Languages and Automata.

Unit III **15 Hrs**

Regular Sets and Regular Grammars- Regular expression- Finite automaton and regular expressions- Pumping Lemma for Regular Sets- Application of Pumping Lemma.

Unit IV **15 Hrs**

Context- free Languages- Context- free languages and derivation Trees- Ambiguity in context- free grammars- Simplification of context- free grammars- Normal forms for context- free Grammars.

Unit V **15 Hrs**

Push down Automata- Basic definitions- Acceptance by Pda- Push Down automata and context- free Languages- Parsing and Pushdown Automata.

Text Book:

" *Theory of Computer Science*" (Automata, Languages and Computation) K.L.P Mishra and N. Chandrasekaran -Prentic Hall of India Private Limited- New Delhi.

Unit I	:	Chapter 2: (2.1 to 2.9)
Unit II	:	Chapter 3: (Section 3.1 to 3.6)
Unit III	:	Chapter 4: (Section 4.1 to 4.4)
Unit IV	:	Chapter 5: (Section 5.1 to 5.4)
Unit V	:	Chapter 6: (Section 6.1 to 6.4)

Semester	Subject code	Title of the paper	Hours of Teaching / Week	No.of Credits
VI	14U6MAEL4A	Major Elective – IV ASTRONOMY	5	4

Objectives:

- To introduce the exciting world of astronomy to students.
- To help the students to know about the celestial objects.

Unit I **15 Hrs**

Spherical Astronomy- Formula without proof- The Earth- Zones of Earth- Dip.

Unit II **15 Hrs**

Twilight- Refraction

Unit III **15 Hrs**

Kepler's Laws

Unit IV **15 Hrs**

Moon, Eclipses

Unit V **15 Hrs**

Solar system

Text Book

"Astronomy" by S.Kumaravelu and Susheela Kumaravelu.

Unit I	:	Chapter 3.1-3.5
Unit II	:	Chapter 3.6 &Chapter 4
Unit III	:	Chapter 6
Unit IV	:	Chapter 12, Chapter 13,
Unit V	:	Chapter 17

General References:

- 1.Astronomy by Dr.S.M. Sirajudeen
- 2.Astronomy by G.V.Ramachandran.
- 3.Textbook on Astronomy H.Subramani Aiyar 1970.

Semester	Subject code	Title of the paper	Hours of Teaching/ Week	No. of Credits
VI	14U6MAEL4B	Major Elective – STOCHASTIC PROCESSES	5	4

Objectives:

Stochastic processes concern sequences of events governed by probabilistic.

Laws, many applications of Stochastic processes.

It is used in physics, Engineering, biology, medicine and other disciplines

The main aim is to bridge the gap between an elementary probability course and the many excellent advanced works on stochastic processes.

Unit I**15 Hrs**

Elements of Stochastic Processes-Two simple examples of Stochastic processes-Classification of general Stochastic processes – Markov Chains- Definitions – Examples of Markov Chain-Transition probability matrices of a Markov chain - classification of states of a Markov chain-Recurrence;

Unit-II**15 Hrs**

The basic limit theorem of Markov chains and applications-Discrete renewal equation-proof of theorem-Absorption probabilities - criteria for recurrence- A queuing Example.

Unit III**15 Hrs**

Classical Examples of continuous time Markov chains-General pure birth processes and Poisson processes-more about Poisson processes- A counter model-birth and death processes-Differential equations of birth and death processes- Examples of birth and death processes.

Unit IV**15 Hrs**

Renewal processes - Definition of Renewal process and related concepts – Some examples of Renewal Processes – More on some special Renewal processes – Renewal equations and elementary Renewal theorem - The Renewal Theorem – Applications of Renewal theorem.

Unit V**15 Hrs**

Martingales - Preliminary definitions and examples – Super martingales and Sub martingales- The optional sampling theorem.

Text Book :

A First course in Stochastic Processes - Second Edition by Samuel Karlin and M.Taylor, Academic Press New York.

Unit I : Chapter (1.2 to 1.3)

Unit II : Chapter (2.1 to 2.5)

Unit III : Chapter (3.1 to 3.5)

Unit IV : Chapter (4.1 to 4.6)

Unit V : Chapter (6.1 to 6.3)

General References:

1. "Stochastic Processes" S.K.Srinivasan and K.M.Mehata, Tata Mcgraw - Hill Publishing Company Ltd., New Delhi.

2. "Stochastic Processes" Medhi, Second Edition Wiley Eastern Ltd., New Delhi.