BACHELOR OF SCIENCE - MATHEMATICS
REGULATIONS

ELIGIBILITY

Candidate for admission to the first year of the **B.Sc. Mathematics** degree course shall be required to have passed the higher secondary examination conducted by the Govt. of Tamil Nadu with Mathematics as one of the subjects are only eligible or other examinations accepted as equivalent there to by the academic council, subject to such other conditions as may be prescribed there for. Business Mathematics, General Mathematics and Statistics subject at HSC cannot be considered as equivalent to Mathematics.

OBJECTIVE OF THE COURSE

Mathematics is the key to success in the field of science and engineering. Today, the students need a thorough knowledge of fundamental basic principles, methods, results and a clear perception of the power of mathematical ideas and tools to use them effectively in modeling, interpreting and solving the real world problems. Mathematics plays an important role in the context of globalization of Indian economy, modern technology and we find the applications of Computers in all walks of life from Agriculture to Atomic research. This course is aimed at preparing the students to cope with the latest developments and compete with students from other universities and put them on the right track.

SCHEME OF EXAMINATION

Subject Code	Subject	Hrs of Inst	Exam Dur (Hrs)	Max Marks			Credit Points
				CA	CE	Total	
First Semester							
Part - I							
15UTL11U/ 15UHL11H/ 15UML11M/ 15UFL11F	Tamil-I/ Hindi-I/ Malayalam-I/ French – I	6	3	25	75	100	4
Part – II							
15UEG12E	English - I	6	3	25	75	100	4
Part – III							
15UMT13A	Core- I: Classical Algebra	4	3	25	75	100	4
15UMT13B	Core - II: Calculus	5	3	25	75	100	4
15UPY1AA	Allied- I: Physics – I	4	3	25	75	100	4
	Allied Practical –I: Physics	3	-	-	-	-	-
Part – IV							
15UFC1FA	Environmental studies	2	3	-	50	50	2
		30				**550**	**22**
Second Semester							
Part – I							
15UTL21U/ 15UHL21H/ 15UML21M/ 15UFL21F	Tamil-II/ Hindi-II/ Malayalam-II/ French – II	6	3	25	75	100	4
Part – II							
15UEG22E	English - II	6	3	25	75	100	4
Part – III							
15UMT23A	Core -III: Analytical Geometry	4	3	25	75	100	4
15UMT23B	Core- IV: Trigonometry, Vector Calculus and Fourier Series	5	3	25	75	100	4
15UPY2AA	Allied- II: Physics – II	4	3	25	75	100	4
15UPY2AP	Allied Practical –I: Physics	3	3	20	30	50	2
Part – IV							
15UFC2FA	Value Education: Human Rights	2	3	-	50	50	2
		30				**600**	**24**

BoS Chairman/HoD
Department of Mathematics
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Dr. P. R. MUTHUSWAMY,
PRINCIPAL
Dr. NGP Arts and Science College
Dr. NGP - Kalapatti Road
Coimbatore - 641 048
Tamilnadu, India

Third Semester							
Part – I							
15UTL31U/ 15UHL31H/ 15UML31M/ 15UFL31F	Tamil-III/ Hindi-III/ Malayalam-III/ French – III	5	3	25	75	100	4
Part – II							
15UEG32E	English - III	5	3	25	75	100	4
Part – III							
15UMT33A	Core -V : Differential Equations and Laplace Transforms	3	3	25	75	100	4
15UMT33B	Core-VI : Statics	3	3	25	75	100	4
15UMT3AA	Allied- III: Statistics for Mathematics-I	7	3	20	55	75	3
Part – IV							
	NMEC-I:	2	3	-	50	50	2
15UMT3SA	Skill Based Subject-I : Operations Research -I	3	3	20	55	75	3
15UFC3FA/ 15UFC3FB/ 15UFC3FC/ 15UFC3FD/ 15UFC3FE	Tamil / Advanced Tamil (OR) Yoga for Human Excellence / Women's Rights/ Constitution of India	2	3	-	50	50	2
		30				**650**	**26**
Fourth Semester							
Part – I							
15UTL41U/ 15UHL41H/ 15UML41M/ 15UFL41F	Tamil-IV/ Hindi-IV/ Malayalam-IV/ French – IV	5	3	25	75	100	4
Part – II							
15UEG42E	English - IV	5	3	25	75	100	4
Part – III							
15UMT43A	Core -VII: Dynamics	3	3	25	75	100	4
15UMT43B	Core -VIII: Programming in C	3	3	10	40	50	2
15UMT43P	Core Lab -I: Programming in C	3	3	20	30	50	2
15UMT4AA	Allied-IV: Statistics for Mathematics-I	4	3	20	55	75	3
Part – IV							
	NMEC-II:	2	3	-	50	50	2
15UMT4SA	Skill Based Subject-II: Operations Research - II	3	3	20	55	75	3

15UFC4FA/ 15UFC4FB/ 15UFC4FC	Tamil / Advanced Tamil (OR) General Awareness	2	3	-	50	50	2
		30				**650**	**26**
Fifth Semester							
				Part – III			
15UMT53A	Core- IX: Real Analysis-I	5	3	25	75	100	4
15UMT53B	Core -X: Complex Analysis-I	6	3	25	75	100	4
15UMT53C	Core -XI: Modern Algebra -I	6	3	25	75	100	4
15UMT53D	Core -XII: Discrete Mathematics	5	3	25	75	100	4
	Elective – I	5	3	20	55	75	3
15UMT5SA	Skill based subject-III : Operations Research -III	3	3	20	55	75	3
		30				**550**	**22**
Sixth Semester							
				Part – III			
15UMT63A	Core- XIII: Real Analysis-II	5	3	25	75	100	4
15UMT63B	Core -XIV: Complex Analysis-II	6	3	25	75	100	4
15UMT6SA	Skill based subject-IV : Modern Algebra - II	6	3	25	75	100	4
	Elective – II	5	3	20	55	75	3
	Elective – III	5	3	20	55	75	3
15UEX65A	Extension Activity	-	-	50	-	50	2
		30				**500**	**20**
					Grand Total	**3500**	**140**

ELECTIVE – I

(Student shall select any one of the following subjects as Elective in Fifth semester)

S.No	Subject Code	Name of the Subject
1	15UMT5EA	Astronomy-I
2	15UMT5EB	Numerical Methods-I

ELECTIVE - II

(Student shall select any one of the following subjects as Elective in sixth semester)

S.No	Subject Code	Name of the Subject
1.	15UMT6EA	Astronomy-II
2.	15UMT6EB	Numerical Methods-II

ELECTIVE – III

(Student shall select any one of the following subjects as Elective in Sixth semester)

S.No	Subject Code	Name of the Subject
1.	15UMT6EC	Graph Theory
2.	15UMT6ED	Automata Theory & Formal Languages

NON MAJOR ELECTIVE COURSES

- The Department offers the following two papers as Non Major Elective Courses for other than the mathematics related students.
- Student shall select any one of the following subject as Non Major Elective Courses during their III and IV semester

S.No	Semester	Subject Code	Name of the Subject
1.	III	15UED34B	Mathematics for Competitive Examinations-I
2.	IV	15UED44B	Mathematics for Competitive Examinations-II

FOR COURSE COMPLETION

Students have to complete the following subjects:

- Language papers (Tamil/Malayalam/French/Hindi, English) in I II ,III and IV semester.
- Environmental Studies in I semester.
- Value Education in II and III semester respectively.
- General Awareness in IV semester.
- Allied papers in I, II, III and IV semesters.
- Non Major Elective Courses in III and IV semester.
- Elective papers in the fifth and sixth semesters.
- Extension activity in VI semester.

Total Credit Distribution

Subjects	Credits	Total		Credits	Cumulative Total
Part I: Tamil	4	4x 100 =	400	16	32
Part II: English	4	4x 100 =	400	16	
Part III:					
Core	4	13 x 100 =	1300	52	81
Core	2	1 x 50 =	50	2	
Core Lab	2	1 x 50 =	50	2	
Allied Theory alone	4	2 x 100 =	200	8	
Allied Theory alone	3	2 x 75 =	150	6	
Allied Practical	2	1 x 50 =	50	2	
Elective	3	3 x 75 =	225	9	
Part IV:					
NMEC	2	2 x 50 =	100	4	25
Skill Based Subject	3	3 x 75 =	225	09	
	4	1 x 100 =	100	04	
Foundation Courses	2	2 x 50 =	100	04	
Value Education	2	1 x 50 =	50	02	
Environmental Studies	2	1 x 50 =	50	02	
Part V:					
Extension Activity	2		50	02	02
Total			**3500**	**140**	**140**

15UTL11U	பகுதி – I: தமிழ் தாள் -I	முதல் பருவம்

Total Credit: 4
Hours per week: 6

(கவிதை, சிறுகதை, இதழியல், இலக்கணம், இலக்கிய வரலாறு)

அலகு -1 கவிதைகள்

1. பாரதியார் – செந்தமிழ்நாடு
2. பாரதிதாசன் – புத்தகச் சாலை, நீங்களே சொல்லுங்கள்
3. கவிமணி – ஒற்றுமையே உயிர்நிலை
4. சிற்பி – பெல்ஜியம் கண்ணாடி
5. மு.மேத்தா – மரங்கள்
6. ஆ.வெண்ணிலா – நீரில் அலையும் முகம்

அலகு - 2 சிறுகதைகள்

1. புதுமைப்பித்தன் – கடவுளும் கந்தசாமிப் பிள்ளையும்
2. ஜெயகாந்தன் – யுக சந்தி
3. தி.ஜானகிராமன் – சிலிர்ப்பு
4. நாஞ்சில் நாடன் – சூடிய பூ சூடற்க
5. பட்சி – பெத்த வயிறு

அலகு - 3 நீதி இலக்கியம்

1. திருக்குறள் - அறன் வலியுறுத்தல்
2. ஏலாதி – (பா.எண் : 15,16,26,39,47)
3. கார்நாற்பது – (முதல் 10 பாடல்கள்)

அலகு - 4 இதழியல் கலை

1. இதழியல் விளக்கம் (இதழியல் விளக்கமும் இலக்கணமும், இதழ்களின் பணிகளும் பொறுப்புகளும், இதழ்களின் வகைகள்)
2. தமிழ் இதழ்கள் (நாளிதழ்கள், வார இதழ்கள், மாத இதழ்கள்)
3. தமிழ் ஊடகங்கள் (வானொலி, தொலைக்காட்சி, இணையம்)

அலகு – 5 இலக்கிய வரலாறும் இலக்கணமும்

1. தமிழ்க் கவிதையின் தோற்றமும் வளர்ச்சியும் (மரபுக்கவிதை, புதுக்கவிதை)
2. தமிழ்ச் சிறுகதையின் தோற்றமும் வளர்ச்சியும்
3. பதினெண் கீழ்க்கணக்கு நூல்கள்
4. **இலக்கணம்** : அ)ஒற்றுமிகும் இடங்கள், ஆ) ஒற்று மிகா இடங்கள்.

பார்வை நூல்கள்

1 . தமிழ்த்துறை வெளியீடு
2. இலக்கிய வரலாறு – பேராசிரியர் முனைவர் பாக்யமேரி
3. இதழியல் கலை - மா.பா.குருசாமி

15UHL11H	PART-I : HINDI-I	SEMESTER- I

Total Credit:4

Hours per week: 6

Prose, Non-detailed Text, Grammar & Translation Books Prescribed:

1. PROSE : **Nuthan Gadya Sangrah**
EDITOR: Jayaprakash (Prescribed Lessons – only 4)

Lesson 1 - Razia
Lesson 2 – Makreal
Lesson3- Bahtha Pani Nirmala
Lesson 4 – Rashtrapitha Mahathma Gandhi

PUBLISHER: Sumitra Prakashan Sumitravas,
16/4 Hastings Road,
Allahabad – 211 001.

2. NON DETAILED TEXT: Kahani Kunj.

EDITOR: Dr.V.P.Amithab. (Stories 1 -4 only)
Publisher : Govind Prakashan Sadhar Bagaar,
Mathura, Uttar Pradesh – 281 001.

3. GRAMMAR : Shabdha Vichar (Sangya, Sarvanam,
Karak, Visheshan) Only(Noun, Pronoun,
Adjective, Case Endings)
Theoretical & Applied. Book for

REFERENCE : Vyakaran Pradeep by Ramdev.
Publisher : Hindi Bhavan,
36,Tagore Town
Allahabad – 211 002. 4.

4.TRANSLATION: English- Hindi only. Anuvadh Abhyas – III
(1-10 lessons Only)

PUBLISHER: Dakshin Bharath Hindi Prachar Sabha
Chennai -17.

4. **COMPREHENSION :** 1 Passage from ANUVADH ABHYAS – III
(16- 30)
Dakshin bharath hindi prachar sabha
Chennai- 17.

15UML11M	PART-I: MALAYALAM-I	SEMESTER-I

Total Credit: 4
Hours per week: 6

Paper I Prose, Composition & Translation

This paper will have the following five units:

Unit I &II - Novel
Unit III & IV - Short story
Unit V **-** Composition & Translation

TEXT BOOKS:

Unit I &II - *M.T. Vasudevan Nair*. **Naalukettu –** (**D.C. Books**, Kottayam, Kerala)

UnitIII&IV-*Lalithampika.***Manikkianum Mattu Prathana Kathakalum–** *Antharjanam* (**D.C.Books**, Kottayam, Kerala)

Unit V - Expansion of ideas, General Essay and Translation of a simple passage from English about **100** words) to Malayalam

REFERENCE BOOKS:

1. *Kavitha Sahithya Charitram, M.Leelavathi* (Kerala Sahithya Academy, Trichur)
2. *K.M.Tharakan,* **Malayala Novel sahithya Charitram –** (**N.B.S. Kottayam**)
3. *G.Sankarapillai*, **Malayala Nataka Sahithya Charitram-** (**D.C.Books**, Kottayam)
4. *M.Achuyuthan*, **Cherukatha Innale Innu – (D.C. Books**, Kottayam)
5. *K.M. George,* **Sahithya Charitram Prasthanangalilude.** (Chief Editor) (D.C. Books, Kottayam)

15UFL11F	PART-I: FRENCH- I	SEMESTER- I

Total Credit: 4

Hours per week: 6

French Language for Under-graduate Degree Programmes

Compétence Culturelle	Compétence De communication	Compétence grammaticale
UNITÉ 1 – Ici, en France		
• Moi et les Autres • La France Express	• INTERACTION: s'identifier • RÉCEPTION ECRITE: Comprendre une annonce d'aeroport • RÉCEPTION ORALE: comprendre l'ecrit de la rue (Panneaux, plaques, rues...) • PRODUCTION ÉCRITE**:** écrire un SMS	• Le présent des verbes: Je suis, je reste,J'arrive • Le lieu: (je suis) à… (je suis) ici • L'infinitif
UNITÉ 2 – Ici, en classe		
• Moi et le francais • Le francais dane le monde	• INTERACTION: Se présenter • RÉCEPTION ORALE: Comprendre des consignes Orales • RÉCEPTION ÉCRITE: Comprendre une fiche D''inscription • PRODUCTION ÉCRITE: écrire un texte à 'impératif	• Tu/vous • Le present des Verbes en-er et de être:je, tu,vous • La forme Impérative (tu ,vous) Des verbes en-er
UNITÉ 3 - Samedi		
• Le fil du temps	• INTERACTION: S'informer • RÉCEPTION ORALE: Comprendre une annonce • RÉCEPTION ÉCRITE: Comprendre un article (titres et illustrations) • PRODUCTION ÉCRITE: écrire des slogans	• Les articles Défines:le,la,les • A,de+le,la,les: Au,aux,du,des,à l', de l' • Être(présent)I'heure • Ll faut+nom Ll faut+infinitive • Pharses verbe+complément, Complément+verbe

UNITÉ 4 - Dimanche		
• Les activités Culturelles des Français	• INTERACTION: Acheter,demander des Informations • RECEPTION ORALE: Comprendre les Titres du journal à la radio • RÉCEPTION ÉCRITE: Comprendre les Informations • PRODUCTION ÉCRITE: Inventer des noms de journaux	• Faire, present • Avior, present • Ll y a • Le présent des verbes en-er: Regarder • Combien? • Quand? • Complément de nom: Tremblement de terre, les noms de pays…. • Du,des,de la(reprise U2) • Les adjectifs possessifs: Mon,ta,son, Ma,ta,sa Mes,tes,ses
UNITÉ 5 – Dommage!		
• Un baby-boom en 2000 et 2001 • L'amour, toujours	• INTERACTION: exprimer la tristesse, la peur, conseiller,encourager • RÉCEPTION ORALE: Comprendre une émission De radio • RÉCEPTION ÉCRITE: Comprendre un sondage • PRODUCTION ÉCRITE: écrire des blogs	• Est-ce que • Le present des verbes pouvoir,Vouloir • Le conditionnel des Verbs pouvoir, Vouloir • Ne…pas

TEXT BOOK:

1. *Marcella Di Giura Jean-Claude Beacco,* **Alors I.** Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar (Kamla Nagar) New Delhi – 110007.

15UEG12E	PART- II: ENGLISH-I	SEMESTER- I

Total Credit: 4
Hours per week: 6

OBJECTIVES:

1. To develop the language competence of the students.
2. To be enriched with functional English.

UNIT – I

PROSE

1. My Financial Career – Stephen Leacock
2. At School – Gandhi
3. Ecology – Barry Commoner

UNIT – II

SHORT STORIES

1. The Gateman's Gift – R.K. Narayan
2. The Open Window – H.H. Munro
3. The Face of Judas Iscariot – Bonnie Chamberlain

UNIT – III

ONE ACT PLAY

1. The Discovery – Herman Ould

UNIT – IV

FUNCTIONAL GRAMMAR

1. Vocabulary Exercises
2. Synonyms, Compound Words, etc
3. Communication Skills – Tasks
4. Different types of sentences
5. The Structure of Sentences
6. Transformation of Sentences

UNIT – V

COMPOSITION TASKS

1. Greeting, Introducing, Requesting, Inviting
2. Congratulating, Thanking, Apologising, Advice
3. Suggestions, Opinions, Permissions.
4. Comprehension

TEXT BOOKS:

1. *Seshasayee. N*. 2001. **Honeycomb.** Anu Chitra Publications, Chennai.
2. *Syamala, V*. 2002. **Effective English Communication for You**. Emerald Publisher, Chennai.

REFERENCE BOOKS:

1. *Rajamanickam. A.* 2001**. Everyman's English Grammar.** Macmillan.
2. *Krishna Mohan and Meera Banerji*. 2005. **Developing Communication Skills.** Macmillan, Chennai.
3. *Wren, P.C. and H. Martin***.** 1998**. High School English Grammar and Composition.** Macmillan.

15UMT13A	CORE –I: CLASSICAL ALGEBRA	SEMESTER - I

Total Credits:4
Hours Per Week:4

OBJECTIVES:

1. On successful completion of this course the students should gain knowledge about the convergence of series.
2. Solving equations by various methods.

CONTENTS

UNIT- I

Binomial, exponential theorems-their statements and proofs- their immediate application to summation and approximation only.

UNIT- II

Logarithmic series theorem-statement and proof-immediate application to summation and approximation only. Convergency and divergency of series –definitions, elementary results-comparison tests-De Alemberts and Cauchy's tests.

UNIT- III

Absolute convergence-series of positive terms-Cauchy's condensation test-Raabe's test.

UNIT- IV

Theory of equations: Roots of an equation- Relations connecting the roots and Coefficients- transformations of equations-character and position of roots-Descarte's rule of signs-symmetric function of roots-Reciprocal equations.

UNIT –V

Multiple roots-Rolle's theorem - position of real roots of f(x) =0 - Newton's method of approximation to a root - Horner's method.

TEXT BOOK:

1. *Manicavachasam Pillai, T.K. Natarajan,T. and Ganapathy,K.S*. 2006. **Algebra.** Viswanatham Printers & Publishers Private Ltd.

REFERENCE BOOKS:

1. *Kandasamy,P and Thilagavathy, K.* 2004. **Mathematics Branch I – Vol.I.** S.Chand and Company Ltd. New Delhi.
2. *Bali. N.P*, **Algebra.** 2010-11. Laxmi publications B.Sc. Mathematics (Colleges).

15UMT13B	CORE- II: CALCULUS	SEMESTER - I

Total Credits:4
Hours Per Week:5

OBJECTIVES:

1. On successful completion of this course the students should have gain the knowledge about the evolutes and envelopes
2. To know about the different types of integrations, its geometrical application, proper and improper integration.

CONTENTS

UNIT- I

Curvature-radius of curvature in Cartesian and polar forms-evolutes and envelopes- pedal equations- total differentiation- Euler's theorem on homogeneous functions.

UNIT –II

Integration of $f'(x)/f(x)$,$f'(x)\sqrt{f(x)}$,$(px+q)/[\sqrt{(ax2+bx+c)}]$,$[\sqrt{(x-a)/(b-x)}]$, $[\sqrt{(x-a)(b-x)}]$, $1/[\sqrt{(x-a)(b-x)}]$, $1/(a\cos x+b\sin x+c)$, $1/(a\cos 2x+b\sin 2x+c)$, Integration by parts

UNIT-III

Reduction formulae- problems- evaluation of double and triple integrals-applications to calculations of areas and volumes-areas in polar coordinates.

UNIT -IV

Change of order of integration in double integral- Jacobions.- change of variables in double and triple integrals.

UNIT-V

Notion of improper integrals, their convergence, simple tests for convergence simple problems, Beta and Gamma integrals-their properties, relation between them- evaluation of multiple integrals using Beta and Gamma functions.

TEXT BOOK:

1. *Narayanan,S and Pillai, T.K.M.* 2009. **Calculus vol 1and 2 –** Viswanathan Publishers.

REFERENCE BOOKS:

1. *Kandasamy,P and Thilagavathy,K.* 2004. **Mathematics for BSc – Vol I and II.** S.Chand and Company.
2. *Shanthi Narayanan and Kapoor,J.N.* 2003. **A Text book of calculus.** S.Chand & Co.

15UMT1AA	ALLIED- I: PHYSICS-I	SEMESTER – I

Total Credits: 4
Hours Per Week: 4

OBJECTIVES:

To give the description for the students in order to

1. Learn motion of rigid bodies.
2. Acquire basic knowledge of heat energy.
3. Know about the propagation of sound waves.
4. Get a depth of knowledge of physics in day today life.

CONTENTS

UNIT- I

Gravitation: Newton's law of Gravitation-Determination of G by Boy's method-mass and density of earth – acceleration due to gravity-Determination of g by compound pendulum. Elasticity: Basic concepts – bending of beams – depression of cantilever- Determination of Y by uniform and non- uniform bending method- Torsion in a wire-Determination of rigidity modulus by torsional pendulum.

UNIT-II

Heat and thermodynamics : Vanderwaal's equation of state-critical constants of a gas-derivation of critical constants in terms of Vanderwaal's contants – Joule – Thomson – effect – Theory of J-K effect – K-Onnes method.- properties of liquid Helium I and II. Sound: Doppler effect – applications – determination of frequency of alternating current by Sonometer – Ultrasonics – production, properties and applications

UNIT-III

Solar Physics: - solar constant – measurement of solar radiations by Pyroheliometer and Pyranometer – general applications of solar energy – flat–plate collector – box type cooker - solar water heaters – solar photo – votaic cells – general applications of solar cells.

UNIT-IV

Electricity: Conversion of Galvanometer into Ammeter and voltmeter – figure of merit of a galvanometer – Ballistic Galvanometer – theory and charge of sensitiveness – measurement of capacitance – measurement of

Themo EMF and resistance by potentiometer – applications of electromagnetic induction - Transformers – theory, energy loss and applications

UNIT-V

Magnetism : Basic concepts of magnetic materials – magnetic properties of Dia, Para and Ferro magnetic materials – Area of (B-H) loop – electric and magnetic circuits – Curie temperature – applications of Ferrites in computer memory

REFERENCE BOOKS:

1. *Brijlal subramaniam.* **Properties of matter and sound.**
2. *Murugesan,R.* **Properties of matter and sound**
3. *Ravi, G.D.* **Solar Energy utilization**
4. *Sukhatme.* **Solar Energy Utilization**
5. *Brijlal subramaniam.* **Heat and Thermodynamics**
6. *Narayanamurthi and Nagarathinam.* **Heat and Thermodynamics**
7. *Brijlal subramaniam.* **Sound**
8. *Seihgal,R.L.* **Sound**
9. *Murugesan,R.* **Electricity and magnetism**
10. *Narayanamurthi and Nagarathinam.* **Electricity and magnetism**
11. *Brijlal subramaniam.* **Electricity and magnetism**

15UFC1FA	PART-IV: VALUE EDUCATION-ENVIRONMENTAL STUDIES	SEMESTER - I

Total Credits: 2
Hours / Week: 2

CONTENTS

UNIT- I

The Multi Disciplinary Nature Of Environmental Studies: Definition, scope and importance-Need for public awareness-Natural resources-Natural resources and associated problems-Role of an individual in conservation of natural resources-Equitable use of resources for sustainable lifestyle…

UNIT- II

Eco System: Concept of an eco system-structure and function of eco system-Producers, consumers and decomposers-Energy flow in the eco system-Ecological succession-Food chain, food webs and ecological pyramids-Forest ecosystem-Grassland eco system-Desert eco system-Aquatic eco system…

UNIT- III

Bio Diversity And Its Conservation Introduction Definition: Genetic, Species And Eco System Diversity-Bio Geographical Classification Of India: Value of bio diversity: conceptive use, productive use, social, ethical and option values-bio diversity at global, national and local levels-India as a mega diversity nation, hot spots-threats: habitat loss, poaching of wild life-man wild life conflicts-endangered and endemic species of India, conservation of bio diversity….

UNIT- IV

Environmental Pollution: Definition-causes, effects and control measures of air, water, soil, noise, thermal pollution-soil waste management: causes, effects and control measures of urban and industrial wastes-prevention of pollution-pollution case studies-disaster management: floods, earthquake, cyclone and landslides…

UNIT- V

Social Issues And The Environment: Sustainable development-urban problems related to energy-water conservation, rain water harvesting, watershed management-resettlement and rehabilitation of people ;its problems and concerns-environmental ethics: issues and possible

solutions-climate change, global warming, ozone layer, depletion, acid rain, nuclear accidents and holo caust-consumerism and waste products-environmental protection act-air, water act-wild life protection act-forest conservation act-issues involved in enforcement of environmental legislation-public awareness-human population and the environment.

15UTL21U	பகுதி – 1: தமிழ் தாள் - 2	இரண்டாம் பருவம்

Total Credit: 4
Hours per week: 6

(இரண்டு ஆண்டுகள் தமிழ் பயிலும் மாணவர்களுக்கு உரியது)

சமய இலக்கியங்கள்

அலகு -1 சைவ வைணவ இலக்கியங்கள்

1. திருஞானசம்பந்தர் – தோடுடைய செவியன் (11 பாடல்கள்)

2. குலசேகர ஆழ்வார் – திருவேங்கட மலைத்தொடர்பு வேண்டல்

அலகு -2 கிறித்துவ இசுலாமிய இலக்கியங்கள்

1. கண்ணதாசன் – இயேசு காவியம் – மலைப்பொழிவு

2. உமறுப்புலவர் - சீறாப்புராணம் – மானுக்குப் பிணை நின்ற படலம்

அலகு -3 சமயச் சான்றோர் வரலாறு

1. சைவ சமயச் சான்றோர்

   திருநாவுக்கரசர், மாணிக்கவாசகர்

2. வைணவ சமயச் சான்றோர்

   பெரியாழ்வார் , ஆண்டாள்

3. கிறித்துவ சமயச் சான்றோர்

   கால்டுவெல், ஜி.யூ.போப்

4. இசுலாமிய சமயச் சான்றோர்

   குணங்குடி மஸ்தான் , சவ்வாதுப் புலவர்

அலகு – 4 சமய இலக்கிய வரலாறு

1. சைவம் 2. வைணவம்

அலகு - 5 இலக்கணம்

1. பெயர்ச்சொல்
2. வினைச்சொல்
3. இடைச்சொல்
4. உரிச்சொல் – பொது இலக்கணம்

பார்வை நூல்கள்

1 . தமிழ்த்துறை வெளியீடு

2. தமிழ் இலக்கிய வரலாறு – பேராசிரியர் முனைவர் பாக்யமேரி

15UHL21H	PART – I: HINDI - II	SEMESTER- II

Total Credit: 4
Hours per week: 6

(Modern Poetry, Novel, Translation & Letter Writing)

1. Modern Poetry: Shabari – By Naresh Mehtha

Publishers: Lokbharathi Prakashan I Floor,Duebari Building Mahathma Gandhi Marg, Allahabad -1.

2. Novel: Seva Sadhan – By Prem Chand

3.Translation: Hindi – English Only, anuvadh abyas – iii) lessons.1 – 10 only publisher: dakshin bharath hindi prachar sabha,
Chennai 600 017.

4. Letter Writing: (Leave letter, Job Application, Ordering books, Letter to Publisher, Personal letter).

15UML21M	PART-I: MALAYALAM - II	SEMESTER- II

Total Credit: 4
Hours Per Week: 6

PAPER II PROSE: NON-FICTION

This Paper will have the following five units:

UNIT I & II

Biography

UNIT III, IV & V

Travelogue

TEXT BOOKS:

1. Unit I & II *Changampuzha Krishna Pillai: Nakshatrangalude Snehabhajanam –M.K. Sanu* (D.C. Books, Kottayam).
2. Unit III, IV & V Kappirikalude Nattil – *S.K. Pottakkadu* (D.C. Books, Kottayam)

REFERENCE BOOKS:

1. Jeevacharitrasahithyam –Dr. K.M. George(N.B.S. Kottayam)
2. Jeevacharitrasahithyam malayalathil- Dr. Naduvattom Gopalakrishnan(Kerala Bhasha Institute, Trivandrum)
3. Athmakathasahithyam malayalathil –Dr. Vijayalam Jayakumar(N.B.S. Kottayam)
4. Sancharasahithyam Malayalathil-Prof.Ramesh Chandran. V,(Kerala Bhasha Institute, Trivandrum)

15UFL21F	PART – I: FRENCH - II	SEMESTER- II

Total Credit: 4
Hours Per Week: 6

French Language for Under-graduate Degree Programmes

Compétence Culturelle	Compétence De communication	Compétence grammaticale
UNITÉ 6 – Super!		
• L'égalité homme/femme	• INTERACTION: Exprimer des sentiments, exprimer la joie, le plaisir, le bonheur • RÉCEPTION ORALE: Comprendre un jeu radiophonique • RÉCEPTION ÉCRITE: Comprendre des announces • PRODUCTION ÉCRITE: Écrire des cartes postales	• Les noms de professions masculine/feminine • Le verb finir et less Verbes du groupe en-ir • Le present de l'impératif • Savoir(present) • Le participle passé: Fini, aimé, arrive, dit,écrit • Quel(s), quelle(s)..: Interrogatif et Exclamatif • À + infinitive • Les articles: n,une,des
UNITÉ 7 – Quoi?		
• Le 20 siécle: Petits progrés Grand progrés	• INTERACTION: Decrire quelque chose, une personne • RECEPTION ORALE: Comprendre un message publicitaire • RÉCEPTION ÉCRITE: Comprendre un dépliant touristique • PRODUCTION ÉCRITE: Écrire des petites annonces	• On • Plus, moins • Le verbe aller: • Present, impératif • Aller + infinitife • Le pluriel en –x
UNITÉ 8 – Et aprés		
• Nouvelles du jour	• INTERACTION: Raconteur,situer un récit dans le temps • RÉCEPTION ORALE: Comprendre une description • RÉCEPTION ÉCRITE: Comprendre un test • PRODUCTION ÉCRITE:	• L'imparfait:: quel-Ques forms pour introduire le récit:Il faisait, il y avait, il Était • Un peu, beaucoup, trop,Assez • Trés • Le verbe venir:

	écrire des cartes postales	Présent, impératif • En Suisse, au Maroc, aux Etats-Unis
UNITÉ 9 – Mais oui!		
• La génération des 20-30 ans	• INTERACTION: Donner son opinion, Expliquer pourquoi • RÉCEPTION ORALE: Comprendre des informations à la radio • RÉCEPTION ÉCRITE: Comprendre un texte informatif • PRODUCTION ÉCRITE: éncrire un mél de protestation	• Répondre, prendre: Présent, impératif, part Passé • Parce que pourquoi • Tout/tous, toute/s Tous/toutes les… (répétition action)
UNITÉ 10 – Mais non!		
• De la ville à la campagne	• INTERACTION: Débat:: exprimer l'accord, exprimer le Désaccord • RECEPTION ORALE: Comprendre un message sur un répondeur téléphonique • RÉCEPTION ÉCRITE: Comprendre un témoignage • PRODUCTION ECRITE: Rediger des petites Announces immobilieres	• Le verbe devoir: Present et participe passé • Le verbe vivre, present • Aller + infinitive • Venir+ infinitive • Etre pour/contre

TEXT BOOK:

1. *Marcella Di Giura Jean-Claude Beacco,* **Alors I.** Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar (Kamla Nagar) New Delhi – 110007.

15UEG22E	PART – II: ENGLISH-II	SEMESTER II

Total Credit: 4
Hours Per Week: 6

OBJECTIVES:

1. To develop the language competence of the students.
2. To be enriched with functional English.

UNIT - I

PROSE

1. Words of Wisdom – Chetan Bhagat
2. Forgetting – Robert Lynd
3. My Early Days – Dr. Abdul Kalam

UNIT - II

SHORT STORIES

1. Am I Blue? – Alice Walker
2. Last Leaf – O Henry
3. Selfish Giant – Oscar Wilde

UNIT - III

ONE ACT PLAY

1. Soul Gone Home - Langston Hughes

UNIT - IV

FUNCTIONAL GRAMMAR

1. Lexical Skills and Question Forms
2. Idioms and Phrases – Subject-Verb Agreement
3. Spelling, Antonyms and Synonyms, Infinitives
4. Vocabulary, Report Writing
5. Plurals, Particles in Adjectives
6. Apostrophe, Archaic Words, Art of Persuasion
7. Syllables, Changing Adjectives to Nouns
8. Homonyms, Prepositions
9. Compound Words, Acronyms, Collective Nouns, Degrees of Comparison.

UNIT - V

COMPOSITION TASKS

1. Letter Writing - Structure
2. Business Correspondence – Memos, reports, proposals
3. Resume & C.V.
4. Advertisements
5. Notices, Agenda, Minutes
6. Circulars
7. Essay Writing
8. Précis Writing
9. Dialogue Writing
10. Soft Skills, Business English

TEXT BOOKS:

1. *Board of Editors.* 2012. **Radiance – English for Communication**, Emerald Publishers.
2. *Syamala, V*. 2002. **Effective English Communication for You**. Emerald Publisher, Chennai.

REFERENCE BOOKS:

1. *Rajamanickam. A.* 2001**. Everyman's English Grammar.** Macmillan.
2. *Krishna Mohan and Meera Banerji*. 2005. **Developing Communication Skills.** Macmillan, New Delhi.
3. *Wren, P.C. and H. Martin***.** 1998**. High School English Grammar and Composition.** Macmillan

15UMT23A	CORE- III: ANALYTICAL GEOMETRY	SEMESTER - II

Total Credits: 4
Hours Per Week: 4

OBJECTIVES:

1. This course gives emphasis to enhance students' knowledge in two dimensional and three dimensional analytical geometry.
2. Conic sections in polar coordinates and the geometrical aspects of three dimensional figs, viz, sphere, cone and cylinder.

CONTENTS

UNIT- I

Analytical geometry of 2D-polar coordinates equation of a conic - directrix-chord-tangent-normal- simple problems - only in deriving equation of a conic.

UNIT- II

Analytical Geometry 3D-stright.lines-coplanarity of straight-line-shortest distance (S.D) and equation of S.D between two lines-simple problems.

UNIT- III

Sphere: standard equation of sphere-results based on the properties of a sphere-tangent plane to a sphere- equation of a circle.

UNIT IV

Cone and cylinder: Cone whose vertex is at the origin- envelope cone of a sphere-right circular cone-equation of a cylinder-right circular cylinder.

UNIT- V

Conicoides: Nature of a conicoide- standard equation of central coincide – enveloping cone- tangent plane-condition for tangency –director Sphere-director plane.

TEXT BOOKS:

1. *Durai Pandian, P. Laxmi duraipandian and Mukilan,D*.2003 **Analytical Geometry.** S.Chand and Company.
2. *Bali, N.P*. 2005. **Solid Geometry.** Laxmi Publications (P) Ltd.

REFERENCE BOOKS:

1. *Pillai, T.K.M. and Others*. 2006. **Analytical Geometry of 2D.**Visvanathan Publications .
2. *Khanna, M.L*. 2005. **Solid Geometry.** Jainath & Co Publishers. Meerut.

15UMT23B	CORE – IV: TRIGONOMETRY, VECTOR CALCULUS AND FOURIER SERIES	SEMESTER - II

Total Credits:4
Hours Per Week:5

OBJECTIVES:

1. On successful completion of this course the students should have gained knowledge about expansion of trigonometric functions,
2. To know about the concept of line integral, surface integral, volume integral and Fourier series.

CONTENTS

UNIT- I

Expansion in Series – Expansion of cosnθ, sinnθ, in a series of cosines and sines of multiples of θ– Expansions of cosnθ and sinnθ in powers of sines and cosines – Expansion of sin θ, cosθ and tanθ in powers of θ – hyperbolic functions and inverse hyperbolic functions.

UNIT- II

Logarithm of complex quantities - summation of series – when an angle are in arithmetic progression – $C + iS$ method of summation – method of differences.

UNIT- III

Scalar and vector fields –Differentiation of vectors – Gradient, Divergence and Curl.

UNIT- IV

Integration of vectors – line integral – surface integral – Green's theorem in the plane – Gauss divergence theorem – Strokes theorem – (Statements only) - verification of the above said theorems.

UNIT-V

Periodic functions – Fourier series of periodicity 2π– half range series.

TEXT BOOKS:

1. *Narayanan,S and Pillai, T.K.M.* 2009. **Trigonometry –**Viswanathan Publishers.
2. *Narayanan,S and Pillai, T.K.M.* 2009. **Fourier Series –**Viswanathan Publishers.
3. *Durai Pandian, P. Laxmi duraipandian and Mukilan,D*. 2003 **Vector Calculus.** S.Chand & Company Ltd., Ramnagar, New Delhi.

REFERENCE BOOK:

1. *Kandasamy,P. and Thilagavathi , K. 2003.* ***Mathematics*** **Volume IV** (Vector Calculus, Fourier Series) S.Chand & Company Ltd., Ramnagar, New Delhi.

15UPY2AA	ALLIED –II: PHYSICS- II	SEMESTER - II

Total Credits: 4

Hours Per Week: 4

OBJECTIVES:

1. To give the description for the students in order to
2. Learn motion of rigid bodies.
3. Acquire basic knowledge of heat energy.
4. Know about the propagation of sound waves.
5. Get a depth of knowledge of physics in day today life.

CONTENTS

UNIT- I

Modern physics: Photo electric effect – Einstein's photo electric equation – verification of Einstein's photo electric equation by Millican's experiment – photo electric cells – applications Wave mechanics: De Broglie matter waves – calculation of De Broglie wave length – Experimental study of De Broglie matter wave by G.P.Thomson experiment.

UNIT -II

Nuclear physics : characteristics of nuclear forces – nuclear structure by liquid drop model – Binding energy – mass defect – particle accelerators – cyclotron and betatron – artificial transmutations by α – particles - nuclear Fission and nuclear Fusion (basic idea only) – elementary particles – Leptons, Mesons and Baryons

UNIT- III

Laser physics: Purity of spectral lines – Coherence length and time – spontaneous and induced emissions – population inversion – meta stable state – conditions for laser actions – Ruby laser – Helium – neon laser – applications of lasers – Raman effect – Raman shift – stokes and anti stokes lines – Laser Raman Spectrometer.

UNIT- IV

Semiconductor physics: Volt – Ampere Characteristics of P-N junction Diode – Zener diode – applications of Zener diodes - Volt – Principles of LED and LCD – Frequency Modulation and Amplitude modulation – basic principles of antennas – block diagram of Superhetrodyne receiver – block diagram of monochrome TV receiver – basic principles and applications of RADAR.

UNIT- V

Integrated Electronics: Steps in fabrication of Monolithic IC's – General applications of IC's – operational amplifiers as an adder and subs tractor. Digital Electronics: Analog and digital computers – organization of digital computers – number systems – conversion of binary into decimal – conversion of decimal to binary – binary addition and subtraction – Basic logic gates – NAND and NOR as an universal logic gates – Demorgan's theorems – Boolean algebra – applications of Demorgans theorems.

REFERENCE BOOKS:

1. *Murugesan,R.* **Modern physics**
2. *Gaur and Gupta.* **Engineering physics**
3. *Arumugam,M.* **Engineering physics**
4. *Thiagarajan.* **Laser Physics**
5. *Metha, V.K.* **Principles of Electronics**
6. *Theraja, B.L.* **Basic Electronics**

15UPY2AP	ALLIED PRACTICAL- I: PHYSICS	SEMESTER - II

Total Credits: 2

Hours Per Week: 3

LIST OF EXPERIMENTS:

Any 12 Experiments

1. Young's Modulus-Uniform Bending (Microscopic Method)
2. Young's Modulus-Non-uniform Bending (Microscopic Method)
3. Compound Pendulum – determination of 'g' and 'K'
4. Torsional Pendulum – Rigidity Modulus
5. Rigidity Modulus – Static Torsion
6. Spectrometer – Refractive Index of a glass Prism
7. Spectrometer – Grating- Minimum deviation & Normal Incidence
8. Moment of a Magnet – Tan C position
9. Viscosity – Poiseuille's Method
10. Meter Bridge- Temperature Coefficient of resistance
11. Meter Bridge- Specific Resistance of a material
12. Specific Heat capacity of a Liquid – Newton's method of cooling
13. Sonometer – Frequency of a tuning fork
14. Post office box- Determination of Temperature Coefficient of Resistance
15. Post office box- Determination of Specific Resistance

15UFC2FA	PART–IV: VALUE EDUCATION-HUMAN RIGHTS	SEMESTER - II

Total Credits: 2

Hours Per Week: 2

CONTENTS

UNIT- I

Concept of Human Values, Value Education Towards Personal Development

Aim of education and value education; Evolution of value oriented education; Concept of Human values; types of values; Components of value education.

Personal Development: Self analysis and introspection; sensitization towards gender equality, physically challenged, intellectually challenged. Respect to - age, experience, maturity, family members, neighbours, co-workers.

Character Formation towards Positive Personality: Truthfulness, Constructivity, Sacrifice, Sincerity, Self Control, Altruism, Tolerance, Scientific Vision.

UNIT - II

Value Education Towards National and Global Development National and International Values: Constitutional or national values - Democracy, socialism, secularism, equality, justice, liberty, freedom and fraternity.

Social Values - Pity and probity, self control, universal brotherhood.

Professional Values - Knowledge thirst, sincerity in profession, regularity, punctuality and faith. Religious Values - Tolerance, wisdom, character.

Aesthetic values - Love and appreciation of literature and fine arts and respect for the same. National Integration and international understanding.

UNIT - III

Impact of Global Development on Ethics and Values: Conflict of cross-cultural influences, mass media, cross-border education, materialistic values, professional challenges and compromise.

Modern Challenges of Adolescent Emotions and behave or; Sex and spirituality: Comparison and competition; positive and negative thoughts.

Adolescent Emotions, arrogance, anger, sexual instability, selfishness, defiance.

UNIT – IV

Therapeutic Measures

Control of the mind through

a. Simplified physical exercise
b. Meditation – Objectives, types, effect on body, mind and soul
c. Yoga – Objectives, Types, Asanas
d. Activities:
   (i) Moralisation of Desires
   (ii) Neutralisation of Anger
   (iii) Eradication of Worries
   (iv) Benefits of Blessings

UNIT- V

Human Rights

1. Concept of Human Rights – Indian and International Perspectives
   a. Evolution of Human Rights
   b. Definitions under Indian and International documents
2. Broad classification of Human Rights and Relevant Constitutional Provisions.
   a. Right to Life, Liberty and Dignity
   b. Right to Equality
   c. Right against Exploitation
   d. Cultural and Educational Rights
   e. Economic Rights
   f. Political Rights
   g. Social Rights
3. Human Rights of Women and Children
   a. Social Practice and Constitutional Safeguards
      (i) Female Foeticide and Infanticide
      (ii) Physical assault and harassment
      (iii) Domestic violence
      (iv) Conditions of Working Women
4. Institutions for Implementation
   a. Human Rights Commission
   b. Judiciary
5. Violations and Redressel
   a. Violation by State
   b. Violation by Individuals
   c. Nuclear Weapons and terrorism
   d. Safeguards.

REFERENCE BOOKS:

1. *Dey A. K,* 2002, **Environmental Chemistry.** New Delhi – Vile Dasaus Ltd.
2. *Gawande . E.N*. **Value Oriented Education.** Vision for better living. New Delhi, Saruptsons.
3. *Brain Trust Aliyar*, 2008, **Value Education for health, happiness and harmony.** Vethathiri publications, Erode.
4. *Ignacimuthu S. J. S,* 1999, **Values for life.** Bombay Better Yourself.
5. *Seetharam. R. (Ed),* 1998 **, Becoming a better Teacher** Madras Academic Staff College.
6. *Grose. D. N* , 2005, **A text book of Value Education.** Dominant Publishers and Distributors, New Delhi.
7. *Shrimali K. L,* 1974, **A Search for Values in Education**. Vikas Publishers, Delhi.
8. *Yogesh Kumar Singh & Ruchika Nath* , 2005, **Value Education.** P. H Publishing Corporation, New Delhi.
9. *Venkataram & Sandhiya*. *N,* 2001, **Research in Value Education.** APH Publishing Corporation, New Delhi.
10. *Ruhela S. P*. **Human Value and Education.** Sterling publishers, New Delhi.
11. *Brain Trust Aliyar*, 2004, **Value Education for Health, Happiness and Harmony.** Vethathiri publications , Erode.
12. *Swami Vivekananda* , 2008, **Personality Development.** Advaita Ashrama, Kolkata.
13. *Swami Jagadatmananda*, **Learn to Live.** Sri Ramakrishna Math, Chennai.

15UTL31U	பகுதி -1 : தமிழ் தாள் -3	மூன்றாம் பருவம்

Total Credits: 4
Hours / Week: 5

காப்பியம் – சிற்றிலக்கியம் – நாடகத்தமிழ்

அலகு -1 காப்பியங்கள்

1. சிலப்பதிகாரம் – மங்கல வாழ்த்துப் பாடல்
2. மணிமேகலை – மலர்வனம் புக்க காதை
3. சீவக சிந்தாமணி – பதுமையார் இலம்பகம் (முதல் 20 பாடல்கள்)

அலகு – 2 சிற்றிலக்கியங்கள்

1. கலிங்கத்துப்பரணி – களம் பாடியது
2. மீனாட்சியம்மை பிள்ளைத்தமிழ் – வருகைப் பருவம்

அலகு – 3 நாடகத்தமிழ்

1. சேர தாண்டவம் – பாரதிதாசன்

அலகு - 4 காப்பியம், சிற்றிலக்கியம் – வரலாறு

1. காப்பியங்களின் தோற்றமும் வளர்ச்சியும்
2. சிற்றிலக்கியத்தின் தோற்றமும் வளர்ச்சியும்
3. நாடகத்தின் தோற்றமும் வளர்ச்சியும்

அலகு- 5 இலக்கணம்

1. எழுத்து ,அசை, சீர், தளை, அடி, தொடை – விளக்கம்
2. அணி – உவமையணி, தற்குறிப்பேற்றஅணி
3. அலுவலகம் சார்ந்த கடிதம்–விண்ணப்பங்கள், வேண்டுகோள், முறையீடு

பார்வை நூல்கள்

1 . தமிழ்த்துறை வெளியீடு

2. இலக்கிய வரலாறு – பேராசிரியர் முனைவர் பாக்யமேரி

3. இதழியல் கலை - மா.பா.குருசாமி

15UHL31H	PART – I: HINDI -III	SEMESTER -III

Total Credits: 4
Hours/week: 5

(Poetry, History of Hindi Literature, Alankar)

1. **Poetry**: Kavya Prasar – By Dr.Balanath Puplisher: Jawahar Pusthakalay Sadar Bazaar, Mathura – U.P. 281 001. (Pracheen – Kabir, Tulsi, Sur & Meera, Aadhunic – Gupt, Prasad, Panth, Nirala, Dinakar, Agneya

Short Notes On Poets -Only the above mentioned.

2. History of Hindi Literature:

(Only Aadi Kaal and Bhakthi Kaal. Only a general knowledge.) ALANKAR: Anupras, Yamak, Slesh, Vakrokthi, Upama, Rupak,

REFERENCE BOOKS:

1. Hindi Sahithya Ka Saral Ithihass By Rajnath Sharma, Vinod Pustak Mandir, Agra – 282 002. Kavya Pradeep Rambadri Shukla, Hindi Bhavan, 36, Tagore Town, Allahabad – 211 002.
2. **Alankar:** Anupras, Yamak, Slesh, Vakrokthi, Upama, Rupak,

15UML31M	PART - I : MALAYALAM -III	SEMESTER III

Total Credits: 4
Hours / Week: 5

PAPER III- POETRY

This Paper will have the following five units:

Unit I, II & III

A part of Ezuthachan's Work

Unit IV & V

A Khandakavya of Vallathol

TEXT BOOKS:

Unit I, II & III

Karnnaparvam – Ezuthachan

(Poorna Publications, Calicut)

Unit IV & V

Achanum Makalum – Vallathol (D.C. Books, Kottayam)

15UFL31F	PART - I : FRENCH -III	SEMESTER -III

Total Credits: 4
Hours/week: 5

French Language for Under-graduate Degree Programmes

Compétence Culturelle	Compétence de Communication	Compétence Grammatical
UNITÉ 1- Excuses et vœux		
• Convivialité (lieux et société, l'apéritif)	• INTERACTION ORALE: Accueillir quelqu'un, s'excuser,remercier • RÉCEPTION ORALE: Comprendre des announces enregistrées • RÉCEPTION ÉCRITE: Compremdre une affiche • PRODUCTION ÉCRITE:Écrire des cartes de vœux	• Pronoms personnels toniques *moi,je…;toi…tu* • Pronoms personnels objets *Me,te,le…* • Lesverbsen-ercomme appeler,acheter • Lesadjectives possessives *nos,vos,leurs*
UNITÉ 2 – Bravo et merci		
• Communication et technologies (leportable, internet)	• INTERACTION ORALE: Interagir au téléphone , féliciter • RÉCEPTION ORALE: Comperendre une emission à la radio • RÉCEPTION ORALE: Comprendre une définition • PRODUCTION ECRITE: Écrire des plaques commemoratives	• Oui,que • Le passé composé • Le participe passé *J'ai eu,ella a été* • Longtemps,pendant …, de… à
UNITÉ 3 – Faire et dire		
• Jeunes : enquête	• INTERACTION ORACE: Demander de l'aide, donner des instructions • RÉCEPTION ORALE: Comprendre un message enregistré • RÉCEPTION ÉCRITE : Comprendre un article d'un magazine de consommateurs • PRODUCTION ÉCRITE : Écrire un règlement	• Ce/*cet,cette,ces* • Le verbe voir • Envoyer,appuyer • Les articles partitifs *du,de la (de l)',des,de*
UNITÉ 4 – Faire ci ou faire ça		
• Les vacances	• INTERACTION ORALE :	• *S'il y a du soleil* :

des Français	Proposer quelque chose,accepter,refuser • RÉCEPTION ORALE : Comprendre une émission de cuisine • RECEPTION ÉCRITE : Comprendre une brochure d'informations • PRODUCTION ÉCRITE : Ecrire un'texte de promotion touristique	L'hypothèse (supposition, Condition) la préposition *S i* + *indicatif* • *Sinon… ou* + *indicatif* • *Sortir,partir* • *Quelques, plusieurs* • *Le long de* • *Au milieu de…* • *Au sommet de…*
UNITÉ 5 – Cœur et santé		
• Author du Couple	• INTERACTION ORALE: Exprimer son intérêt pour quelqu'un, exprimer l'affection • RECEPTION ORALE: Comprendre une chanson • RECEPTION ÉCRITE: Lire un horoscope • PRODUCTION ÉCRITE: Écrire une letter au courrier du cœur	• J'étais…L'imparfait(1) • Aussi brilliant que… • Le plus beau, le moins cher • Le verbe connaître

TEXT BOOK:

1. *Marcella Di Giura Jean-Claude Beacco,* **Alors II .** Goyal Publishers Pvt Ltd 86, University Block ,Jawahar Nagar (Kamla Nagar), New Delhi – 110007.

15UEG32E	PART- II : ENGLISH -III	SEMESTER III

Total Credits: 4
Hours per week: 5

OBJECTIVES:

1. To develop the language competence of the students.
2. To be enriched with functional English.

UNIT –I

PROSE

1. On Habits – A. G. Gardiner
2. Men and Women – Virginia Woolf
3. Sweets for Angels – R. K. Narayan

UNIT –II

SHORT STORIES

1. The Ant and the Grasshopper – Somerset Maugham
2. A Day's Wait – Ernest Hemingway
3. The Doll's House – Catherine Mansfield

UNIT III

ONE ACT PLAY

1. The Bishop's Candlesticks- Norman McKinnel
2. A Kind of Justice- Margaret Wood

UNIT -IV

FUNCTIONAL GRAMMAR

1. The Noun
2. The Adjective
3. The Adverb
4. Sentence Structure
5. Sentence Pattern

UNIT -V

COMPOSITION TASKS

1. Human relationships in academic and professional life
2. Deciding on a career
3. Finding a Job
4. Going for an Interview
5. Writing Projects
6. Account of a task completed
7. Recommendation for promotion
8. Writing recording of achievement
10. Story Writing

TEXT BOOKS

1. *Daniel, James. P.C.* 2013. **Focus: A Course in Language and Communication Skills**, Harrows Publications, Bangalore, 560068.
2. *Daniel, James.P.C.* 1989. **English for Career Development, a Course in Functional** English, Orient Longman Private Limited Publications, Bangalore.

REFERENCE BOOKS:

1. *Rajamanickam. A.* 2001**. Everyman's English Grammar.** Macmillan,
   Chennai.
2. *Krishna Mohan and Meera Banerji*. 2005. **Developing Communication Skills.** Macmillan, New Delhi.
3. *Wren, P.C. and H. Martin***.** 1998**. High School English Grammar and Composition.** Macmillan, Chennai.

15UMT33A	CORE – V: DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS	SEMESTER - III

Total Credits:4
Hour Per Week:3

OBJECTIVES:

1. End of this course, the students should gain the knowledge about the method of solving Differential Equations.
2. It also exposes Differential Equation as a powerful tool in solving problems in Physical and Social sciences.

CONTENTS

UNIT-I

Ordinary Differential Equations: Equations of First Order and of Degree Higher than one – Solvable for p, x, y – Clairaut's Equation – Simultaneous Differential Equations with constant coefficients of the form (i) $f_1(D)x + g_1(D)y = \varphi_1(t)$ (ii) $f_2(D)x + g_2(D)y = \varphi_2(t)$ where f_1 , g_1 , f_2 and g_2 are rational functions $D=d/dt$ with constant coefficients $\varphi_1(t)$and $\varphi_2(t)$explicit functions of t.

UNIT -II

Finding the solution of Second and Higher Order with constant coefficients with Right Hand Side is of the form Ve^{ax} where V is a function of x – Euler's Homogeneous Linear Differential Equations – Method of variation of parameters.

UNIT- III

Partial Differential Equations: Formation of equations by eliminating arbitrary constants and arbitary functions – Solutions of P.D Equations – Solutions of Partial Differential Equations by direct integration – Methods to solve the first order P.D. Equations in the standard forms - Lagrange's Linear Equations.

UNIT- IV

Laplace Transforms: Definition – Laplace Transforms of standard functions – Linearity property – Firsting Shifting Theorem – Transform of $t\,f(t)$, $f(t)/t$, $f^{-1}(t)$, $f^{11}(t)$.

UNIT –V

Inverse Laplace Transforms – Applications to solutions of First Order and Second Order Differential Equations with constant coefficients.

TEXT BOOK:

1. *Kandasamy, P and Thilagavathi, K.*2004. **Mathematics for B.Sc – Branch – I Volume III**. S. Chand and Company Ltd, New Delhi.

REFERENCE BOOK:

1. *Narayanan,S. Manickavasagam Pillai*,T.K. 1991. **Calculus.** S. Viswanathan (Printers and Publishers) Pvt. Ltd, Chennai.

15UMT33B	CORE – VI: STATICS	SEMESTER - III

Total Credits:4
Hours Per Week:3

OBJECTIVES:

1. On successful completion of course the students should realize the concept about the forces, resultant force of more than one force acting on a surface, friction and center of gravity.
2. Also the students can differentiate static and dynamic forces.

CONTENTS

UNIT- I

Forces acting at a point – Parallelogram law-triangle law

UNIT- II

(λ, μ)theorem - Polygon of forces-conditions of equilibrium.

UNIT- III

Parllel Forces-Moments and couples composition of parallel forces (like and unlike)

UNIT- IV

Moment of a force about a point-Varignons theorem - Co-planar forces acting on a rigid body – Theorem on three co-planar forces in equilibrium

UNIT -V

Reduction of a system of co-planar forces to a single force and a couple - necessary & sufficient conditions of equilibrium only – Equation to the line of action of the resultant.

TEXT BOOK :

1. *Venkataraman, M.K*. 1999. **Statics.** Agasthiar Publications, Trichy.

REFERENCE BOOK:

1. *Duraipandian,P. and Laxmi Duraipandian.* 1985. **Mechanics**. S.Chand and Company Ltd, Ram Nagar, New Delhi -55

15UMT3AA	ALLIED –III: STATISTICS FOR MATHEMATICS- I	SEMESTER - III

Total Credits:3
Hours Per Week:7

OBJECTIVES:

1. On successful completion of the paper the students should have understood the concepts of probability and random variable.
2. To gain the knowledge about various discrete and continuous probability distributions.
3. To know about the concepts of correlation and regression.

CONTENTS

UNIT -I

Random variables- Discrete and continuous random variables – Distribution function-properties- Probability mass function, Probability density function-Mathematical expectation – Addition and multiplication theorems on expectations

UNIT- II

Moment generating and cumulative generating - Characteristic functions and their properties. Joint probability distributions-marginal and conditional probability distributions-Independence of random variables-transformation of variables (One & Two dimensional only) Chebychev's inequality, weak law of large numbers and central limit theorem.

UNIT- III

Discrete probability distributions: Binomial, Poisson and Normal distributions and their properties (MGF, Characteristic function, Additive properties, Mean & Variance and simple problems).

UNIT- IV

Exact probability distributions: Chi-square distribution- Student t distribution and f distribution their probability density functions and their properties. (MGF, Characteristic function, Additive properties).

UNIT-V

Curve fitting and principle of least squares: fitting of curves of straight line, second degree parabola, power curve and exponential curves-correlation and regression analysis.

TEXT BOOKS:

1. *Guptha, S.C and Kapoor, V.K.* 2007. **Fundamentals of Mathematical statistics.** S.Chand & co. New Delhi.
2. *Guptha ,C.B and Vijay Guptha*. 2007. **Introduction to Statistical methods.** S.Chand & co.New Delhi.

15UMT3SA	SKILL BASED SUBJECT- I: OPERATIONS RESEARCH -I	SEMESTER– III

Total Credits: 3
Hours Per Week: 3

OBJECTIVES:

1. On successful completion of this course students should have gained knowledge about optimal use of resources.
2. To know about the concept of the transportation Problems and Assignment Problems

CONTENTS

UNIT -I

Basics of O.R – Definition of O.R – Characteristics of O.R - Scientific methods in O.R – Necessary of O.R in Industry – O.R and Decision Making – Scope of O.R in Modern Management – Uses and limitations of O.R. Linear Programming Problem – Formulation of L.P.P – Graphical solutions of L.P.P – Problems.

UNIT- II

Simplex Method – Charnes Penality Method (or) Big – M Method - Two Phase Simplex method – Problems.

UNIT-III

Duality in L.P.P – Concept of duality – Duality and Simplex Method – Problems

UNIT- IV

The transportation Problems – Basic feasible solution by L.C.M – NWC-VAM optimum solutions – unbalanced Transportation problems

UNIT- V

The Assignment Problems – Assignment algorithm – optimum solutions – Unbalanced Assignment Problems.

TEXT BOOKS:

1. *Prem Kumar Gupta,and Hira,D.S. 1998.* **Operations Research.** S. Chand & Company Ltd. Ram Nagar, New Delhi.
2. *Kandiswarup, P. K. Gupta. and Man Mohan*.1998.**Operations Research**. S. Chand & Sons Education Publications, New Delhi.

15UTL41U	பகுதி – 1 தமிழ் தாள் – 4	நான்காம் பருவம்

Total Credits:4
Hours / Week: 5

(இரண்டு ஆண்டுகள் தமிழ் பயிலும் மாணவர்களுக்கு உரியது)

சங்க இலக்கியமும் நாட்டுப்புற இலக்கியமும்

அலகு – 1 எட்டுத்தொகை

1. குறுந்தொகை – (நெய்தல், பாடல் எண் : 57 – சிறைக்குடி ஆந்தையார்)

(மருதம், பாடல் எண்: 61 – தும்பிசேர்கீரன்)

(முல்லை, பாடல் எண்: 167 - கூடலூர்கிழார்)

2. கலித்தொகை – (குறிஞ்சிக்கலி, பாடல் எண் :16 – கபிலர்)

3. அகநானூறு – (பாலை, பாடல் எண் : 43 - நல்லந்துவனார்)

4. புறநானூறு – (பா.எண் : 279 – ஒக்கூர் மாசாத்தியார்,

பா.எண்: 312 - பொன்முடியார்)

அலகு - 2 பத்துப்பாட்டு

1. முல்லைப்பாட்டு – நப்பூதனார்

அலகு - 3 நாட்டுப்புறவியல்

1. நாட்டுப்புறப்பாடல்கள் – அறிமுகம்

2. தாலாட்டுப் பாடல்கள்

3. தொழிற்களப் பாடல்கள்

அலகு - 4 இலக்கிய வரலாறு

1. பத்துப்பாட்டு
2. எட்டுத்தொகை

அலகு - 5 இலக்கணம்

1. அகத்திணை – விளக்கம்
2. புறத்திணை – விளக்கம்

பார்வை நூல்கள்

1 . தமிழ்த்துறை வெளியீடு

2. இலக்கிய வரலாறு – பேராசிரியர் முனைவர் பாக்யமேரி

3. நாட்டுப்புற இயல் ஆய்வு – சு. சக்திவேல்

15UHL41H	PART-I :HINDI-IV	SEMESTER-IV

Total Credits: 4

Hours/week: 5

(**Drama, One Act Play, General Essay**)

1. **Ladai** Sarveshwar Dayal Saksena Publisher : Vani Prakashan New Delhi – 110 002.

2. **One act play :** Ekanki Panchamruth (Excluding Bohr Ka Thara)
Publisher: Govind Prakashan Mathura

3. **General essay**

Book for reference : Aadarsh Nibandh Vinodh Pustak Mandir Hospital Road, Agra – 28

15UML41M	PART-I: MALAYALAM-IV	SEMESTER -IV

Total Credits: 4

Hours / Week: 5

Drama & Folklore Paper IV. Drama & Folklore

Unit I, II & III A Drama

Unit IV & V Folklore

TEXT BOOKS:

1. Unit I, II & III **Lankalakshm**i – *C. N. Sreekantan Nair* (D.C. Books, Kottayam).
2. Unit IV & V **Oru Vadakkanveeragatha** – *M.T. Vasudevan Nair* (Puthariyamkam, Sahithya Kairali Publications, Bhagavathinada P.O.

REFERENCE BOOKS:

1. **Natyasasthram,** *K.P. Narayana Pisharodi*, Trans. (Kerala Sahithya Akademi, Thrissur).
2. **Malayala Nataka Sahithya Charithram**, *G. Sankara Pillai* (Kerala Sahithya Akademi, Thrissur).
3. **Malayala Nataka Sahithya Charithram**, *Vayala Vasudevan Pillai* (Kerala Sahithya Akademi Thrissur).
4. **Natakam – Oru Patanam** (*C. J. Smaraka Prasanga Samithi*, Koothattukulam).
5. **Natakaroopacharcha**, *Kattumadam Narayanan* (NBS, Kottayam)
6. **Folklore** – *Raghavan Payyanadu* (Kerala Bhasha Institute, Trivandrum)

15UFL41F	PART-I: FRENCH-IV	SEMESTER-IV

Total Credits: 4
Hours/week: 5

French Language for Under-graduate Degree Programmes

Compétence Culturelle	Compétence de Communication	Compétence Grammatical
UNITÉ 6 – Problémes problems		
• Le bénvolat	• INTERACTION ORALE: Interroger sur la tristesse, l'abattement, exprimer sa sympathie, rassurer • RÉCEPTION ORALE: Comprendre une interview à la radio • RECEPTION ÉCRITE: Comprendre un test de magazine • PRODUCTION ÉCRITE: Écrire une letter a un(e) amie	• Les pronoms indfinis rien, quelque chose • Le verbe crier • Du pluriel: eau, eu, al • Se soigner, s'excuser, se renseigner, s'appeler • La phrase ngative: ne… plus, ne… jamais, ne… rien, ne… personne
UNITÉ 7 – C'est qui? C'est comment?		
• Les classes socials	INTERACTION ORALE: Décrire quelqu'un RECEPTION ORALE: Comprendre un bulletin météo RECEPTION ÉCRITE: Comprendre une courte interview PRODUCTION ÉCRITE: Écrire des notices biographiques	• Les adjectifs qualificatifs: Formes au masculin et au féminin • ll fait beau, il neige, il pleut… • Le verbe décrier • Les verbs en –indre • Les adjectifs possessifs féminins mon, ton, son devant voyelle ou h
UNITÉ 8 – Et après? Et après		
• La mémoire et l'histoire	• INTERACTION ORALE: Raconter une anecdote, une histoire, attire l'attention • RÉCEPTION ORALE:	• L'imparfait(2) • Les verbs en – oir • Les pronoms démonstratifs ça et

	Comprendre une interview à la radio • RÉCEPTION ÉCRITE: Comprendre des faits divers • PRODUCTION ÉCRITE: Écrire une bréve	cela • Prés de… Loin de… • La forme passive
UNITÉ 9 – Sûr et certain		
• L'université en France	• INTERACTION ORALE : Expreimer un point de vue, exprimer une certitude • RÉCEPTION ORALE : Comprendre et apprecier un poème • RÉCEPTION ÉCRITE : Comprendre un appel à participer à la vie collective • PRODUCTION ÉCRITE : • Ecrire une letter de motivation	• Le futur des verbes *parler, Avoir,être,voir* • Le verbe *valoir* • Par • Les pronoms démonstratifs *celui-ci, cella –là*
UNITÉ 10 – Peut –être…peut-être		
• Le système de santé en France	• INTERACTION ORALE : Exprimer une incertitude, exprimer l'évidence • RÉCEPTION ORALE : Comprendre et apprecier une chanson • RECEPTION ÉCRITE : Comprendre un débat d'idées • PRODUCTION ÉCRITE : Écrire au courier des lecteurs	• Les pronoms personnels objets,indirect *lui, leur* • L'impératif affirmative + COD et COL • Les verbes *en – ayer* • Linterrogation à inversion

TEXT BOOK:

1. *Marcella Di Giura Jean-Claude Beacco,* **Alors II .** Goyal Publishers Pvt Ltd 86, University Block ,Jawahar Nagar (Kamla Nagar), New Delhi – 110007.

15UEG42E	PART – II ENGLISH - IV	SEMESTER IV

Total Credits: 4

Hours per Week: 5

OBJECTIVES:

1. To develop the language competence of the students.
2. To be enriched with functional English.

UNIT -I

1. Mobile and Mixed-up – Anil Darker
2. My Vision for India – Dr. Abdul Kalam
3. Common Sense – Sedgwick, Woodworth

UNIT -II

SHORT STORIES

1. A Room 10 x 8 –K.S. Duggal
2. A Face on the Wall – E.V. Lucas

UNIT -III

SHORT PLAY

1. The Death Trap – H. H. Munro
2. The Never Never Nest – Cedric Mount

UNIT- IV

FUNCTIONAL ENGLISH

1. Communication Skills – Listening, Telephone, Resume & E-Mail
2. Interview & Group Discussion, Parts of the Exercises in each chapter.

UNIT -V

COMPOSITION TASKS

1. Public Speaking – speaking on an official occasion
2. Participating in a meeting
3. Airing grievances
4. Interview Skills
5. Conducting an Interview
6. Interviewing the expert
7. Netiquette
8. Negotiation Skills

TEXT BOOKS:

1. *Nayar, Nandini.2014.* **Treasure Hunt.** Board of Editors, Foundation Books, Chennai.
2. *Daniel, James .P.C***. 1989. English for Career Development, a Course in Functional English**, Orient Longman Private Limited Publications, Bangalore.

REFERENCE BOOKS:

1. *Rajamanickam. A.* 2001**. Everyman's English Grammar.** Macmillan, *Chennai.*
2. *Krishna Mohan and Meera Banerji*. 2005. **Developing Communication Skills.** Macmillan, New Delhi.
3. *Wren, P.C. and H. Martin***.** 1998**. High School English Grammar and Composition.** Macmillan, Chennai.

15UMT43A	CORE –VII: DYNAMICS	SEMESTER– IV

Total Credits:4
Hours Per Week:3

OBJECTIVES:

1. End of this course, the student understands the reason for dynamic changes in the body.
2. To know about the concept of central orbits and Kinetic energy.

CONTENTS

UNIT- I

Projectiles: Path of a projectile-Greatest height-time of filght-range on an inclined plane through the point of projection-Maximum range.

UNIT -II

Central Orbits: Radial and transverse components of velocity and acceleration – area velocity. Differential equation of central orbit – Pedal equations.

UNIT -III

Simple Harmonic Motion: Amplitude, periodic time, phase-composition of two simple harmonic motions of the same period in a straight line and in two perpendicular lines.

UNIT -IV

Impact on a fixed surface: Impulsive force-Impact on a smooth fixed plane –Direct and oblique impact of two smooth spheres.

UNIT -V

Loss of Kinetic energy during direct and oblique impacts.

TEXT BOOK:

1. *Venkataraman, M.K.*1994. **Dynamics.** 11th Edition. Agasthiar Publications. Trichy.

REFERENCES BOOKS:

1. *Dharamapadam , A.V*. 1998.**Dynamics.** S.Viswanathan Printers and Publishers Pvt., Ltd, Chennai.
2. *Viswanatha Naik*, K and Kasi, M.S.1992 .**Dynamics**. Emerald Publishers.
3. *Naryanamurthi. 19*91.**Dynamics.** National Publishers. New Delhi.

15UMT43B	CORE –VIII: PROGRAMMING IN C	SEMESTER– IV

Total Credits: 2
Hours Per Week: 3

OBJECTIVES:

1. On successful completion of the course the students should have: Learnt the basic structure, operators and statements of c language.
2. Learnt the decision making statements and to solve the problems based on it. Learnt arrays, functions and solve the problems regarding about it.

CONTENTS

UNIT -I

Introduction – Importance of C Basic structure of C programme - Character set Constants – Keywords and identifiers – Variables Data types – Declaration of variables – Assigning values to variables –Defining symbolic constants.

UNIT- II

Arithmetic operators - Relational operators - logical operators – assignment operators –increment and decrement operates –Conditional operators – Special operators – Arithmetic expressions –Evaluation of expressions –Precedence of arithmetic operators – Some computational problems –Type conversion in expressions – operator precedence and associating mathematical functions.

UNIT- III

Reading and Writing character – formatted input and output. Decision making with IF statement – Simple IF statement – The if ELSE statement - Nesting of IF…..ELSE statement – The ELSE IF ladder. The Switch statement –The ? Operator –The GOTO statement.

UNIT- IV

The WHILE statement - the DO statement the FOR statement –Jumps in loops.

UNIT -V

One, Two dimensional arrays – Initiating two dimensional arrays – Multidimensional arrays –Declaring and initializing string variables – reading strings from terminal – Writing strings on the screen – Arithmetic operations on characters.

TEXT BOOK:

1. *Balagurusamy, E. 2007.* **Programming in ANSI C** Second Edition. Tata McGraw –Hill Publishing company limited, New Delhi.

REFERENCE BOOK:

1. *Byron Gottfried*. 1998. **Programming with C**. Tata McGrawHill publishing company.

15UMT43P	CORE LAB-I: PROGRAMMING IN C	SEMESTER– IV

Total Credits:2
Hours Per Week:3

1. Write a C program to generate 'N' Fibonacci number.

2. Write a C program to print all possible roots for a given quadratic equation.
3. Write a C program to calculate the statistical values of mean, median, mode, Standard Deviation and variance of the given data.
4. Write a C program to sort a set of numbers.

5. Write a C program to sort the given set of names.

6. Write a C program to find factorial value of a given number 'N' using recursive function call.
7. Write a C program to find the product of two given matrix.
8. Write a C program to prepare pay list for a given data.

15UMT4AA	ALLIED-IV: STATISTICS FOR MATHEMATICS -II	SEMESTER– IV

Credit Points: 3
Hours Per week:4

OBJECTIVE :

1. On successful completion of the paper the students should have understood the concepts of estimation.
2. To know about testing ,sampling and design of experiments.

CONTENTS

UNIT I

Concept of population, sample, statistics, parameter-point estimation-concept of point estimation – Characteristics of Estimator: consistency, unbiasedness, efficiency- sufficiency-Neymann factorization theorem- Cramer Rao inequality -Rao-Blackwell theorem.

UNIT II

Methods of estimation-maximum likelihood, moments, and minimum chi-square –properties-Interval estimation –confidence interval-derivation of confidence intervals based normal, t, and chi-square and F.

UNIT III

Test of hypothesis: Type-I and II errors-power test –Neyman-Pearson Lemma-likelihood ratio tests-concept of most powerful test (statements and results only). Test of significance-standard error-large sample tests with respect to mean, standard deviation, proportion, difference between means, standard deviations and proportions-Small sample test with respect to student t, chi-square and F distributions-simple problems.

UNIT IV

Sampling- Types of sampling: Purposive sampling, Random sampling, simple sampling, Stratified random sampling and systematic sampling- parametric and statistics- sampling distribution of a statistics- standard error- Sampling and non sampling errors.

UNIT V

Analysis of variance: one way& two classifications and their properties-Experimental designs-simpleproblems.

Text Book:

Guptha, S.C and Kapoor, V.K. 2007. **Fundamentals of Mathematical statistics.** S.Chand & co.NewDelhi.

Guptha, S.C and Kapoor, V.K. 2007. **Fundamentals of Applied statistics.** S.Chand & co.New Delhi.

Gupta, S.P. **Statistical Methods.** 2007. S.Chand & co, New Delhi.

15UMT4SA	SKILL BASED SUBJECT –II: OPERATIONS RESEARCH - II	SEMESTER– IV

Total Credits:3
Hours Per Week:3

OBJECTIVES :

1. On successful completion of this course students should have gained knowledge about optimal use of resources.
2. To know about the concept of Queueing Theory

CONTENTS

UNIT- I

Game Theory – Two person zero sum game – The Maxmini – Minimax principle – problems - Solution of 2 x 2 rectangular Games – Domination Property – (2 x n) and (m x 2) graphical method – Problems.

UNIT- II

Queueing Theory – Introduction – Queueing system – Characteristics of Queueing system – symbols and Notation – Classifications of queues – Problems in (M/M/1) : (∞/FIFO); (M/M/1) : (N/FIFO); (M/M/C) : (∞/FIFO); (M/M/C) : (N/FIFO) Models.

UNIT -III

Inventory control – Types of inventories – Inventory costs – EOQ Problem with no shortages – Production problem with no shortages – EOQ with shortages – Production problem with shortages – EOQ with price breaks.

UNIT -IV

Simulation – Introduction – simulation models – Event – Types of simulation - Generation of Random Numbers – Mante-carlo simulation – simulation of queueing system.

UNIT-V

Network scheduling by PERT / CPM – Introduction – Network and basic components – Rules of Network construction – Time calculation in Networks – CPM. PERT – PERT calculations – Cost Analysis – Crashing the Network – Problems.

TEXT BOOKS:

1. *Prem Kumar Gupta and Hira,D.S.*1998.**Operations Research.** S. Chand & Company Ltd, Ram Nagar, New Delhi.
2. *Kandiswarup, Gupta, P. K. and Man Mohan.*1995. **Operations Research.S**. Chand & Sons Education Publications. New Delhi. 12th Revised edition.

15UMT53A	CORE – IX: REAL ANALYSIS - I	SEMESTER – V

Total Credits:4
Hours Per Week:5

OBJECTIVES:

1. **T**he students should gain the knowledge about real and complex numbers, sets and metric space.
2. **T**he students should gain the knowledge about The Riemann - Stieltjes integral

CONTENTS

UNIT- I

The Real and Complex number systems the field axioms, the order axioms – integers – the unique Factorization theorem for integers – Rational numbers – Irrational numbers – Upper bounds, maximum Elements, least upper bound –the completeness axiom –some properties of the supremum – properties of the integers deduced from the completeness axiom- The Archimedian property of the real number system – Rational numbers with finite decimal representation of real numbers – absolute values and the triangle inequality – the Cauchy Schewarz, inequality –plus and minus infinity and the extended real number system.

UNIT- II

Basic notions of a set theory. Notations – ordered pairs – Cartesian product of two sets –Relations and functions – further terminology concerning functions –one –one functions and inverse – composite functions – sequences – similar sets - finite and infinite sets – countable and uncountable sets – uncountability of the real numbersystem – set algebra–countable collection of countable sets.

UNIT- III

Elements of point set topology: Euclidean space R^n –open balls and open sets in R^n. The structure of open Sets in R^n –closed sets and adherent points –The Bolzano –Weierstrass theorem –the Cantor intersection Theorem.

UNIT- IV

Covering – Lindelof covering theorem – the Heine Borel covering theorem – Compactness in R^n – Metric Spaces – point set topology in metric spaces – compact subsets of a metric space – Boundary of a set.

UNIT -V

Convergent sequences in a metric space – Cauchy sequences – Completeness sequences –complete metric Spaces. Limit of a function – Continuous functions – continuity of composite functions. Continuous complex valued and vector valued functions.

TEXT BOOK*:*

1. *Tom M APOSTOL.* 1990. **Mathematical Analysis**. 2nd ed., Addison-Wisely. Narosa Publishing Company, Chennai.

15UMT53B	CORE -X : COMPLEX ANALYSIS - I	SEMESTER – V

Total Credits:4
Hour Per Week:6

OBJECTIVES:

1. The students should gained knowledge about the origin, properties
2. To know about the concept of application of complex numbers and complex functions.

CONTENTS

UNIT -I

Complex number system, Complex number –Field of Complex numbers – Conjugation –
Absolute value -Argument –Simple Mappings.
i) $w = z + \alpha$ ii) $w = az$ iii) $w = 1/z$
invariance of cross-ratio under bilinear transformation – definition of extended complex plane –Stereographic projection.

UNIT –II

Complex functions: Limit of a function – continuity – differentiability – Analytical function defined in a region – necessary conditions for differentiability – sufficient conditions for differentiability – Cauchy-Riemann equation in polar coordinates – Definition of entire function.

UNIT- III

Power Series: Absolute convergence – circle of convergence – Analyticity of the sum of power series in the Circle of convergence (term term differentiation of a series) Elementary functions: Exponential, Logarithmic, Trigonometric and Hyperbolic functions.

UNIT –IV

Conjugate Hormonic functions: Definition and determination, Conformal Mapping: Isogonal mapping –Conformal mapping-Mapping z--->>f(z), where f is analytic, particularly the mappings.

$w = e^Z$; $w = Z^{\frac{1}{2}}$; $w = \sin z$; $w = 1/2(z + 1/z)$

UNIT-V

Complex Integration: Simply and multiply connected regions in the complex plane. Integration of f(z) from definition along a curve joining z1and z2. Proof of Cauchy's Theorem (using Goursat's lemma for a simply connected region). Cauchy's integral formula for higher derivatives (statement only) - Morera's theorem.

TEXT BOOK:

1. *Durai Pandian and Laxmi Durai Pandian*.2003. **Complex Analysis**. Emerald Publications.
2. Unit I Chapter 1 Sections 1.1 to 1.3, 1.6 to 1.9; Chapter 2 Sections 2.1 to 2.2, 2.6 to 2.9, Chapter 7 Section 7.1
3. Unit II Chapter 4 Sections 4.1 to 4.10; Unit III Chapter 6 Sections 6.1 to 6.11
4. Unit IV Chapter 6 Sections 6.12 to 6.13; Chapter 7 Sections 7.6 to 7.9
5. Unit V Chapter 8 Sections 8.1 to 8.9

15UMT53C	CORE –XI: MODERN ALGEBRA- I	SEMESTER – V

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

1. The students should have concrete knowledge about the abstract thinking like sets, groups
2. To know about the concept of rings by proving theorems

CONTENTS

UNIT- I

Sets – mappings – Relations and binary operations – Groups: Abelian group, Symmetric group Definitions and Examples – Basic properties.

UNIT- II

Subgroups – Cyclic subgroup - Index of a group – Order of an element – Fermat theorem – A Counting Principle - Normal Subgroups and Quotient Groups.

UNIT -III

Homomorphisms – Cauchy's theorem for Abelian groups – Sylow's theorem for Abelian groups Automorphisms – Inner automorphism - Cayley's theorem, permutation groups.

UNIT- IV

Rings: Definition and Examples –Some Special Classes of Rings – Commutative ring – Field – Integral domain - Homomorphisms of Rings.

UNIT-V

Ideals and Quotient Rings – More Ideals and Quotient Rings – Maximal ideal – The field of Quotients of an Integral Domain

TEXT BOOK:

1. *Herstein,I.N*. 2003. **Topics in Algebra**. John Wiley & Sons, New York.
2. Unit I Chapter 1 Sections 1.1 to 1.3,Chapter 2 Sections 2.1 to 2.3
3. Unit II Chapter 2 Sections 2.4 to 2.6
4. Unit III Chapter 2 Sections 2.7 to 2.10
5. Unit IV Chapter 3 Sections 3.1 to 3.3
6. Unit V Chapter 3 Sections 3.4 to 3.6.

REFERENCE BOOKS:

1. *Surjeet Singh and Qazi Zameeruddin*.1992. **Modern Algebra.** Vikas Publishing house.
2. *Vasishtha, A.R.*1994-95. **Modern Algebra.** Krishna Prakashan Mandir. Meerut.

15UMT53D	CORE – XII: DISCRETE MATHEMATICS	SEMESTER – V

Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

1. The students should gain knowledge about the Formal languages Automata Theory
2. To know about the concept of Lattices & Boolean Algebra and Graph Theory.

CONTENTS

UNIT- I

Mathematical logic: Connections well formed formulas, Tautology, Equivalence of formulas, Tautological implications, Duality law, Normal forms, Predicates, Variables, Quantifiers, Free and bound Variables. Theory of inference for predicate calculus.

UNIT -II

Relations and functions: Composition of relations, Composition of functions, Inverse functions, one-to- one, onto, one-to-one& onto, onto functions, Hashing functions, Permutation function, Growth of functions. Algebra structures: Semi groups, Free semi groups, Monoids, Groups, Cosets, Sets, Normal subgroups, Homomorphism.

UNIT- III

Formal languages and Automata: Regular expressions, Types of grammar, Regular grammar and finite state automata, Context free and sensitive grammars.

UNIT -IV

Lattices and Boolean algebra: Partial ordering, Poset, Lattices, Boolean algebra, Boolean functions, Theorems, Minimization of Boolean functions.

UNIT- V

Graph Theories: Directed and undirected graphs, Paths, Reachability, Connectedness, Matric representation, Eular paths, Hamiltonean paths, Trees, Binary trees simple theorems, and applications.

TEXT BOOK:

1. *Tremblay, J.P and Manohar, R.P.1975.Discrete* **Mathematical Structures with applications to computer science**. Mc.Graw Hill.

15UMT5EA	ELECTIVE – I: ASTRONOMY – I	SEMESTER – V

Total Credits: 3
Hours Per Week: 5

OBJECTIVES:

1. On successful completion of this course the students should gain knowledge about Astronomy.
2. To know about the concept of Kepler's Laws

CONTENTS

UNIT -I

General description of the Solar system. Comets and meteorites – Spherical trigonometry.

UNIT- II

Celestial sphere – Celestial co – ordinates – Diurnal motion – Variation in length of the day

UNIT -III

Dip – Twilight – Geocentric parallex.

UNIT- IV

Refration – Tangent formula – Cassinis formula.

UNIT- V

Kepler's laws – Relation between true eccentric and mean anamolies.

TEXT BOOK:

1. *Kumaravelu,S and Susheela Kumaravelu.2007.* **Astronomy.** S. Chand & Sons Publications, New Delhi.

15UMT5EB	ELECTIVE – II: NUMERICAL METHODS - I	SEMESTER – V

Total Credits: 3
Hours Per Week: 5

OBJECTIVES:

1. On successful completion of this course the student gain the knowledge about solving the linear equations numerically.
2. To find interpolation by using difference formulae.

CONTENTS

UNIT- I

The solution of numerical algebraic and transcendental Equations: Bisection method – Iteration Method – Convergence condition – Regula Falsi Method – Newton – Raphson method - Convergence Criteria – Order of Convergence.

UNIT -II

Solution of simultaneous linear algebraic equations: Gauss elimination method – Gauss Jordan method – Method of Triangularization – Crouts method – Gauss Jacobi method – Gauss Seidel method.

UNIT- III

Finite Differences: Differences – operators – forward and backward difference tables – Differences of a polynomial – Factorial polynomial – Error propagation in difference table.

UNIT- IV

Interpolation (for equal intervals): Newton's forward and backward formulae – equidistant terms with one or more missing values – Central differences and central differencetable – Gauss forward and backward formulae – Stirlings formula.

UNIT -V

Interpolation (for unequal intervals): Divided differences – Properties – Relations between divided differences and forward differences – Newton's divided differences formula – Lagrange's formula and inverse interpolation.

TEXT BOOK:

1. *Kandasamy. P, Thilagavathi. K and Gunavathi.,K,2007*.**Numerical methods.** S. Chand and Company Ltd, New Delhi – Revised Edition . (Chapters: 3,4,5,6,7 and 8).

REFERENCE BOOKS:

1. *Venkataraman M. K.* 1999.**Numerical Methods in Science and Engineering.** National Publishing company. V Edition.
2. *Sankara Rao K.* 2004.**Numerical Methods for Scientists and Engineers.** 2nd Edition. Prentice Hall India.

15UMT5SA	SKILL BASED SUBJECT –III: OPERATIONS RESEARCH - III	SEMESTER – V

Total Credits: 3
Hours Per Week: 3

OBJECTIVES:

1. To solve Integer Programming Problems, Non-linear Programming Problems and Dynamic Programming problems.
2. It also includes Markov Analysis and Decision Analysis.

CONTENTS

UNIT -I

Integer Programming Problem – Gromory's fractional cut Method – Branch Boud Method.

UNIT -II

Non-linear Programming Problems – General NLPP – Lagrange multiplier – Hessian bordered Matrix – Kuhn Tucker Condition – Problems

UNIT- III

Dynamic Programming Problem – Recursive equation approach – D.P.P Algorithm – Solution of L.P.P by D.P.P.

UNIT-IV

Markov Analysis – Stochastic process – Markov analysis Algorithm.

UNIT- V

Decision Analysis – Decision Making environment – Decisions under uncertainty – Decision under risk – Decision – Tree Analysis.

TEXT BOOKS:

1. *Prem Kumar Gupta*, and Hira, D. S. 1995.**Operations Research**.S. Chand & Company Ltd, Ram Nagar, New Delhi.
2. *Kandiswarup, Gupta. P. K.and Man Mohan*. 2007.**Operations Research** S. Chand & Sons Education Publications, New Delhi.

15UMT63A	CORE –XIII:REAL ANALYSIS - II	SEMESTER– VI

Total Credits:4
Hours Per Week:5

OBJECTIVES:

1. The students should gain the knowledge about real and complex numbers, sets and metric space.
2. The students should gain the knowledge about The Riemann - Stieltjes integral

CONTENTS

UNIT- I

Examples of continuous functions –continuity and inverse images of open or closed sets functions continuous on compact sets –Topological mappings –Bolzano's theorem.

UNIT- II

Connectedness –components of a metric space – Uniform continuity : Uniform continuity and compact sets –fixed point theorem for contractions –monotonic functions.

UNIT -III

Definition of derivative – Derivative and continuity – Algebra of derivatives – the chain rule – one sided derivatives and infinite derivatives – functions with non-zero derivatives – zero derivatives and local extrema – Roll's theorem – The mean value theorem for derivatives –Taylor's formula with remainder.

UNIT –IV

Properties of monotonic functions – functions of bounded variation – total Variation –additive properties of total variation on (a, x) as a function of x – functions of bounded variationexpressed as the difference of increasing functions – continuous functions of bounded variation.

UNIT -V

The Riemann - Stieltjes integral : Introduction –Notation –The definition of Riemann –Stieltjes integral –linear properties –Integration by parts – change of variable in a Riemann –stieltjes integral –Reduction to a Riemann integral.

TEXT BOOK:

1. *Tom M APOSTOL.*1990. **Mathematical Analysis**. 2nd edition. Addison-Wisely. Narosa Publishing Company, Chennai.

15UMT63B	CORE – XIV: COMPLEX ANALYSIS - II	SEMESTER– VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

1. The students should gained knowledge about the origin, properties
2. To know about the concept of application of complex numbers and complex functions.

CONTENTS

UNIT- I

Results based on Cauchy's theorem(I) : Zeros-Cauchy's Inequality – Lioville's theorem – Fundamental theorem of algebra –Maximum modulus theorem –Gauss mean value theorem – Gauss mean value theorem for a harmonic function on a circle .

UNIT -II

Results based on Cauchy's theorem (II) –Taylor's series –Laurent's series .

UNIT -III

Singularities and Residues: Isolated singularities (Removable Singularity, pole and essential singularity) –Residues –Residue theorem.

UNIT- IV

Real definite integrals: Evaluation using the calculus of residues – Integration on the unit circle –Integral with $-\infty$and $+\infty$as lower and upper limits with the following integrals.

i) P(x) /Q(x) where the degree of Q(x) exceeds that ofP(x) at least 2.

ii)(sin ax).f(x), (cos ax).f(x), where a>0 and f(z)$\rightarrow$ 0 AS z $\rightarrow \infty$ and f(z) does not have a
pole on the real axis.

iii)f(x) where f(z) has a finite number of poles on thereal axis. Integral of the type x
$\int$a-1x /(1+x) dx; 0< a <1;

UNIT -V

Meromorphic functions: Theorem on number of zeros minus number of poles –Principle of argument: Rouche's theorem – Theorem that a function which is meromorphic in the extended plane is a rational function.

TEXT BOOK:

1. *Durai Pandian and Laxmi Durai Pandian*.2003. **Complex Analysis** . Emerald Publications.
2. Unit I Chapter 8 Sections 8.10, 8.11
3. Unit II Chapter 9 Sections 9.1 to 9.3, 9.13.
4. Unit III Chapter 9 Sections 9.5 to 9.12, 9.13.
   Chapter 10 Sections 10.1, 10.2 and 10.4.
5. Unit IV Chapter 10 Sections 10.3 and 10.4.
6. Unit V Chapter 11 Sections 11.1 to 11.3 (Omit theorems 11.5 and 11.6)

15UMT6SA	SKILL BASED SUBJECT–IV: MODERN ALGEBRA –II	SEMESTER– VI

Total Credits: 4
Hours Per Week: 6

OBJECTIVES:

1. The students should have concrete knowledge about the abstract thinking like vector space, dual spaces.
2. To know about the concepts of Linear transformations by proving theorems

CONTENTS

UNIT-I

Matrices: Introduction – Addition and Scalar Multiplication of Matrices – Product of Matrices –Transpose of a Matrix – Matrix Inverse – Symmetric and Skew - Symmetric Matrices.

UNIT-II

Hermitian and Skew-Hermitian Matrices – Orthogonal and Unitary Matrices – Rank of a Matrix –Characteristic Roots and Characteristic Vectors of a Square Matrix.

UNIT-III

Vector space: Elementary Basic Concepts – Subspaceof a Vector space - Homomorphism – Isomorphism - Internal and External direct sums - Linear span - Linear Independence and Bases.

UNIT-IV

Dual Spaces – Annihilator of a subspace - Inner Product Spaces – Norm of a Vector – Orthogonal Vectors - Orthogonal Complement of a subspace – Orthonormal set.

UNIT-V

Linear Transformations: Algebra of Linear Transformations – Regular, Singular Transformations – Range of T – Rank of T - Characteristic Roots – Characteristic Vectors - Matrices.

TEXT BOOK:

1. *Balakrishnan,R and Ramabadran,M. 1994.,***Modern Algebra.** Vikas Publishing House Pvt. Ltd, New Delhi, (Second Revised Edition) (For Units I & II)
2. Unit I Chapter 1 Sections 1.1 to 1.3, 1.5 to 1.7
3. Unit II Chapter 1 Sections 1.8 and 1.9 , Chapter 2 Section 2.9, Chapter 3 Section 3.9
4. *Herstein, I.N,* 2003**. Topics in Algebra.** John Wiley &Sons, New York.(For Units III, IV & V)
5. Unit III Chapter 4 Sections 4.1 and 4.2
6. Unit IV Chapter 4 Sections 4.3 and 4.4
7. Unit V Chapter 6 Sections 6.1 , 6.2 and 6.3

REFERENCE BOOKS:

1. *Surjeet Singh and Qazi Zameeruddin. 1992.* **Modern Algebra.**Vikas Publishing house
2. *Vasishtha, A.R. 1994 – 95.***Modern Algebra.** Krishna Prakashan Mandir, Meerut.
3. *Seymour Lipschutz and Marc Lipson.* 2001. **Linear Algebra.** 3rdEdition, McGraw Hill.

15UMT6EA	ELECTIVE- II - ASTRONOMY – II	SEMESTER– VI

Total Credits: 3
Hours Per Week: 5

OBJECTIVES:

1. On successful completion of this course the students should gain knowledge about Astronomy.
2. To know about the concept of Planetory.

CONTENTS

UNIT- I

Time: Equation of time – Convertion of time – Seasons – Calendar.

UNIT- II

Annual Parallax – Abberation.

UNIT- III

Precession – Nutation.

UNIT- IV

The Moon – Eclipses.

UNIT- V

Planetory Phenomenon – The Stellar system.

TEXT BOOK:

1. *Kumaravelu,S and Susheela Kumaravelu*. 2007. **Astronomy.** S. Chand & Sons Publications, New Delhi.

15UMT6EB	ELECTIVE- II: NUMERICAL METHODS - II	SEMESTER– VI

Total Credits: 3
Hours Per Week: 5

OBJECTIVES:

1. On successful completion of this course the student gain the knowledge about solving the linear equations numerically
2. To find Taylor's method, Euler's method and RK method by using difference formulae.

CONTENTS

UNIT -I

Numerical differentiations: Newton's forward and backward formulae to compute the derivatives – Derivative using Stirlings formulae – to find maxima and minima of the function given the tabular values.

UNIT -II

Numerical Integration: Newton – Cote's formula – Trapezoidal rule– Simpson's $1/3^{rd}$ and 3/8 thrules – Gaissian quadrature – two points and three points formulae .

UNIT- III

Difference Equation:Order and degree of a difference equation – solving homogeneous and non – homogeneous linear difference equations.

UNIT -IV

Taylor series method – Euler's method – improved and modified Euler method – Runge Kutta method(fourth order Runge Kutta method only)

UNIT- V

Numerical solution of O.D.E(for first order only): Milne's predictor corrector formulae –Adam-Bashforth predictor corrector formulae – solution of ordinary differential equations by finite difference method (for second order O.D.E).

TEXT BOOK:

1. *Kandasamy,P, Thilagavathi, K and Gunavathi,K* . 2007.**Numerical methods.** S. Chand and Company Ltd, New Delhi – Revised Edition. (Chapters: 3,4,5,6,7 and 8).

REFERENCE BOOKS:

1. *Venkataraman M. K.* 1999. **Numerical Methods in Science and Engineering.** National Publishing company. V Edition.
2. *Sankara Rao K.* 2004. **Numerical Methods for Scientists and Engineers.** 2nd Edition Prentice Hall India.

15UMT6EC	ELECTIVE- III: GRAPH THEORY	SEMESTER– VI

Total Credits: 3
Hours Per Week: 5

OBJECTIVES:

1. On successful completion of this course the students should gain knowledge about Graph Theory.
2. To know about the concept of Hamiltonian Graphs.

CONTENTS

UNIT- I

Graphs –Sub graphs – Degree of a vertex walks, paths and cycles in a Graphs – connectedness cut vertex and cut edge.

UNIT- II

Euler and Hamiltonion Graphs – Algorithm for Enteoriom circuits – Bipartite Graphs –Trees.

UNIT- III

Matrix representation of a graph – vector spaces, associated with a graph – cycle spaces and cut set graphs.

UNIT- IV

Planar graphs – Enter's theorem on planar graphs –characterization of planar graphs (no proofs) of the difficult part of the characterization.

UNIT- V

Directed graphs – Connectivity – Enteoriom Digraphs – Tournaments.

TEXT BOOK:

1. *Chandran,A. 2004.* **A First Course in Graph Theory.** Macmillan Publishers . Chapters 1 to 7.

REFERENCE BOOKS:

1. *Narasingh Deo. 2000.* **Graph Theory.** Prentice Hall of India.
2. *Harary.* 1990. **Graph Theory.** Narosa Publishing HQCK.

15UMT6ED	ELECTIVE- III: AUTOMATA THEORY AND FORMAL LANGUAGES	SEMESTER– VI

Total Credits: 3
Hours Per Week: 5

OBJECTIVES:

1. On successful completion of this course the students should gain knowledge about Automata Theory
2. To know about the concept of Formal Languages.

CONTENTS

UNIT -I

Introduction – phrase structure languages.

UNIT-II

Closure operations.

UNIT-III

Context free languages.

UNIT-IV

Finite state automata.

UNIT-V

Push down automata.

TEXT BOOK:

1. *Rani Sriomoney.1984.* **Formal Languages and Automata.** Christian Literary Society, Madras. Chapters 1 to 6.

REFERENCE BOOKS:

1. *Hopcrot and still man. 1990.* **Formal languages and their relation automata.** Addision Wesley.
2. *Kulin, R.Y. 2000.* **Automata theory-Machines and Languages.** McGraw Hill.

BoS Chairman/HoD
Department of Mathematics
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Dr. P. R. MUTHUSWAMY
PRINCIPAL
Dr. NGP Arts and Science College
Dr. NGP - Kalapatti Road
Coimbatore - 641 048
Tamilnadu, India