BACHELOR OF SCIENCE MATHEMATICS WITH COMPUTER APPLICATIONS

SYLLABUS: 2018-19 (Outcome Based Education)



Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore) Approved by Government of Tamil Nadu and Accredited by NAAC with 'A' Grade (2nd Cycle) Dr. N.G.P.- Kalapatti Road, Coimbatore-641048, Tamil Nadu, India Web: <u>www.drngpasc.ac.in</u> | Email: <u>info@drngpasc.ac.in</u> | Phone: +91-422-2369100

BACHELOR OF SCIENCE MATHEMATICS WITH COMPUTER APPLICATIONS REGULATIONS

ELIGIBILITY

A Candidate for admission to the first year of the **B. Sc. Mathematics with Computer Applications** Degree Programme shall be required to have passed the higher secondary examination conducted by the Govt. of Tamil Nadu with Mathematics as one of the paper are only eligible or other examinations accepted as equivalent there to by the Academic Council, subject to such other conditions as may be prescribed therefore. Business Mathematics, General Mathematics and Statistics subject at HSC shall not be considered as equivalent to Mathematics.

PROGRAMME EDUCATIONAL OBJECTIVES

- 1. To understand the basic rules of logic, including the role of axioms or assumptions
- 2. To Appreciate the role of mathematical proof in formal deductive reasoning
- 3. To Proficiently construct logical arguments and rigorous proofs
- 4. To Formulate and solve abstract mathematical problems
- 5. To Recognize real-world problems that are amenable to mathematical analysis, and formulate mathematical models of such problems
- 6. To Apply mathematical methodologies to open-ended real-world problems

B.Sc., Mathematics with Computer Applications (Students Admitted for the A.Y 2018-2019)

SCHEME OF EXAMINATION

Course Code	Course	Hrs of	Exam	Max Marks			Credit		
course coue	course	ction	n (Hrs)	ĊA	CE	Total	Points		
First Semester									
		Part -	I						
17UTL11T	Tamil-I								
17UHL11H	Hindi-I/	5	3	25	75	100	2		
17UML11M	Malayalam-I/	5	5	25	75	100	3		
17UFL11F	French – I								
		Part -							
17UEG12F	English - I	5	3	25	75	100	3		
		Part – I	II						
17UMA13A	Core –I: Classical Algebra	6	3	25	75	100	4		
17UMA13B	Core -II: Calculus	6	3	25	75	100	4		
17UMA1AA	Allied -I: Statistics – I	6	3	25	75	100	4		
		Part - 1	V						
17UFC1FA	Environmental studies	2*	2	1	50	50	2		
		30				550	20		
Second Semes	ster				2.4				
		Part -	I						
17UTL21T 17UHL21H 17UML21M 17UFL21F	Tamil-II/ Hindi-II/ Malayalam-II/ French – II	5	3	25	75	100	3		

3 Dr.N.G.P Arts and Science College (Autonomous)



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



Part – II							
17UEG22F	English - II	5	3	25	75	100	3
		Part – I	II			I	
17UMA23A	Core -III: Analytical Geometry	6	3	25	75	100	4
18UMA23B	Core -IV: MS Office and Internet	3	3	-	50	50	2
18UMA23P	Core Lab - I : MS Office and Internet	3	3	20	30	50	2
17UMA2AA	Allied- II: Statistics - II	6	3	25	75	100	4
		Part – I	V			I	
17UFC2FA	Value Education: Human Rights	2*	2	-	50	50	2
	0	30				550	20
Third Semest	er						
		Part – I	II	1			
17UMA33A	Core -V: Trigonometry, Vector Calculus and Fourier Series	5	3	25	75	100	4
17UMA33B	Core -VI : Mechanics	5	3	25	75	100	3
17UMA33C	Core -VII: Operations Research-I	4	3	25	75	100	3
17UMA33P	Core Lab – II: RDBMS & Oracle	3	3	20	30	50	2
17UCI3AB	Allied - III :	5	3	25	75	100	4

	Business						
	Accounting - I						
18UMA3SA	Skill Based Course –I : Quantitative Aptitude – I	4	2	-	50	50	4
		Part – I	V				
	NMEC-I	2	2	-	50	50	2
17UFC3FA/ 17UFC3FB/ 17UFC3FC/ 17UFC3FD/ 17UFC3FE	Basic Tamil/ Advanced Tamil (or) Yoga for Human Excellence/ Women's Rights Constitution of India	2*	2	-	50	50	2
		30				600	24
Fourth Semester							
Fourth Semes	ter		I				
Fourth Semes	ter	Part – I	II				
Fourth Semes	ter Core -VIII: Differential Equations and Laplace Transforms	Part – I 4	II 3	25	75	100	4
Fourth Semes	ter Core -VIII: Differential Equations and Laplace Transforms Core -IX: Number Theory	Part - I 4 4	II 3 3	25 25	75	100	4
Fourth Semes	ter Core -VIII: Differential Equations and Laplace Transforms Core -IX: Number Theory Core -X: Operations Research-II	Part - I 4 4	II 3 3 3	25 25 25	75 75 75	100 100 100	4 3 3
Fourth Semes 17UMA43A 17UMA43B 17UMA43C 18UMA43D/ 17UMA53D	ter Core -VIII: Differential Equations and Laplace Transforms Core -IX: Number Theory Core -X: Operations Research-II Core- XI: Fundamentals of Data Science and R	Part - I 4 4 4 2	II 3 3 3 3	25 25 25 -	75 75 75 50	100 100 100 50	4 3 3 2

18UCI4AB	Allied - IV : Business Accounting - II	5	3	25	75	100	4
18UMA4SA	Skill Based Course-II : Quantitative Aptitude – II	4	2	-	50	50	4
		Part – I	V				
	NMEC-II:	2	2	-	50	50	2
17UFC4FA/ 17UFC4FB/ 17UFC4FC/	Tamil / Advanced Tamil (or)General Awareness	2*	2	-	50	50	2
		30				650	26
Fifth Semeste	r						
Part – III							
17UMA53A	Core- XII: Real Analysis I	5	3	25	75	100	5
17UMA53B	Core -XIII: Complex Analysis I	5	3	25	75	100	5
17UMA53C	Core -XIV: Modern Algebra	6	3	25	75	100	4
18UMA53D / 17UMA43D	Core- XV: Programming in C & C++	3	3	-	50	50	2
18UMA53P	Core Lab – IV: Programming in	3	3	20	30	50	2
	C++						
	C++ Elective – I	5	3	25	75	100	4

	LATEX						
	1	Part – I	V				
18UMA53T	Industrial Training		G	rade A	to C		
		30				550	24
Sixth Semeste	er						
		Part – I	II				
17UMA63A	Core- XVI: Real Analysis II	5	3	25	75	100	5
17UMA63B	Core- XVII: Complex Analysis II	5	3	25	75	100	5
17UMA63C	Core -XVIII: Java Programming	3	2	-	50	50	2
17UMA63P	Core Lab - V: Java Programming	3	3	20	30	50	2
	Elective -II :	5	3	25	75	100	4
	Elective -III :	6	3	25	75	100	4
17UMA6SP	Skill based Course -IV: Advanced Excel	3	3	20	30	50	2
		Part -	V				
17UEX65A	Extension Activity	-	-	-	50	50	2
		30				600	26
	otal	3500	140				

ELECTIVE – I

(Student shall select any one of the following Course as Elective in fifth semester)

S.No	Course Code	Name of the Course
1	17UMA5EA	Astronomy-I
2	17UMA5EB	Numerical Methods-I
3	17UMA5EC	Discrete Mathematics

ELECTIVE – II

(Students shall select any one of the following Course as Elective in sixth semester)

S.No	Course Code	Name of the Course
1.	17UMA6EA	Astronomy-II
2.	17UMA6EB	Numerical Methods-II
3.	17UMA6EC	Digital Electronics and Computer Fundamentals

ELECTIVE - III

(Students shall select any one of the following Course as Elective in sixth semester)

S.No	Course Code	Name of the Course
1	17UMA6ED	Automata Theory & Formal
1.	TOWADED	Languages
2.	17UMA6EE	Fuzzy Logic and Neural Networks
3.	17UMA6EF	Graph Theory

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 courses as Non Major Elective Courses during their III and IV semester

S.No	Semester	Course Code	Name of the Course
1.	III	18UNM34B	Mathematics for Competitive Examinations-I
2.	IV	18UNM44B	Mathematics for Competitive Examinations-II

FOR PROGRAMME COMPLETION

Students have to complete the following:

- 1. Part I, II, III, IV and V as mentioned in the scheme.
- 2. Industrial training: Course code 18UMA53T.

•Student must undergo Industrial training for 15 days during Summer Vacation in IV Semester. Internal and external Examiner will evaluate the report in V Semester. Based on the performance Grade will be awarded as follows:

A- 75marks and above

- B- 60-74 marks
- C- 40-59 marks

Below 40 marks - Re Appear

Earning Extra credits is **NOT MANDATORY** for programme completion

Courses	Credit	Total credits
BEC/ Self study courses	1	1
Hindi / French/ Other foreign Language approved by certified Institutions	1	1
Type Writing / Short Hand Course	1	1
Diploma/certificate/CA/ ACS/CMA Foundation	1	1
Representation – Academic/Sports /Social Activities/ Extra Curricular / Co-Curricular activities at University/ District/ State/ National/ International	1	1
Total		5

Extra credits:

Rules:

The students can earn extra credits only if they complete the above during the programme period (I to V semester) and based on the following criteria. Proof of Completion must be submitted in the office of the Controller of Examinations before the commencement of the VI Semester. (Earning Extra credits are not mandatory for programme completion)

1. Student can opt BEC course/ Self study course to earn one credit. They have to Enroll and complete any one of the course during their programme period before fifth semester (I semester to V semester).

Self Study Courses offered by the Department of Mathematics with Computer Applications

S. No.	Semester	Course Code	Course Title
1.	Semester	17UMASS1	Vedic Mathematics
2.		17UMASS2	History of Mathematics

- Student can opt Hindi/ French/ Other foreign Language approved by certified Institutions to earn one credit. The certificate(Hindi) must be obtained from Dakshina Bharat Hindi Prachar Sabha and He/ she has to enroll and complete during their programme period (first to fifth semester)
- 3. Student can opt for Type writing /short hand course to earn one extra credit. He/she has to enroll and complete the course during their programme period to obtain certificate through **Tamil Nadu Board of Technical Education**
- 4. Student can opt for Diploma/certificate/CA/ACS/CMA foundation to earn one extra credit. Student who opt for Diploma/ Certificate course have to enroll any diploma/certificate course offered by Bharathiar University through our Institution. Student who opt for CA/ ACS/CMA have to enroll and complete the foundation level during the programme period.
- 5. Award Winners in Academic/ Representation in Sports /Social Activities/ Extra Curricular/ Co-Curricular Activities at University/ District/ State/ National/ International level can earn one extra credit.

Total Credit Distribution

Course	Credits	Total		Credits	Cumulative Total
Part I: Tamil	3	2x 100	200	06	
Part II: English	3	2x 100	200	06	12
Part III:					
Core	5	4 x 100	400	20	
Core	4	6 x 100	600	24	
Core	3	4x 100	400	12	
Core	2	4 x50	200	08	114
Core Lab	2	5x 50	250	10	
Elective	4	3 x 100	300	12	
Allied Theory	4	4 x 100	400	16	
Skill Based course Theory	4	2 x 50	100	08	
Skill Based course Lab	2	2 x 50	100	04	
Part IV:					
Value Education	2	1 x 50	50	02	
Environmental Studies	2	1 x 50	50	02	12
Foundation Course	2	2 x 50	100	04	
NMEC	2	2 x 50	100	04	
Part V:					

Extension Activity	2	1 x50	50	02	02
Total			3500	140	140

PROGRAMME OUTCOMES

PO Number	PO Statement
PO1	To maintain a core of Mathematical and Computational knowledge that provides a solid foundation for future learning
PO2	To develop a respectable intellectual level seeking to expose the various concepts in Mathematics and Computer Applications
PO3	To enhance the students reasoning, logical, problem solving, employability skills for carrier opportunities
PO4	To promote the interest among students in higher studies and inter disciplinary research
PO5	To develop an advance level of career prospectus in a huge array of fields in mathematics and its applications.

17UTL11T	தமிழ் - தாள் -1	SEMESTER - I
		Total Credits: 3
		Hours per week: 5
குறிக்கோள்:		
≻ மொழிப்ப	ாடங்களின் வாயிலாக தமிழரின் பண்பாடு	, பகுத்தறிவு, கலை
மற்றும் மர	rபு ஆகியவற்றை அறிந்து மாணவர்களின்	

படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

பயனடைவுக்கல்வியின் விளைவாக ஏற்படும் பயன்பாடுகள்:

பாடத்திட்டப்	பாடத்திட்டத்தின் குறிக்கோள்	அறிவுத்திறன்	
பகுப்பு முறை		வெளிப்படும் அளவு	
		முறை	
	வாழ்க்கைத் திறன்கள் (Life Skills) -		
CO1	மாணவனின் செயலாக்கத்திறனைத்	K 1, K 2, K 3	
	தாய்மொழி வாயிலாக ஊக்குவித்தல்		
CO2	மதிப்புக்கல்வி (Attitude and Value	KaK	
002	educations)		
<u></u>	பாட இணைச்செயல்பாடுகள்		
CO_3	(Co-curricular activities)	K 2, K 3, K 4	
CO ₄	சூழலியல் ஆக்கம் (Ecology)	K 4	
CO ₅	மொழி அறிவு (Tamil knowledge)	K ₅ , K ₆	

K₁-Remembering, K₂-Understanding, K₃-Applying, K₄-Analysing, K₅-Evaluating, K

6-Creating

Mapping with Programme outcomes

COs /POs	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	М
CO2	S	М	М	М	М
CO3	S	М	М	М	М
CO4	S	М	М	М	М
CO5	S	М	М	М	М

S – Strong, M – Medium, L – Low

	17UTL11T	தமிழ் - தாள் -1	SEMESTER - I	
L			Total Credits: 3	
	Hours per week:			
	கவிதை – சிறுகதை – இலக்கிய வரலாறு – இலக்கணம்			

அலகு 1-கவிதைகள் - நாட்டுப்பற்று

1 பாரததேசம் . – பாரதியார்

.2புத்தகசாலை,புதிய உலகு செய்வோம்– பாரதிதாசன்

.3ஒற்றுமையே உயிர்நிலை – கவிமணி

.4அவனும் அவளும் நாமக்கல் கவிஞர் –

அலகு – சமூகமும் 2, இயற்கையும்

.1ஒப்பில்லாத சமுதாயம்அப்துல் – ரகுமான்

.2காகிதப்பூக்கள் காமராசன்.நா -

.3கரிக்கிறது தாய்ப்பால்- ஆரூர் தமிழ்நாடன்

.4மரங்கள்– மு மேத்தா.

.5ஹைகூ கவிதைகள் 10)கவிதைகள்(

அலகு – பெண்ணியம் 3

- 1. தற்காத்தல் பொன்மணி வைரமுத்து
- 2. மாங்கல்ய மரமும் தொட்டில் மரமும் ஆண்டாள் பிரியாதர்சினி
- 3. அம்மா செல்வநாயகி
- 4. நீரில் அலையும் முகம் வெண்ணிலா.அ -

அலகு 4 -சிறுகதைகள்

- 1. பொன்னகரம் புதுமைப்பித்தன் –
- 2. விடியுமா? கு.ரா.ப.
- 3. குருபீடம் ஜெயகாந்தன்
- 4. காய்ச்சமரம் ராஜநாராயணன்.கி –
- 5. புதியபாலம் நா பார்த்தசாரதி .
- 6. பூ –.....மேலாண்மை பொன்னுசாமி
- 7. வேட்கை- சூர்யகாந்தன்

அலகு 5 -இலக்கிய வரலாறு , இலக்கணம்

.1தமிழ்க் கவிதையின் தோற்றமும் வளர்ச்சியும் மரபு),புதுக்கவிதைகள்(

.2தமிழ்ச் சிறுகதையின் தோற்றமும் வளர்ச்சியும்

.3வல்லினம் மிகும், மிகா இடங்கள்

.4ர,ற ; ல, ழ, ள ; ண, ந,ன, வேறுபாடு

பார்வை நூல்கள் :

.1செய்யுள் திரட்டு – தமிழ்த்துறை வெளியீடு

.2இலக்கிய வரலாறு பேராசிரியர் முனைவர் பாக்யமேரி -

17UHL11H	HINDI-I	SEMESTER - I

Total Credits: 3 Hours Per Week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge
Number		Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Apply the knowledge writing critical views on fiction	К3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	Μ	Μ	Μ	S
CO2	S	Μ	Μ	Μ	S
CO3	S	М	S	Μ	S
CO4	S	Μ	S	Μ	S
CO5	S	Μ	S	Μ	S

S – Strong, M – Medium, L – Low

17UHL11H	HINDI-I	SEMESTER - I
		Total Credits: 3
		Hours Per Week: 5
TINIT I	CONTENTS	
UNII - I गटरा =	प्रतन गरम पंगर (तम प्रकाश)	
णप् प - व	ति गत्य राजह (जय प्रयोश) निया	
	ाजया निन्द	
416 2- 4		
पाठ ३- ब	हता पानी निमला	
पाठ ४- र	ाष्ट्र पता महात्मा गाँधी	
प्रकाशकः	: सु मत्र प्रकाशन	
204 लीत	ना अपार्ट्मेंट्स, 15 हेस्टिंग्स रोड'	
अशोक	नगर इलाहाबाद-211001	
UNIT – II		
कहानी कुंज-	डाँ वी.पी. 'अ मताभ' (पाठ १-४)	
प्रकाशकः	: गो वन्द प्रकाशन	
सदर बा	जार, मथुरा	
उत्तर प्र	देश-281001	
UNIT – III		
व्याकरण	ा : श्ब्द वचार (संज्ञा, सर्वनाम, कारक, वशेश्ण)	
पुस्तकः	व्याकरण प्रदिप - रामदेव	
प्रकाशक	ः हिन्दी भवन ३६	
टेगोर न	गर	
इलाहाबा	द-211024	
UNIT - IV		
अनुवाद	अभ्यास-॥। (केवल अंग्रेजी से हिन्दी में)	
(पाठ 1 t	io 10)	
प्रकाशक: द क्षण	भारत प्रचार सभा चेनैई -17	

17UML11M	MALAYALAM-I	SEMESTER-I

Total Credits: 3 Hours per week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge
Number		Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Apply the knowledge writing critical views on	К3
	fiction	
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

S – Strong, M – Medium, L – Low

17UML11M	MALAYALAM-I	SEMESTER-I
		SEIVILS I EK-I

Total Credits: 3 Hours Per Week: 5

CONTENTS

Paper I Prose, Composition & Translation

This paper will have the following five units:

- **1. UNIT I &II** Novel
- 2. UNIT III & IV Short story
- **3. UNIT V** Composition & Translation

TEXT BOOKS:

- 1. Unit I &II -Naalukettu M.T. Vasudevan Nair (D.C. Books, Kottayam, Kerala)
- 2. Unit III & IV Manikkianum Mattu Prathana Kathakalum Lalithampika Antharjanam (D.C.Books, Kottayam, Kerala)
- 3. 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 –Dr. M.Leelavathi (Kerala Sahithya Academy, Trichur)
- 2. Malayala Novel sahithya Charitram -K.M.Tharakan(N.B.S. Kottayam)
- 3. Malayala Nataka Sahithya Charitram-G.Sankarapillai(D.C.Books, Kottayam)
- 4. Cherukatha Innale Innu –M.Achuyuthan(D.C. Books, Kottayam)
- Sahithya Charitram Prasthanangalilude-Dr. K.M. George, (Chief Editor) (D.C. Books, Kottayam)

17UFL11F	FRENCH- I	SEMESTER- I

Total Credit: 3 Hours per week: 5

Preamble

- To Acquire Competence in General Communication Skills Oral + Written
 Comprehension & Expression
- To Introduce the Culture, life style and the civilization aspects of the French people as well as of France
- To help the students to acquire Competency in translating simple French sentences into English and vice versa

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge
Number		Level
CO1	Learn the Basic verbs, numbers and accents	K1
CO2	To learn the adjectives and the classroom	K2
	environment in France	
CO3	Learn the Plural, Articles and the Hobbies	К3
CO4	To learn the Cultural Activity in France	K3
CO5	To learn the Sentiments, life style of the French people	K2
	and the usage of the conditional tense	

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

S – Strong, M – Medium, L – Low

17UFL11F	FRENCH- I
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SEMESTER-I

Total Credit: 3 Hours per week: 5

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

	 annonce RÉCEPTION ÉCRITE: Comprendre un article (titres et illustrations) PRODUCTION ÉCRITE: écrire des slogans 	l' • Être(présent)I'heure • Ll faut+nom Ll faut+infinitive • Pharses verbe+complément, Complément+verbe
UNITÉ 4 - Dimanc	he	
 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 – Domma	nge!	
 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 Nepas

TEXT BOOK:

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

17UEG12F ENGLISH – I SEMESTER - I	17UEG12F	ENGLISH – I	SEMESTER - I
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Total Credits: 3 Hours per week: 5

PREAMBLE:

To expose students to language competency through literary works and to obtain development in various genres of English Literature and the skills of the language

COURSE OUTCOMES:

On successful completion of the course, students will be able to

СО	CO Statement	Knowledge
Number		Level
CO1	Analyze the genre of prose through the works of	K 4
	Martin Luther King, M. K. Gandhi and Jesse Owens	
CO2	Interpret Poetry through the poems of Tagore, George	K 2
	Herbert and John Milton	
CO3	Analyze the techniques of Short Story writing through	K 4
	the works of R. K. Narayan, Guy De Manupassant and	
	Bonnie Chamberlain.	
CO4	Interpret the techniques of One Act Play through the	K 2
	play by Ramu Ramanathan	
CO5	Explain the fundamentals of basic Grammar through	K 2
	Functional English	

MAPPING WITH PROGRAMME OUTCOME

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	М	S	S	S	S
CO2	S	М	S	S	S
CO3	S	М	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	М

S – Strong, M – Medium, L – Low

17UEG12F	ENGLISH – I	SEMESTER - I
		Total Credits: 3
		Hours per week: 5
	CONTENTS	
UNIT I - PROSE		
I Hav	e a Dream – Martin Luther King Jr.	
At Scl	hool – M.K. Gandhi	
My G	reatest Olympic Prize – Jesse Owens	
UNIT II – POETR	Y	

UN

Where the Mind is without Fear - Rabindranath Tagore

Pulley – George Herbert

On His Blindness - John Milton

UNIT III - SHORT STORY

The Gateman's Gift – R.K. Narayan

The Necklace – Guy De Maupassant

The Face of Judas Iscariot - Bonnie Chamberlain

UNIT IV - ONE ACT PLAY

The Boy Who Stopped Smiling - Ramu Ramanthan

UNIT V - FUNCTIONAL GRAMMAR AND COMPOSITION

Sentences, Verbs - Tenses and Voice Letter - Writing Concord, **Dialogue Writing**

TEXT BOOK:

1. Board of Editors. 2016. Stream – A Course book to enhance Language and Life Skills. Chennai: New Century Book House.

REFRENCE BOOK:

Wren and Martin, *High School English Grammar and Composition* S.

17UMA13A

CORE – I : CLASSICAL ALGEBRA

SEMESTER - I

PREAMBLE

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

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Learn sequences and series, Binomial theorem, Exponential series and Logarithmic series	K1
CO 2	Learn the Convergence or Divergence of sequences and series comparison tests- Cauchy's condensation test, De Alembert's ratio test, Cauchy's roots test, Raabe's test	K1
CO 3	Distinguish the Convergence / Divergence of series	K2
CO 4	Distinguish the various tests in testing, studying the convergence/ divergence of rules.	К2
CO 5	Solve the problems in theory of equations and Convergence / Divergence of series	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	М	М
CO4	S	S	М	М	М
CO5	S	S	М	М	М

MAPPING WITH PROGRAMME OUTCOMES

S-Strong; M-Medium; L-Low

CORE – I : CLASSICAL ALGEBRA

SEMESTER – I

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT - I

BINOMIAL THEOREM: Binomial theorem for a positive integral index – Multinomial theorem (Expansion of the product $(a + b + c + d + \cdots)^n$) – Vandermonde's Theorem- Application of the Binomial Theorem to the summation of series.

UNIT - II

EXPONENTIAL AND LOGARITHMIC SERIES: The Exponential limit - The exponential theorem-Summation of Exponential series - The logarithmic series (Theorem) - Modification of the logarithmic series - Euler's constant - Summation of logarithmic series.

UNIT - III

CONVERGENCY AND DIVERGENCY OF SERIES: General theorems – series of positive terms - comparison tests- Cauchy's condensation test-De Alembert's ratio list –Cauchy's roots test - Raabe's test.

UNIT - IV

THEORY OF EQUATIONS : Roots of an equation- Equation with real coefficient imaginary roots occurs in pairs – Equation with rational coefficients irrational roots occur in pair – Relation between the roots and coefficient of equation – Transformations of equations – Reciprocal equations.

UNIT – V

THEORY OF EQUATIONS :Descarte's rule of signs - Rolle's theorem –Multiple root – Strum's theorem – solution of numerical equations - Horner's method.

TEXT BOOK

- Manicavachasam Pillai, T.K. Natarajan, T. and Ganapathy, K.S. 2015. Algebra-VOLUME I. S. Viswanatham Printers & Publishers Private Ltd.
 - UNIT I : Chapter 3 :Pg.no 99 124, 143 152
 UNIT II : Chapter 4 :Pg.no 191 207, 213 230
 UNIT III : Chapter 2 :Pg.no 43 83
 UNIT IV : Chapter 6 : Pg.no 282 303, 318 337
 UNIT V : Chapter 6 : Pg.no 351 365, 376 381

REFERENCE BOOKS

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

17UMA13B	CORE - II : CALCULUS	SEMESTER - I

PREAMBLE

- 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.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Recall differentiation, integration and properties of definite integral.	K1
CO 2	Learn partial differentiation, circle, radius and centre of curvature, Gamma and Beta Function.	K1
CO 3	Distinguish integrations of various forms of functions.	K2
CO 4	Compute radius of curvature in polar co-ordinates, Involute, Evolute and double integrals.	К3
CO 5	Solve the problems in pedal equations, triple integrals, Gamma, Beta function and Application of Gamma function to multiple integrals.	K3

Mapping with Programme outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	М	М
CO4	S	S	М	М	М
CO5	S	S	М	М	М

S-Strong; M-Medium; L-Low

17UMA13B	CORE - II : CALCULUS	SEMESTER - I

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT - I

Curvature: Circle, Radius and Center of curvature – Cartesian formula for the radius of curvature – The co-ordinates of the center of curvature – Evolute and involute – Radius of curvature in polar co-ordinates – Pedal equation of a curve

UNIT - II

Partial Differentiation: Successive partial derivatives – Function of function rule
– Total differential coefficient- Special case – Implicit functions – Homogeneous
functions – Euler's theorem- Partial derivatives of a function of two functions.

UNIT – III

Integration: Integration of f'(x)/f(x), $F\{f(x)\}f'(x)$, $(px + q)/\sqrt{ax^2 + bx + c} - (x-a)(b-x)$, $1/\sqrt{(x-a)(b-x)}$, 1/(acosx + bsinx + c), $1/(a^2cos^2x + b^2sin^2x + c)$ - Integration by parts

UNIT -IV

Multiple integrals: Evaluation of the double integral – Double integral in polar co-ordinates- Triple integral- Applications to calculations of areas and volumes.

UNIT – V

Beta and Gamma functions : Recurrence formula for gamma functions – Properties of beta functions – Relation between beta and gamma functions – Applications of gamma functions to multiple integrals .

TEXT BOOKS

 Narayanan,S and Manicavachasam Pillai, T.K. 2015. Calculus volume I. S.Viswanathan Publishers, Chennai.

UNIT-I : Chapter X : Section 2.1-2.8

UNIT-II : Chapter VIII : Section 1.1 to 1.6

Narayanan,S and Manicavachasam Pillai, T.K. 2009. Calculus volume II.
 S.Viswanathan Publishers, Chennai.

UNIT-III : Chapter 1: Page No.16-17; 20-21; 43-45; 57-58; 63-65.

UNIT-IV : Chapter 5 :2.1,2.2,3.1,4,5.1

UNIT-V : Chapter 7: 2.1, 2.2, 2.3, 3, 4, 5, 6

REFERENCE BOOKS

- Kandasamy, P and Thilagavathy, K. 2004. Mathematics for B.Sc Volume I and II. S.Chand and Company.
- 2. Shanthi Narayanan and Kapoor, J.N. 2003. A Text book of Calculus.S.Chand& Co.

17UMA1AA	ALLIED - I: STATISTICS - I	SEMESTER - I

PREAMBLE

- 1. On successful completion of this course the students should understood the concepts of Probability and Random variable.
- 2. Should understand the concept of Correlation and Regression analysis

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Learn about Basic Concepts of probability theory.	K1
CO 2	Learn the Concept of random variables and two dimensional random variables	K1
CO 3	Interpret the Mathematical Expectation	К2
CO 4	Interrelate Correlation and Regression Analysis	К2
CO 5	Solve the problems in Correlation and Regression Analysis, Moments, Conditional Probability	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	М	М	М
CO4	S	S	S	S	S
CO5	S	S	М	М	М

S-Strong; M-Medium; L-Low

17UMA1AA	ALLIED - I : STATISTICS - I	SEMESTER - I

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT –I

Theory of Probability-I : Introduction –Short History- Basic Terminology-Mathematical Probability- Statistical probability- Subjective Probability-Mathematical Tools- Axiomatic Approach to Probability- Some Theorems on Probability- Conditional Probability-Multiplication Theorem on Probability-Independents Events.

UNIT –II

Random Variables and Distribution Functions: Introduction - Distribution Function- Discrete Random Variable- Continuous Random Variable - Two Dimensional Random Variable

UNIT –III

Mathematical Expectation: Introduction- Expected Value of a Random Variable-Expected Value of function of a Random Variable- Properties of Expectation-Properties of Variance – Covariance – Moments of Bivariate Probability Distributions-Conditional Expectation and Conditional Variance.

UNIT -IV

Generating Functions and Law of Large Numbers: Moment Generating Functions - Cumulants - Characteristic Functions – Some important theorems-Chebychev's Inequality - Weak law of Large Numbers.
UNIT -V

Correlation : Introduction – Meaning of Correlation- Scatter Diagram- Karl Pearson's Coefficient of Correlation- Rank Correlation. **Linear and Curvilinear Regression:** Introduction - Linear Regression- Curvilinear Regression

TEXT BOOKS:

1. Gupta. S.C and V.K.Kapoor. 2007. Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.

Unit -I : Chapter 3: Section 3.1 – 3.12

Unit -II : Chapter 5: Section 5.1 - 5.5

Unit -III : Chapter 6: Section 6.1 – 6.6, 6.8 & 6.9

Unit -IV : Chapter 7: Section 7.1-7.5 & 7.7

Unit -V : Chapter 10: Section 10.1-10.4 & 10.7

Chapter 11: Section 11.1-11.3

REFERENCE BOOKS:

- 1. *Gupta, C.B and Vijay Gupta*.2007. **Introduction to Statistical Methods** S.Chand & Co, New Delhi.
- 2. Sanchetti, D.C. Kapoor, V.K.2010. Statistics, S.Chand & Co, New Delhi.
- 3. Vittal, B.R. 2015. Mathematical Statistics, Margham Publication, Chennai.

17UFC1FAPART-IV: VALUE EDUCATION-
ENVIRONMENTAL STUDIESSEMESTER - I

Total Credits: 2 Hours per 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.

TEXT BOOK:

1. *Kumaraswamy. K, A. Alagappa Moses and M. Vasanthy.* 2001, Environmental Studies. Thanjavur- National Offset Printers.

17UTL21T		தமிழ் - தாள் - 2	SEMESTER - II	
			Total Credits: 3	
			Hours per week: 5	
குறிக்கோள்:				
🕨 மொழிப்	ப்பாடங்களில்	ர் வாயிலாக தமிழரின் பண்ட	பாடு , பகுத்தறிவு, கலை	
மற்றும்	மரபு ஆகியல	<u></u> பற்றை அறிந்து மாணவர்கள	ரின்	
படைப்	பாக்கத்திறன்	ரகளை ஊக்குவித்தல்		
பயனடைவுக்க	ல்வியின் வி	ளைவாக ஏற்படும் பயன்பா(டுகள்:	
பாடத்திட்டப்	பாடத்த	ிட்டத்தின் குறிக்கோள்	அறிவுத்திறன்	
பகுப்பு முறை			வெளிப்படும் அளவு முறை	
	வாழ்க்கைத்	, திறன்கள் (Life Skills) -		
CO ₁	மாணவனி	ன் செயலாக்கத்திறனைத்	K 1, K 2, K 3	
	தாய்மொழி	வாயிலாக ஊக்குவித்தல்		
<u></u>	மதிப்புக்கவ்	ചി (Attitude and Value	K K	
	educations)	N 2, N 4	
	பாட இனை			
	(Co-curricu	lar activities)	N 2, N 3, N 4	
CO ₄	சூழலியல் 🚽	ஆக்கம் (Ecology)	K 4	
CO ₅	மொழி அற்	ിഖു (Tamil knowledge)	K ₅ , K ₆	

K₁-Remembering, K₂-Understanding, K₃-Applying, K₄-Analysing, K₅-Evaluating, K

6-Creating

Mapping with Programme outcomes

COs /POs	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	М
CO2	S	М	М	М	М
CO3	S	М	М	М	М
CO4	S	М	М	М	М
CO5	S	М	М	М	М

S – Strong, M – Medium, L – Low

17UTL21T	தமிழ் 2- தாள் -	SEMESTER - II
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Total Credits: 3 Hours per week: 5

செய்யுள் – உரைநடை – இலக்கிய வரலாறும் இலக்கணமும்

அலகு – 1

.1திருக்குறள் -அ(83 எண்.அ) கூடா நட்பு .

- ஆ (93 எண்.அ) கள்ளுண்ணாமை.
- (110 எண்.அ) குறிப்பறிதல் .இ
- ஈ (113 எண்.அ) காதல் சிறப்புரைத்தல் .
- .2மூதுரை 10) ஔவையார்–பாடல்கள்6 -,7,9,10,14,16,17,23,26,30(

அலகு – 2

.1புரட்சிக்கவி –பாரதிதாசன்

அலகு – உரைநடை 3

- 1. சங்க நெறிகள் மாணிக்கம்.சுப.வ -
- 2. கர்ணனும் கும்பகர்ணனும் -ராசேதுப்பிள்ளை.பி.
- 3. அறிவியலும் கலையும்வரதராசன்.மு -

அலகு – உரைநடை 4

- 1. வாழ்வியல் இயக்கம் குன்றக்குடி அடிகளார்
- 2. பெரியார் உணர்த்தும் சுயமரியாதையும் சமதர்மமும் ஆனைமுத்து.வே -
- 3. போதைப்பொருள் அமுதன்

அலகு 5 -இலக்கிய வரலாறும் இலக்கணமும்(பாடத்திட்டம் தழுவியது)

- 1. பதினெண்கீழ்க்கணக்கு நூல்கள்
- 2. தமிழ் உரைநடையின் தோற்றமும் வளர்ச்சியும்
- 3. வழு, வழுவமைதி,வழாநிலை
- 4. பிறமொழிச் சொற்களைத் தமிழில் மொழிபெயர்த்தல்

பார்வை நூல்கள்:

.1செய்யுள் திரட்டு – தமிழ்த்துறை வெளியீடு

.2இலக்கிய வரலாறு பேராசிரியர் முனைவர் பாக்யமேரி -

17UHL11H	HINDI-II	SEMESTER - II
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Total Credits: 3 Hours per week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

СО	CO Statements	Knowledge
Number		Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Apply the knowledge writing critical views on fiction	K3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	Μ	S
CO2	S	Μ	Μ	Μ	S
CO3	S	М	S	Μ	S
CO4	S	М	S	Μ	S
CO5	S	Μ	S	Μ	S

S - Strong, M - Medium, L - Low

17UHL21H	HINDI-II	SEMESTER - II
		Total Credits: 3 Hours Per Week: 5
	CONTENTS	
UNIT – I		
आधुनिक पद्य	– शबरी (श्री नरेश मेहता)	
प्रकाशक: लोकभ	ारती प्रकाशन	
पहली म	ांजिल, दरबारी बिल्डिंग,	
	महात्मा गाँधी मार्ग, इलाहाबाद-211001	
UNIT – II		
उपन्यास	: सेवासदन-प्रेमचन्द	
प्रकाशकः	सु मत्र प्रकाशन	
204 लील	ग अपार्ट्मेंट्स, 15 हेस्टिंग्स रोड'	
अशोक व	नगर इलाहाबाद-211001	
UNIT – III		
अनुवाद	अभ्यास-॥। (केवल हिन्दी से अंग्रेजी में)	
(पाठ 1t	o 10)	

प्रकाशक: द क्षण भारत प्रचार सभा चेनैई -17

UNIT - IV

पत्र लेखनः (औपचारिक या अनौपचारिक)

Total Credits: 3 Hours per week: 5

Preamble:

- > To develop the writing ability and develop reading skill.
- To learn various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process.

Course Outcomes:

On the successful completion of the course, students will be able to

CO Number	CO Statements	Knowledge
		Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Apply the knowledge writing critical views on fiction	К3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

S - Strong, M - Medium, L - Low

17UML21M	MALAYALAM-II	SEMESTER- II

Total Credit: 3 Hours per week: 5

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 III, IV & V Kappirikalude Nattil *S.K. Pottakkadu* (D.C. Books, Kottayam)
- 2. Kannerum Kinavum V.T. Bhatathirippadu Autobiography (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)

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17UFL21F	FRENCH- II	SEMESTER-

Total Credit: 3 Hours per week: 5

Π

Preamble

- To Acquire Competence in General Communication Skills Oral + Written
 Comprehension & Expression
- To Introduce the Culture, life style and the civilization aspects of the French people as well as of France
- To help the students to acquire Competency in translating simple French sentences into English and vice versa

Course Outcomes:

On the successful completion of the course, students will be able to

CO Number	CO Statements	Knowledge
		Level
CO1	Learn the Basic verbs, numbers and accents	K1
CO2	To learn the adjectives and the classroom	K2
	environment in France	
CO3	Learn the Plural, Articles and the Hobbies	K3
CO4	To learn the Cultural Activity in France	K3
CO5	To learn the Sentiments, life style of the French	K2
	people and the usage of the conditional tense	

K1-Remembering, K2- Understanding, K3- Applying

Mapping with Programme Outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	М	М	М	S
CO2	S	М	М	М	S
CO3	S	М	S	М	S
CO4	S	М	S	М	S
CO5	S	М	S	М	S

S – Strong, M – Medium, L – Low

17UFL21F	FRENCH-II	SEMESTER- II	
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Total Credit: 3 Hours per week: 5

Compétence	Compétence De	Compétence
Culturelle	communication	grammaticale
UNITÉ 1 – 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): Interrogatifet Exclamatif À + infinitive Les articles: n,une,des
UNITÉ 2 – 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 3 – 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: écrire des cartes postales 	 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: Présent, impératif En Suisse, au Maroc, aux Etats-Unis
UNITÉ 4- Mais oui	!	<u> </u>
• 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 5- Mais nor	h!	
• De la ville à la campagne	 INTERACTION: Débat:: exprimer l'accord, exprimer le Désaccord RECEPTION ORALE: Comprendre un message sur un répondeur 	 Le verbe devoir: Present et participe passé Le verbe vivre, present Aller + infinitive Venir+ infinitive Etre pour/contre

téléphonique	
 RÉCEPTION ÉCRITE: Comprendre un témoignage 	
• PRODUCTION ECRITE: Rediger des petites Announces immobilieres	

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

17UEG22F	ENGLISH - II	SEMESTER - II

Total Credits: 3 Hours per week: 5

PREAMBLE

To expose students to language competency through literary works and to obtain

development in various genres of English Literature and the skills of the language

COURSE OUTCOMES

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Develop the knowledge of prose through the works of Martin Luther King, M. K. Gandhi and Jesse Owens	K 3
CO2	Interpret Poetry through the poems of Tagore, George Herbert and John Milton	K 2
CO3	Identify the techniques of Short Story writing through the works of R. K. Narayan, Guy De Manupassant and Bonnie Chamberlain.	K 3
CO4	Interpret the techniques of One Act Play through the play by Ramu Ramanathan	K 2
CO5	Explain the fundamentals of basic Grammar through Functional English	K 2

MAPPING WITH PROGRAMME OUTCOME

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	М	S	S	S	S
CO2	S	М	S	S	S
CO3	S	М	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	М

S – Strong, M – Medium, L – Low

17UEG22F

ENGLISH - II

SEMESTER - II

Total Credits: 3 Hours per week: 5

CONTENTS

UNIT I - PROSE

Words of Wisdom – Chetan Bhagat

Acceptance Speech - Noble Peace Prize - Mother Teresa

My Early Days - Dr. A.P.J.Abdul Kalam

UNIT II – POETRY

In the Bazaars of Hyderabad - Sarojini Naidu

Telephonic Conversation – Wole Soyinka

Mending Wall - Robert Frost

UNIT III - SHORT STORY

The Old Man at the Bridge – Ernest Hemingway The Model Millionaire – Oscar Wilde White Washing the Fence – Mark Twain

UNIT IV - ONE ACT PLAY

Soul Gone Home - Langston Hughes

UNIT V - FUNCTIONAL GRAMMAR AND COMPOSITION

Relative Pronoun Degrees of Comparison Reported Speech Correction of Sentences

Business Correspondence

Memo, Reports, Proposals, Resume & CV Writing

TEXT BOOK:

 Board of Editors. 2016. Stream – A Course book to enhance Language and Life Skills. Chennai: New Century Book House.

REFRENCE BOOK:

1. Wren and Martin, *High School English Grammar and Composition* S. Chand Publishing 2006, New Delhi.

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CORE - III : ANALYTICAL GEOMETRY

SEMESTER - II

PREAMBLE

- 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.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Learn the concepts and equations of a plane, line, sphere, cone, cylinder and conicoid.	K1
CO 2	Interpret the plane section of a sphere, explain the right circular cone, right circular cylinder.	K2
CO 3	Illustrate the SD between the two lines and co-planar lines	K2
CO 4	Solve the problems in sphere, cone, cylinder, conicoid, symmetric form of straight line	K3
CO 5	Apply the tangent plane, normal to solve the problems in sphere, cone, cylinder and conicoid	K3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	М	М	М
CO4	S	S	М	М	М
CO5	S	S	М	М	М

S-Strong; M-Medium; L-Low

17UMA23A	CORE - III : ANALYTICAL GEOMETRY	SEMESTER - II

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT – I

The plane: General equations of a plane – several forms for the equations of a plane- The equation of the plane passing through the points – direction cosines – angle between the planes – intersection of two plane

UNIT – II

The straight lines : Symmetrical form- Straight line passing through two points – The plane and the straight line- Angle between the plane-coplanar lines- The shortest distance between two lines – Simple problems

UNIT – III

The sphere: The standard equation of a sphere – The plane section of a sphere is a circle – Equation of a circle on a sphere – Intersection of two sphere is a circle – The equation of the tangent plane to the sphere

UNIT - IV

Cone : Right circular cone – Intersection of a straight line and a quadric cone-Tangent plane and normal – Condition for the plane to touch the quadric cone – The angle between the lines in which the plane cuts the cone

UNIT – V

Cylinder : Right circular cylinder – Enveloping cylinder – Central quadrics – The intersection of a line and a quadric – Tangents and tangent planes- The condition for the plane to touch the conicoid.

TEXT BOOK

- 1. *ManicavachagomPillay T.K. and Natarajan T.* 2011. **Analytical Geometry** (Three Dimensions). S.Viswanathanpublishers.
 - UNIT I :Chapter -II:1,2,3,4,5,6,7,8,9
 - UNIT II :Chapter III -1,2,3,4,5,6,7,8
 - UNIT III :Chapter -IV:1,2,3,4,5,6,7,8
 - UNIT IV :Chapter -V:1,2,3,4,5,6
 - UNIT V :Chapter -V 8,9,10,11,12

REFERENCE BOOK

 DuraiPandian, P. Laxmiduraipandian and Mukilan, D.2003. Analytical Geometry 3D.S. Chand and Company.

18UMA23B	CORE - IV: MS OFFICE AND	SEMESTED II
	INTERNET	SEIVIES I EK - II

PREAMBLE

- 1. To enable students gain fundamental knowledge about Microsoft office and its applications.
- 2. To know about the usage of Internet.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Demonstrate the basic knowledge of MS – Word, Excel, Power point and Internet.	K1
CO2.	Perform working knowledge of using Word's advance formatting techniques and uses of accepted business style formatting conventions.	K2
CO3.	Recognize how to secure information's, working knowledge of organizing, use of formulas and complex data in MS -Excel.	K2
CO4.	Apply the theory behind and the basic usage of Network usage and E-Marketing.	К3
CO5.	Develop working knowledge of integrating information from other MS programming into Power point presentation, effective way to convey message through Internet.	К3

Mapping with Programme outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	М	М	М
CO5	S	S	М	М	М

S-Strong : M-Medium : L-Low

18UMA23B

CORE – IV: MS OFFICE AND INTERNET

SEMESTER - II

Total Credits:2 Hours Per Week:3

CONTENTS

UNIT – I

Create Word documents: Create word document – Enter text – select and copy text – correct proofing error- apply styles- insert a picture- page layout- word count- create a table- convert text to table – print document

UNIT – II

Complex document: Start a booklet- choose page arrangement- create a structure- import text- insert illustrations – add captions-Table of contents- insert preface- decorate the page-templates-create the publications

Calculations: Start Excel- Enter data – Quick fill-Sum and difference- formatting – rounding up – find the function-templates

UNIT – III

Presentations: Start a presentation- expand the slide-insert a picture- apply a theme-animations- run the show- other views – presenter view- use and download a template- print the slide show- rehearse timings- save the options – package for CD.

UNIT-IV

Web Browser – Connecting to the Internet –Internet Service Provider(ISP)-Types of Internet connections- Internet Explorer-Features of Internet Explorer 6-Searching the Internet-Online help tutorials-File Transmission protocol-Browser settings. E-mail: E-Mail-Creating an E-mail ID- sending and receiving mails-Attaching a file-Functions, Advantages, Disadvantage of E-mail, Instant Messaging (IM).

UNIT-V

E-Marketing – Customer tracking- E-Electronic Advertising (E-Advertising)-Search Engine- Customer Relationship Management (CRM)-Online Payments-Smart Card. Connecting to the Internet: Internet Connection Concepts-Domain Name System and DNS Servers-Types of Internet Connection.

TEXT BOOK

- 1. Michael price.2011.Office 2010. Tata McGraw-Hill publisher private limited.
 - UNIT -I : Chapter 1
 - UNIT -II : Chapter 2
 - UNIT III : Chapter 3 and 4
- 2. P.Rizwan Ahmed.2013.Internet and its Applications. Margham Publications.
 - UNIT IV : Chapter 2 and 3

UNIT – V : Chapter 6

REFERENCE BOOK

- 1. Bible 2007. Microsoft Office 2007. Wiley India.
- 2. Stephen.L.Nelson. 1999, The complete Reference office 2000, Tata McGraw Hill Publishing company Ltd.
- 3. Sheila.S.Dienes. 1995, Microsoft Office Professional, BPB Publication.
- 4. Harley Hahn. 1996, The internet -Complete reference, second edition, Tata McGraw Hill.
- 5. Research and Development Wing.2003, Internet and Web design, Macmillan India Ltd.

18UMA23P	CORE LAB – I : MS OFFICE AND	SEMESTER _ II
	INTERNET	5EME51EK - 11

Total Credits: 2 Hours Per Week:3

CONTENTS

MS - WORD

- 1. Type the text, check spelling and grammar bullets and numbering list items, align the text to left, right justify and center.
- 2. Prepare a job application letter enclosing your Bio-Data.
- 3. Create a Labels and Performing Mail Merger Operation.
- 4. Type the Mathematical Equations involving Powers and fractions.
- 5. Create a Multi dimensional Matrix.

MS – EXCEL

- 6. Prepare a Worksheet Using Formulae.
- 7. Create an electricity bill in a worksheet.
- 8. Illustrate a class performance by drawing graphs.

MS - POWERPOINT

- 9. Prepare a PowerPoint presentation with at least three slides for department Inaugural function.
- 10. Draw an organization chart with minimum three hierarchical levels.
- 11. Insert an excel chart into a Power Point slide.

INTERNET

- 12. Creating E-Mail ID
- 13. Composing and sending E-mail with attachment
- 14. Forwarding a mail and to reply a mail
- 15. Searching newspaper sites, TV Program schedules in internet
- 16. Verifying University/Colleges details in websites
- 17. Upload Resume in any job portal.

17UMA2AA	ALLIED - II : STATISTICS - II	SEMESTER - II
17UMA2AA	ALLIED – II: STATISTICS - II	SEMESTER - II

PREAMBLE

1. On successful completion of this course the students should understood the concepts of various discrete and continuous probability distributions.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Learn moments, mean deviation, Modes of Binomial, Poisson and Normal Distribution.	K1
CO 2	Explain moment characteristic function of Rectangular distribution and Gamma distribution	K2
CO 3	Interpret Chi-square, student's t and F Distribution	K2
CO 4	Solve the problems in Chi-square, student's Distribution	K3
CO 5	Solve the problems in Normal distribution, Poission distribution, Gamma distribution, Fisher's t distribution, Fisher's Z distribution.	K3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	М	М
CO4	S	S	М	М	М
CO5	S	S	М	М	М

S-Strong; M-Medium; L-Low

17UMA2AA

ALLIED - II : STATISTICS -II

SEMESTER - II

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT I

Discrete Probability Distributions: Introduction - Discrete Uniform Distribution -Bernoulli Distribution - Binomial Distribution –Poisson Distribution

UNIT II

Continuous Probability Distributions: Introduction - Normal distribution - Rectangular or Uniform Distribution - Gamma Distribution

UNIT III

Exact Sampling Distributions-I: Introduction - Derivation of the Chi-Square Distribution- Moment Generating Function of Chi-square Distribution- Some theorems on Chi-Square Distribution- Linear Transformation – Applications of Chi-square Distribution

UNIT IV

Exact Sampling Distributions- II: Introduction- Student's t - Distribution-Applications of t- Distribution

UNIT V

Exact Sampling Distributions –II: F-distribution – Applications of F – Distribution - Relation between t and F Distributions - Relation between F and Chi-Square Distributions

TEXT BOOKS

1. *Gupta. S.C and V.K.Kapoor.* 2007. Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.

Unit-I : Chapter 8 : Section 8.1 – 8.5

Unit -II : Chapter 9 : Section 9.1-9.3 & 9.5

Unit -III : Chapter 15: Section 15.1-15.6

Unit -IV : Chapter 16: Section 16.1-16.3

Unit-V : Chapter 16: Section 16.5-16.8

REFERENCE BOOKS

- 1. *Kapur, J.M and Saxena,* H.C. 2001. **Mathematical Statistics.** S.Chand & Co, New Delhi.
- Gupta.C.B and Vijay Gupta.2007. An Introduction to Statistical Methods S.Chand & Co, New Delhi.
- 3. *Vittal.B.R.* 2015. Mathematical Statistics, Margham Publication, Chennai.

17UFC2FA

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 crosscultural 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
 - b. Violation by State
 - c. Violation by Individuals
 - d. Nuclear Weapons and terrorism
 - e. Safeguards.

REFERENCE BOOKS:

- 1. Dey A. K, 2002, Environmental Chemistry. New Delhi Vile Dasaus Ltd.
- 3. Gawande . E.N. Value Oriented Education. Vision for better living.

New Delhi, Saruptsons.

- Brain Trust Aliyar, 2008, Value Education for health, happiness and harmony. Vethathiri publications, Erode.
- 5. Ignacimuthu S. J. S, 1999, Values for life. Bombay Better Yourself.
- 6. *Seetharam. R. (Ed),* 1998 , **Becoming a better Teacher** Madras Academic Staff College.
- 7. *Grose. D. N* , 2005, **A text book of Value Education.** Dominant Publishers and Distributors, New Delhi.
- 8. Shrimali K. L, 1974, A Search for Values in Education. Vikas Publishers, Delhi.
- 9. Yogesh Kumar Singh & Ruchika Nath , 2005, Value Education. P. H Publishing Corporation, New Delhi.
- 10. Venkataram & Sandhiya. N, 2001, Research in Value Education.

APH Publishing Corporation, New Delhi.

- 11. *Ruhela S. P.* **Human Value and Education.** Sterling publishers, New Delhi.
- 12. Brain Trust Aliyar, 2004, Value Education for Health, Happiness and

Harmony. Vethathiri publications , Erode.

- 13. *Swami Vivekananda*, 2008, **Personality Development.** Advaita Ashrama, Kolkata.
- 14. Swami Jagadatmananda, Learn to Live. Sri Ramakrishna Math, Chennai.

17UMA33A

CORE- V: TRIGONOMETRY, VECTOR CALCULUS AND FOURIER SERIES

SEMESTER - III

PREAMBLE

- 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.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Recall the expansion of trigonometric function and hyperbolic function	K1
CO 2	Solve the logarithmic of complex quantities using trigonometric concept	K2
CO 3	Learn basic concept of vector calculus and line, surface and volume integrals	К3
CO 4	Verify Gauss Divergence , Green's and Stroke's theorem in vector calculus	К3
CO 5	Introduce general periodic function and learn how to express then as a Fourier series, which are sums of sins and cosines	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	М	S	S
CO4	S	М	S	М	S
CO5	S	S	S	S	S

S-Strong; M-Medium; L-Low

17UMA33A

CORE- V: TRIGONOMETRY, VECTOR CALCULUS AND FOURIER SERIES

SEMESTER - III

Total Credits : 4 Hours Per Week : 5

CONTENTS

UNIT – I

Expansion : Expansion of $cosn\theta$ and $sinn\theta$ - powers of sines and cosines of θ in terms of functions of multiples of θ – Expansion of $cos^n\theta$ and $sin^n\theta$ - **Hyperbolic functions**: Definition – Relations between hyperbolic function – Inverse hyperbolic functions.

UNIT -II

Logarithm of complex quantities: Definition –Logarithm of x + iy – General value of log(x + iy)- Simple problems. **Summations of Trigonometrical series**: Method of differences- sum of sine of n angles in A.P- sum of cosines of n angles in A.P- summation of series by using complex quantities

UNIT – III

Vectors Differentiation: Definition of vectors – Some standard results – Gradient – Divergence – Curl – Solenoidal – Irrotational problems.

UNIT -IV

Vector Integration : Line integral - surface and volume integrals – Gauss divergence theorem – Green's theorem – Stokes theorem- Problems .

UNIT – V

Fourier series: Definition- Finding Fourier coefficients for a given periodic function with period 2π - Odd and even functions – Half range series .

TEXT BOOKS

 Narayanan,S and Manicavachagom Pillay .T.K. 2011. Trigonometry. S.Vishwanathan Pvt.Ltd.

UNIT I: Chapter 3: Section 1, 4, 4.1

Chapter 4: Section 1, 2, 2.1, 2.2, 2.3

UNIT II:Chapter 5: Section 5, 5.1, 5.2

Chapter 6: Section 1, 2, 3

2. *Vittal,P.R and Malini,.V.* 2014.**Vector Analysis**. Margham publications Chennai.

UNIT III: Chapter 1

UNIT IV: Chapter 2

3. *Narayanan.S and Manicavachagom Pillay .T.K.*2009. Fourier Series. S.VishwanathanPvt.Ltd.

UNIT V: Chapter 1: Section 1, 2, 3, 4, 5.1, 5.2

REFERENCE BOOKS

- Kandasamy, P. and Thilagavathi, K. 2003. Mathematics Volume IV (Vector Calculus, Fourier series) S. Chand & Company Ltd., New Delhi. (Unit-I&II).
- Durai Pandian, P. Kayalal Pachaiyappa. 2014. Vector Analysis. S.Chand & Company Ltd., New Delhi. (Unit-III &IV).

17UMA33B

SEMESTER - III

PREAMBLE

- 1. This course aims to provide models for some real life problems.
- 2. To provide a strong foundation in understanding the concepts of mechanism. To know how the friction is regulating the motion of objects.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO1	Define the basic concepts, Laws and theorems of forces, work, projectile and simple Harmonic motion.	K1
CO2	Understand the relation between the forces and work done by the forces.	K2
CO3	Demonstrate the equilibrium of a system of forces and reduction of system of forces.	K2
CO4	Develop the general solution for Simple Harmonic Motion.	К3
CO5	Build the path, greatest height, time of flight and range on horizontal plane as well as the range on an inclined	K3

Mapping with Programme outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	S	L
CO2	S	М	L	S	L
CO3	S	М	S	S	L
CO4	S	S	S	М	М
CO5	S	S	S	М	S

S-Strong; M-Medium; L-Low

CORE - VI: MECHANICS

SEMESTER - III

Total Credits : 3 Hours Per Week : 5

CONTENTS

UNIT - I

Forces acting at a point – parallelogram of forces-triangle of forces - the polygon of forces - Lami's theorem-resolution of a force – conditions of equilibrium of any number of forces acting upon a particle.

UNIT- II

Coplanar forces acting on a rigid body: Theorem on reduction of any number of coplanar forces – condition for a system of coplanar forces to reduce to a single force or to a couple – conditions of equilibrium of a system of coplanar forces.

UNIT- III

Virtual work: Work - method of virtual work-principle of virtual work for a system of coplanar forces acting on a body - Forces which may be omitted in forming the equation of virtual work - work done by an extensible string - work done by the weight of a body - Application of the principle of virtual work.

UNIT -IV

Projectiles: Two fundamental principles - path of a projectile- characteristics of the motion of a projectile: Greatest height - time of flight-range on the horizontal plane through the point of projection - range on an inclined plane-maximum range.

UNIT- V

Simple harmonic motion: Simple Harmonic motion in a straight line – General solution and geometrical representation of SHM - Composition of two simple harmonic motions of the same period in a straight line and in two perpendicular lines.

TEXT BOOKS

 Venkataraman. M.K. 2016. Statics. 18th edition. Agasthiar Publications, Trichy.

UNIT I : Chapter 2

UNIT II : Chapter 6 (Section 6.1 – 6.12)

UNIT III : Chapter 9

 Venkataraman .M.K. 2001. Dynamics. 10th Edition. Agasthiar Publications. Trichy.

UNIT IV : Chapter 6 (Section 6.1 to 6.16)

UNIT IV : Chapter 10 (Section 10.1 to 10.7)

REFERENCE BOOKS

- 1. *Vittal P.R and Anantha Narayanan V.* 2014. Dynamics.Margham Publications.
- 2. Bali.N.P.2007.STATICS. Lakshmi Publications Pvt. Ltd.
| 17UMA33C | CORE -VII: OPERATIONS RESEARCH-I | SEMESTER-III |
|----------|----------------------------------|--------------|
|----------|----------------------------------|--------------|

PREAMBLE

- 1. The aim of this course is to provide student with a broad and in depth knowledge of a range of Operations Research models and techniques, which can be applied to a variety of industrial fields.
- 2. To know about the concept of simplex and duality.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Learn the basic concepts, models, methodology and applications of the Operations Research.	K1
CO2.	Demonstrate a real-world problem as a mathematical programming model to their optimization using graphical, Simplex, Two-phase and Big-M method.	K2
CO3.	Understand the relationship between a linear program and its dual, including strong duality and complementary slackness	К2
CO4.	Build the concept of a Transportation Model and Assignment Model to develop the initial basic feasible solution for the same.	K2
CO5.	Construct the formulation and solution for the Linear Programming Problems to get an optimal solution.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	М	S	S
CO3	S	М	S	М	S
CO4	S	S	S	М	S
CO5	S	S	S	М	S

S-Strong : M-Medium : L-Low

CORE -VII: OPERATIONS RESEARCH-I

SEMESTER-III

Total Credits:3 Hours Per Week:4

CONTENTS

UNIT - I

Operations Research-An Overview: Origin and Development of O.R - Nature and features in O.R - Modeling in O.R-General solution methods for O.R Models - Scientific Method for O.R - Methodology and Applications of O.R .

Linear Programming Problem: Introduction - Mathematical Formulation of the problem – Graphical solutions Method.

UNIT - II

Linear Programming Problem: Introduction - The computational Procedure: Simplex Method – Use of Artificial variables - Two Phase method and Big – M Method (Method of Penalties).

UNIT - III

Duality in Linear Programming: Introduction - General Primal - Dual Pair -Formulating a Dual Problem - Primal Dual Pair in Matrix form - Duality and Simplex Method - Dual Simplex Method.

UNIT - IV

Transportation Problems: Introduction- General Transportation Problem - The Transportation Table – solution of a Transportation Problem - Finding an Initial Basic Feasible solution - Degeneracy in Transportation Problem - Transportation Algorithm (MODI Method) – unbalanced Transportation Problems

UNIT - V

Assignment Problem: Introduction-Mathematical Formulation of the Problem-The Assignment Method – Unbalanced Assignment Problems - Special cases in Assignment Problem – The Travelling salesman Problem.

TEXT BOOK

 Kandiswarup, P. K. Gupta. Man Mohan.2003. Operations Research. Sultan Chand & Sons Education Publications, New Delhi.

UNIT I : Chapter 1 Section 1.1-1.7 : Chapter 2 Section 2.1-2.2 : Chapter 3 Section 3.1-3.3 UNIT II : Chapter 4 Section 4.1, 4.3, 4.4 UNIT III: Chapter 5 Section 5.1-5.4, 5.7 & 5.9 UNIT IV: Chapter 10 Section 10.1-10.12

UNIT V: Chapter 11 Section 11.1-11.4, 11.6

REFERENCE BOOKS

- 1. *Gupta, P.K. and. Hira, D.S,* 2002. Problems in Operations Research. S. Chand Publication.
- 2. Vittal, P.R, 2013. Operations Research .Margham Publishers, Chennai.
- Taha, H.A. 2006. Operations Research: An Introduction. Eighth Edition.
 Prentice Hall of India Private Limited, New Delhi.

17UMA33P	CORE LAB-II: RDBMS AND ORACLE	SEMESTER – III	
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Total Credits:2 Hours Per Week:3

CONTENTS

RDBMS AND ORACLE LAB

- 1. Create tables and write simple queries using
 - a. Comparison operators
 - b. Logical Operators
 - c. Set operators
- 2. Create tables and write simple queries using Sorting and Grouping
- 3. Write Queries using GRANT and REVOKE
- 4. Creation of reports using column format
- 5. Update and alter tables using SQL
- 6. Write a PL/SQL to split the student's information table into two, one with the passed and other withy failed.
- 7. Write a PL/SQL block to prepare the electricity bill
- 8. Write Queries using the following string functions :
 a)CONCAT b) LENGTH c) LTRIM d) REPLACE e)SUBSTR
 f)RTRIM g)REVERSE h) UPPER i) TRIM j)INITCAP
- 9. Write Queries using the following number functions :
 - a) ABS b) CIEL c) FLOOR d) MOD e) POWER
 - **f**)LN **g**)LOG **h**)ROUND **i**) SQRT **j**) TRUNC
- 10. Write Queries using the following Aggregate and date functions :

a) AVG	b) SUM	c) MAX	d) MIN
e) COUNT	f) STDDEV	g) VARIENCE	h) SYSOLATE
I) SYSTTIM	ESTAMP	j) ADD-MONT	HS

- 11. Write PL/SQL block to join two tables with Roll number and Address.
- 12. Create a database Trigger to check the data validity of record.
- 13. Write a PL/SQL program for Armstrong number.
- 14. Write PL/SQL program to swap two numbers without using temporary variable.
- 15. Write PL/SQL program to print the pattern.

PREAMBLE

- 1. To analyze business transactions from an accounting viewpoint.
- 2. To recognize, record, and classify new accounting data.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Describe the accounting cycle, write simple journal entries and compute a trial balance	K1
CO 2	Obtain knowledge to prepare final accounts of a company and to gain skills to detect and prevent errors in journal and ledger accounts	K2
CO 3	Capture the procedures relating to bills of exchange, Account current and Average due date	К2
CO 4	Understand accounting treatment for consignment and Joint venture	К3
CO 5	Perform cost volume profit analysis and identify relevant costs.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	М	М	S	М	S
CO2	М	М	S	М	S
CO3	L	М	М	М	М
CO4	L	М	М	М	М
CO5	L	М	S	L	S

S-Strong; M-Medium; L-Low

17UCI3AB

ALLIED- III: BUSINESS ACCOUNTING – I

SEMESTER - III

Total Credits : 4 Hours Per Week : 5

CONTENTS

UNIT – I

Fundamentals of Book Keeping: Definition, objectives, methods of accounting, Branches of accounting, Types of Accounts and Accounting rules –Accounting Concepts and Conventions–Journal–Ledger– Subsidiary books: Purchases Book, Sales Book, Purchases Returns, Sales Return book, Cash Book (Single Column, Double Column and Triple Column) – Trial balance.

UNIT – II

Final accounts of a sole trader with adjustments: Trading Account, Profit and loss account, Balance Sheet, Adjustments

UNIT – III

Bill of exchange: Definition of bill of exchange, essentials of Bill of exchange, classification of bill of exchange, Accounting Treatment Of Bill Of Exchange (bill retained, bill discounted with bank, bill endorsed, bill sent for collection, renewal of bill, Accommodation bills)–Average Due Date: Meaning, determination of due date, types of problems (where amount is lent in different installments and where amount lent in single installment)–Account current: Meaning, Methods of Calculation of Interest : Interest table method, Product Method, Red Ink Interest Method, Époque Method and varying interest rate method.

UNIT – IV

Accounting for consignments and Joint ventures: Consignment Meaning, definition, features, account sales, valuation of unsold stock, goods sent on consignment at cost price and invoice price, various commission to consignee (only Problem). Joint venture: Meaning, features, distinction between joint venture and partnership, joint venture and consignment, accounting treatment for joint venture: when keeping separate sets of books is kept and without keeping separate set of books (Only Theory).

UNIT – V

Cost accounting – Meaning - definition – Difference between cost accounting and financial accounting- Advantages and disadvantages- Element of cost - preparation cost sheet – stock levels-EOQ-Methods of pricing of stock issue-FIFO-LIFO Simple average method – weighted average method.

TEXT BOOKS

- Vinayakam N., Mani P.L., and Nagarajan K.L, 2003, Principles of Accountancy, S.Chand & Company Ltd., New Delhi
- 2. *Jain S P and Narang K L*, 2000, **Cost Accounting**, Kalyani publishers, New Delhi

REFERENCE BOOKS

- 1. *Gupta R.L., Gupta V.K. and Shukla M.C.,* 2006, **Financial Accounting**, Sultan chand& sons, New Delhi.
- 2. *Maheswari S.K., and Reddy T.S.,* 2005, **Advanced Accountancy**, Vikas publishers, New Delhi.

18UMA3SA

SKILL BASED COURSE -I: **QUANTITATIVE APTITUDE I**

SEMESTER - III

PREAMBLE:

- 1. On successful completion of this course the students should gain knowledge about the course wise aptitude.
- 2. Solving questions by various methods.

COURSE OUTCOMES:

On the successful completion of the course, student will be able to

CO	CO Statement	Knowledge
Number	CO Statement	Level
CO 1	Learn about the various types of equations	K1
CO 2	Learn about the Geometry , Progression	K1
CO 3	Determine the Limits and continuity	K2
CO 4	Determine the Maxima and Minima	K2
CO 5	Solve the questions for singular points	K3

Mapping with Programme Outcomes

COS/POS	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	М	S	S	М
CO 2	S	S	S	S	М
CO 3	S	М	S	S	S
CO 4	S	S	М	S	S
CO 5	S	S	S	S	S

S- Strong; M-Medium ;L-Low

18UMA3SA

SKILL BASED COURSE -I: QUANTITATIVE APTITUDE I

SEMESTER – III

Credits: 4 Hours Per Week: 4

CONTENTS

UNIT - I

Elementary algebra – Linear Equations – Quadratic Equations and inequation

UNIT – II

Progression - Geometry - Trigonometry

UNIT - III

Differential Calculus: Function - Limit and Continuity and differentiability

UNIT – IV

Differential Calculus :Rolle's Theorem-Meanvalue theorem-Taylor's Theorem-Rate of change- Tangents and Normals- Maxima and Minima

UNIT - V

Differential Calculus : Curvature – Asymptotes –Singular Points –Curve Tracing.

TEXT BOOKS:

- 1. Abhijit Guha. 2017. Quantitative Aptitude. Mc Graw Hill, 6th Edition
- Objective Mathematics(for civil services). Anil kumar Garg & H.B.Pandey.Upkar's Prakashan, Agra-2.

REFERENCE BOOK:

- 1. *Agarwal, R.S.* 2015. **Quantitative Aptitude.** Revised Edition. S.Chand and Company Ltd, Ram Nagar, New Delhi -55.
- 2. Praveen R.V.2013.Quantitative Aptitude and Logical reasoning.PHI Learning (P) Ltd. Delhi

18UNM34B

NMEC-I :MATHEMATICS FOR COMPETITIVE EXAMINATIONS - I

SEMESTER - III

Total Credits:2 Hours Per Week:2

CONTENTS

UNIT - I

Elementary algebra – Linear Equations – Quadratic Equations and inequation.

UNIT – II

Progression - Geometry - Trigonometry.

UNIT - III

Differential Calculus: Function – Limit and Continuity and differentiability.

UNIT – IV

Differential Calculus :Rolle's Theorem-Meanvalue theorem-Taylor's Theorem-Rate of change.

UNIT - V

Differential Calculus : Curvature – Asymptotes –Singular.

TEXT BOOKS:

- 1. Abhijit Guha. 2017. Quantitative Aptitude. Mc Graw Hill, 6th Edition
- Objective Mathematics(for civil services). Anil kumar Garg & H.B.Pandey.Upkar's Prakashan, Agra-2.

REFERENCE BOOK:

- 1. *Agarwal, R.S.* 2015. **Quantitative Aptitude.** Revised Edition. S.Chand and Company Ltd, Ram Nagar, New Delhi -55.
- 2. Praveen R.V.2013.Quantitative Aptitude and Logical reasoning.PHI Learning (P) Ltd. Delhi.

17UFC3FA	பகுதி 1 : அடிப்படைத்தமிழ் தாள்: 4 –	SEMESTER- III
	(Basic Tamil)	

இளங்கலைஆம் கல்வியாண்டு முதல் சேர்வோர்க்குரியது 2018 – 2017 10)மற்றும் – 12ஆம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயிலாதவர்களுக்கு((பருவத் தேர்வு உண்டு)

அலகு .தமிழ் மொழியின் அடிப்படைக் கூறுகள் .1 : அ) எழுத்துகள் :

- உயிர் எழுத்துக்கள் குறில் , நெடில் எழுத்துகள்
- மெய் எழுத்துக்கள் வல்லினம், மெல்லினம், இடையினம்
- உயிர்மெய் எழுத்துக்கள்

ஆ) சொற்களின் வகைகள் : பெயர்ச்சொல், வினைச்சொல் – விளக்கம்

(எ.கா.)

அலகு குறிப்பு எழுதுதல் .2 :

- பெயர், முகவரி, பாடப்பிரிவு , கல்லூரியின் முகவரி
- தமிழ் மாதங்கள்(12), வாரநாட்கள்(7), எண்கள் (ஒன்று முதல் பத்து வரை), வடிவங்கள், வண்ணங்கள்
- ஊர்வன, பறப்பன, விலங்குகள், மனிதர்களின்
 உறவுப்பெயர்கள்
- இந்திய மாநிலங்கள், நதிகள், தேசத் தலைவர்கள் பற்றிய குறிப்புகள்

வினாத்தாள் அமைப்பு முறை - மொத்த			
மதிப்பெ	ண்கள் - 50		
பகுதி –	சரியான விடையைத் தேர்வு	10x2=20	
அ	செய்தல்		அனைத்து அலகுகளில்
பகுதி –	அரைப்பக்க அளவில்	5x3=15	இருந்தும் வினாக்கள்
ஆ	விடையளிக்க		அமைதல் வேண்டும்
பகுதி-	இரண்டு பக்க அளவில்	1x15=15	
Ø	விடையளிக்க		

17UFC3FB	பகுதி –2 :சிறப்புத் தமிழ் தாள் : 1	SEMESTER- III
	(Advanced Tamil)	
இளங்	 கலைஆம் கல்வியாண்டு முதல் சேர்வோர்க்	குரியது 2018 – 2017
)10 மற்று	் – 12ஆம் வகுப்புகளில் தமிழ் மொழிப்ப	் ாடம் பயின்றவர்களுக்கு
, , , ,	உரியது(
	(பருவத் தேர்வு உண்டு)	
அலகு மரபுச்	s கவிதைகள் :1 –	
அ	பாரதியார் கவிதைகள்(
	● தமிழ்நாடு	
	∙ மனதில் உறுதி வேண்டும்	
	∙ வருகின்ற பாரதம் (பா.எண்.5-8)	
ஆ)	பாரதிதாசன் கவிதைகள்	
	● இன்பத்தமிழ்	
	● நீங்களே சொல்லுங்கள்	
	∙ உலக ஒற்றுமை	
	∙ வாளினை எடடா!	
அலகு – 2 : ட	புதுக்கவிதைகள்	
	 கம்பன் கவியரங்கக் கவிதை - மு.மேத் 	ந்தா
	 தமிழா! நீ பேசுவது தமிழா! - காசியா 	னந்தன்
	 நட்புக் காலம் (10 கவிதைகள்) - அறி 	வுமதி கவிதைகள்
அலகு இலக்	கணம் : 3 –	
	 வல்லினம் மிகும் மற்றும் மிகா இடங் 	கள்
	• ர, ற, - ல, ழ, ள - ந, ண, ன - வேறுட	பாடு அறிதல்
அலகு கடிதா	ங்கள் எழுதுதல் :4 <i>–</i>	
	● பாராட்டுக் கடிதம்	
	● நன்றிக் கடிதம்	
	● அழைப்புக் கடிதம்	
	● அலுவலக விண்ணப்பங்கள்	
அலகு பாட	ம் தழுவிய வரலாறு :5 –	
	 பாரதியாரின் இலக்கியப் பணி 	
	● பாரதிதாசனின் இலக்கியப்பணி	
	 மரபுக்கவிதை, புதுக்கவிதை - விளக்க 	5ம்

வினாத்தாள் அமைப்பு முறை – மொத்த					
மதிப்பெண்கள் - 50					
பகுதி –	சரியான விடையைத் தேர்வு	10x1=10	ஒவ்வொரு அலகிலும்		
அ	செய்தல்		இரண்டு வினாக்கள்		
பகுதி –	அரைப்பக்க அளவில்	5x3=15	ஒவ்வொரு அலகிலும் ஒரு		
ஆ	விடையளிக்க		வினா		
பகுதி –	இரண்டு பக்க அளவில்	5x5=25	ஒவ்வொரு அலகிலும் ஒரு		
2	விடையளிக்க		வினா		
குறிப்பு : பகுதி ஆ மற்றும் இ –க்கான வினாக்கள் இது அல்லது அது என்ற					
அடிப்படையில்					
	அந்தந்த அலகுகளில் அமைதல் வேண்டும்				

17UFC3FC

SEMESTER - III

Total Credits: 2 Hours Per Week: 2

CONTENTS

UNIT – I

Yoga and Physical Health

- 1.1 Physical Structure-Three bodies-Five limitations
- 1.2 Simplified physical Exercise Hand Exercises Leg Exercises Breathing Exercises Eye Exercises Kapalapathi
- 1.3 Maharasanas 1-2 Massages puncture-Relaxation
- 1.4 Yogasanas Padmasana- Vajrasanas-Chakrasanas (side) Viruchasanas –
 Yoga muthra Patchimothasanas Ustrasanas Vakkarasanas Salabasanas

UNIT - II

Art of Nurturing the life force and Mind

- 2.1 Maintaing the youthfulness –Postponing the ageing process
- 2.2 Sex and Spirituality Significancew of sexual vital fluid Married life Chastity
- 2.3 Ten stages of Mind
- 2.4 Mental frequency Methods for concentration

UNIT - III

Sublimation

- 3.1 Purpose and Philosophy of life
- 3.2 Introspection Analysis of Thought
- 3.3 Moralization of Desires
- 3.4 Neutralization of Anger

UNIT IV

Human Resources Development

- 4.1 Eradication of worries
- 4.2 Benefits of Blessings
- 4.3 Greatness of Friendship

4.4 Individual Peace and World Peace

UNIT V

Law of Nature

- 5.1 Unified force Cause and Effect system
- 5.2 Purity of Thought and Deed and Genetic Centre
- 5.3 Love and Compassion
- 5.4 Cultural Education Fivefold Culture

17UFC3FD

PART-IV: WOMEN'S RIGHTS

SEMESTER - III

Total Credits: 2 Hours Per Week: 2

CONTENTS

UNIT- I

Laws, Legal Systems and Change: Definition - Constitutional law, CEDAW and International Human Rights – Laws and Norms – Laws and Social Context – Constitutional and Legal Framework.

UNIT- II

Politics Of Land And Gender In India: Introduction – Faces of Poverty – Land as Productive Resources – Locating Identities – Women's Claims to Land – Right to Property - Case Studies.

UNIT- III

Women's Rights: Access to Justice: Introduction – Criminal Law – Crime Against Women –Domestic Violence – Dowry Related Harassment and Dowry Deaths – Molestation –Sexual Abuse and Rape – Loopholes in Practice – Law Enforcement Agency.

UNIT- IV

Women's Rights: Violence Against Women – Domestic Violence - The Protection of Women from Domestic Violence Act, 2005 - The Marriage Validation Act, 1982 - The Hindu Widow Re-marriage Act, 1856 - The Dowry Prohibition Act, 1961.

UNIT -V

Special Women Welfare Laws: Sexual Harassment at Work Places – Rape and Indecent Representation – The Indecedent Representation (Prohibition) Act, 1986 - Immoral Trafficking – The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment - Role of Rape Crisis Centers.

REFERENCES BOOKS:

- 1. *Nitya Rao.* 2008. "Good Women do not Inherit Land" Social Science Press and Orient Blackswan.
- 2. *International Solidarity Network*, 2006 ,"**Knowing Our Rights**" An imprint of Kali for Women.
- 3. Kaushik. P.D. 2007. "Women Rights" Bookwell Publication.
- 4. *Aruna Goal.* 2004. "Violence Protective Measures for Women Development and Empowerment." Deep and Deep Publications Pvt.
- 5. Monica Chawla. 2006. "Gender Justice". Deep and Deep Publications Pvt Ltd.
- 6. *Preeti Mishra*. 2007. "**Domestic Violence Against Women**". Deep and Deep Publications Pvt.
- ClairM.Renzetti, Jeffrey L.Edleson, and Raquel Kennedy Bergen. 2001. Source Book on "Violence Against Women". Sage Publications.

17UFC3FE

PART-IV: CONSTITUTION OF INDIA

SEMESTER - III

Total Credits: 2 Hours Per Week: 2

CONTENTS

UNIT I

Making of Constitution - Constituent Assembly- Dr.RajendraPrasath-Dr.B.R.Ambedkar - Salient features - Fundamental Rights.

UNIT II

Union Executive - President of India - Vice-President - Prime Minister - Cabinet - Functions

UNIT III

Union Legislature - Rajiya Sabha - Lok Sabha - Functions and Powers

UNIT IV

Union Judiciary - Supreme Court - Functions - Rule of law

UNIT V

State - Executive - Legislature - Judiciary - Role of Tamilnadu Public Service Commission.

REFERENCE BOOKS:

- 1. Agharwal.R.C. 1977, National Moment and Constitutional Development. New Delhi.
- 2. Chapra B.R., 1970, Constitution of India. New Delhi.
- 3. *Rao B.V*, 1975. Modern Indian Constitution. Hyderabad.
- 4. Nani Palkhivala ,1970, Constitution of India, New Delhi.
- 5. *Krishna Iyer, V.R.*, 2009, Law and Justice. New Delhi.
- 6. Reference Manual from the Govt. of Tamilnadu.

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1/UNIA551	

SELF STUDY PAPER - I

VEDIC MATHEMATICS

SEMESTER - III

PREAMBLE

1. To enable students gain fundamental knowledge about the Vedic Mathematics and its calculations

COURSE OUTCOMES

In the successful completion of the course, student will be able to

СО	CO Statement	Knowledge
Number		Level
CO 1	Observe mathematical concepts and examine the subtraction and multiplication using simple techniques	K1
CO 2	Illustrate the basic method of sum and product of two numbers	К2
CO 3	Manipulate the multiplication with eleven	K3
CO 4	Construct the secondary basis of 50 and 500	К3
CO 5	Practice the two digits and three digits multiplication.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	М	S
CO2	S	S	S	S	М
CO3	S	М	L	S	М
CO4	S	S	М	S	S
CO5	S	М	S	М	S

S-Strong; M-Medium; L-Low

	SELF STUDY PAPER – I	CEMECTED III
1/01/1851	VEDIC MATHEMATICS	SENIESTEK III

Total Credit: 1

CONTENTS

UNIT-I

Simple techniques :Subtraction from 100/1000/10000 - Normal method - Vedic method - Multiplication with a series of 9s.

UNIT-II

Operations with 9: Computation of remainder on dividing a number by 9: Basic method - First enhancement - Second enhancement - Verification of the product of two numbers, sum of two numbers.

UNIT-III

Operations with 11:Multiplication – Divisibility Test of numbers by 11 – Multiplication with 111.

UNIT – IV Multiplication (Nikhilam) :Secondary Bases of 50 – Secondary Bases of 500

UNIT – V

(Multiplication (UrdhaTiryak): 2 Digit Multiplication - 3Digit multiplication

TEXT BOOK

1. AtulCupta, The Power of Vedic maths, 2005, Jaico Publishing House Mumbai.

17UMASS2

HISTORY OF MATHEMATICS

SEMESTER - III

PREAMBLE

1. To enable students gain knowledge about historical perspectives

2. To know about the international dimension of mathematics

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Learn the significance of the history of mathematics.	K1
CO 2	Demonstrate understanding of the concepts of numbers, number systems, representations of numbers, techniques and methods	К2
CO 3	Demonstrate the deeply interconnected nature of mathematics and excellent communications skills in mathematics.	К2
CO 4	Build the significance of mathematical models over the course of mathematics history	К3
CO 5	Acquire the significance and nature of axiomatic reasoning and ability to read and discuss mathematical proofs.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	М	S
CO2	S	S	S	S	М
CO3	S	М	L	S	М
CO4	S	S	М	S	S
CO5	S	Μ	S	М	S

S-Strong; M-Medium; L-Low

17UMASS2

SELF STUDY PAPER – II HISTORY OF MATHEMATICS

SEMESTER - III

Total Credit: 1

CONTENTS

UNIT- I

Traces: Concepts and Relationships - Early Number Bases - Number Language and Counting - Spatial Relationships. **Ancient Egypt:** The Era and the Sources -Numbers and Fractions - Arithmetic Operations - "Heap" Problems - Geometric Problems - Slope Problems - Arithmetic Pragmatism. **Mesopotamia:** The Era and the Sources - Cuneiform Writing - Numbers and Fractions: Sexagesimals – Positional Numeration - Sexagesimal Fractions – Approximations – Tables – Equations - Measurements: Pythagorean Triads - Polygonal Areas - Geometry as Applied Arithmetic.

UNIT-II

Euclid of Alexandria: Alexandria - Lost Works - Extant Works - The Elements. **Archimedes of Syracuse:** The Siege of Syracuse - On the Equilibriums of Planes - On Floating Bodies - The Sand- Reckoner - Measurement of the Circle - On Spirals - Quadrature of the Parabola - On Conoids and Spheroids - On the Sphere and Cylinder - Book of Lemmas - Semiregular Solids and Trigonometry - The Method. **Apollonius of Perge:** Works and Tradition - Lost Works -Cycles and Epicycles - The Conics.

UNIT-III

Crosscurrents: Changing Trends - Eratosthenes - Angles and Chords - Ptolemy's Almagest - Heron of Alexandria - The Decline of Greek Mathematics

95 Dr.N.G.P Arts and Science College (Autonomous)

- Nicomachus of Gerasa - Diophantus of Alexandria - Pappus of Alexandria -The End of Alexandrian Dominance - Proclus of Alexandria- Boethius -Athenian Fragments - Byzantine Mathematicians. **Ancient and Medieval China:**The Oldest Known Texts - The Nine Chapters - Rod Numerals - The Abacus and Decimal Fractions - Values of Pi - Thirteenth-Century Mathematics.

UNIT – IV

Early Modern Problem Solvers: Accessibility of Computation - Decimal Fractions - Notation - Logarithms - Mathematical Instruments - Infinitesimal Methods: Stevin - Johannes Kepler Analysis, Synthesis, the Infinite and Numbers: Galileo's Two New Sciences - Bonaventura Cavalieri - Evangelista Torricelli - Mersenne's Communicants - Rene' Descartes - Fermat's Loci -Gregory of St. Vincent - The Theory of Numbers - Gilles Persone de Roberval -Girard Desargues and Projective Geometry - Blaise Pascal - Philippe de Lahire -Georg Mohr - Pietro Mengoli - Frans van Schooten - Jan de Witt - Johann Hudde - Rene' Franc ois de Sluse - Christiaan Huygens.

UNIT- V

British Techniques and Continental Methods: John Wallis - James Gregory -Nicolaus Mercator and William Brouncker - Barrow's Method of Tangents -Newton - Abraham De Moivre - Roger Cotes - James Stirling - Colin Maclaurin - Textbooks - Rigor and Progress - Leibniz - The Bernoulli Family -Tschirnhaus Transformations - Solid Analytic Geometry - Michel Rolle and Pierre Varignon - The Clairauts - Mathematics in Italy - The Parallel Postulate - Divergent Series.

TEXT BOOK

- UtaC.Merzbach and Carl B. Boyer, 2010, A History of Mathematics, Third Edition, John Wiley & Sons, Inc.
 UNIT I : Chapter 1, 2, 3
 UNIT II : Chapter 5, 6 and 7
 UNIT III: Chapter 8 and 9
 UNIT IV: Chapter 14 and 15
 - UNIT V : Chapter 16

REFERENCE BOOK

1. *David M. Burton*.2011. **The History of Mathematics an Introduction**. Seventh Edition. McGraw-Hill.

17UMA43A

CORE -VIII: DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS

PREAMBLE

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.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

СО	CO Statement	Knowledge
Number	CO Statement	Level
CO 1	Learn the basic concept of differential equation and its order.	K1
CO 2	Solve the differential equations of first order with constant and variable coefficients.	К2
CO 3	Solve the linear differential equations of second and higher order.	К2
CO 4	Solve linear differential equations using Laplace transform technique.	К3
CO 5	Develop the ability to apply differential equations.	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	М	S	М	S
CO4	S	S	М	S	S
CO5	S	М	S	М	S

MAPPING WITH PROGRAMME OUTCOMES

S-Strong; M-Medium; L-Low

17UMA43A

CORE -VIII: DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS

SEMESTER -IV

Total Credits : 4 Hours Per Week : 4

CONTENTS

Differential Equations: Introduction - Solution of Differential Equations-Formation of Differential Equations. **Equation of the first order and of the first degree**: Variables Separable – Homogeneous Equations – Non homogeneous Equations – Linear Equation – Bernoulli's Equation – Exact Differential Equation with Integral Factors.

UNIT -II

UNIT - I

Linear equation with constant coefficients: Definitions – The operators – Complementary function of a linear equation with constant coefficients – particular integral – Equations reducible to the linear equations.

UNIT -III

Simultaneous Differential Equations: Simultaneous equations of the first order and first degree – solution of $\frac{dx}{p} = \frac{dy}{Q} = \frac{dz}{R}$ – methods for solving $\frac{dx}{p} = \frac{dy}{Q} = \frac{dz}{R}$ – Geometrical interpretation of $\frac{dx}{p} = \frac{dy}{Q} = \frac{dz}{R}$ – Simultaneous linear differential equations – Simultaneous equations with variable coefficients.

UNIT -IV

Partial Differential Equations of the first order: Introduction – classification of integrals – derivation of PDE by elimination of constants and an arbitrary

function – Lagrange's method – special methods – standard forms – Equations reducible to the standard forms – Charpit's method.

UNIT -V

The Laplace Transforms: Definition – Periodic functions – Some General theorems – The inverse Transforms – solution to Differential equations – Solution to differential equations with variable coefficients.

TEXT BOOK

 Narayanan. S and Manickavachagom Pillay .T. K. 2014. Differential Equations and its Applications. S. Viswanathan Pvt. Ltd. Chennai.

UNIT I : Chapter 1 & 2

UNIT II : Chapter 5 Section 5.1 to 5.4, and 5.6

UNIT III : Chapter 6

UNIT IV : Chapter 12

UNIT V : Chapter 9 Section 9.1 to 9.7, 9.9 and 9.10

REFERENCE BOOKS

- 1. *Bali.N.P.* 2004. **Differential Equations.** Laxmi Publication Ltd, New Delhi.
- 2. *M.L.Kannan*. Differential Equations, 1999, Jai Prakash Math& Co, Meerut.
- P.R. Vittal, 2012, Differential Equations, Fourier and Laplace Transforms, Probability, Margham Publications, Chennai.
- 4. *Sankarappan.S, Kalavathy.S*2005. **Differential Equations and Laplace Transforms,** Vijay Nicole Imprints Private Limited, Chennai

17UMA43B

CORE -IX: NUMBER THEORY

SEMESTER-IV

PREAMBLE

1. To give an insight into numbers.

2. To understand the concept of Number-Theoretic Functions

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO		Knowledge
Number	CO Statement	
CO 1	Recall the Divisors, Greatest Common	K1
	divisors, congruence's and its basic properties.	
CO 2	Understand the concept of Number-Theoretic functions, Quadratic Reciprocity law	K2
CO 3	Demonstrate the Fundamental theorem, Chinese remainder theorem, Fermat's theorem & Wilson's theorem	K2
CO 4	Apply Euclidean algorithm, Diophantine equation,Mobius inversion formula, Euler's phi function,egendre symbol to solve the problems	К3
CO 5	Solve the problems to find GCD, order of integer modulo, primitive roots, composite numbers having primitive roots	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	М
CO3	S	S	S	S	М
CO4	S	S	S	М	S
CO5	S	S	S	М	S

S-Strong; M-Medium; L-Low

17UMA43B	CO

ORE -IX: NUMBER THEORY

SEMESTER-IV

Total Credits : 3 Hours Per Week : 4

CONTENTS

UNIT-I

Preliminaries: Mathematical induction - The Binomial Theorem. **Divisibility Theory in the Integers:** The Division Algorithm - The Greatest Common Divisor - The Euclidean Algorithm - The Diophantine Equation ax+by=c.

UNIT-II

Primes and Their Distribution: The fundamental Theorems of Arithmetic - The Sieve of Eratosthenes - Gold back conjecture. **The Theory of Congruences:** Basic properties of Congruence - Binary and Decimal Representations of integers - Linear Congruences and the Chinese Remainder Theorem.

UNIT-III

Fermat's Theorem: Pierre da Fermat - Fermat's Little Theorem and Pseudo primes – Wilson's Theorem. **Number-Theoretic Functions:** The sum and Number of Divisors - The Mobius Inversion Formula - The Greatest Integer Function.

UNIT-IV

Euler's Generalization of Fermat's Theorem: Euler's Phi - Function-Euler's Theorem. **Primitive Roots and Indices:** The Order of an Integer modulo *n*Primitive Roots for Primes- Composite Numbers Having Primitive Roots.

UNIT-V

The Quadratic Reciprocity law: Euler's Criterion - The Legendre symbol and its Properties - Quadratic Reciprocity - Quadratic Congruences with Composite Moduli.

TEXT BOOK

1. *David M.Burton.* 2010. **Elementary Number Theory**, Sixth Edition. Tata McGraw Hill.

UNIT I : Chapter 1and 2 Section: 1.1-1.2 and 2.2-2.5

UNIT II : Chapter 3 and 4 Section : 3.1-3.3 and 4.2-4.4

UNIT III : Chapter 5 and 6 Section : 5.1-5.3 and 6.1-6.3

UNIT IV : Chapter 7 and 8 Section : 7.2, 7.3 and 8.1-8.3

UNIT V: Chapter 9 Section: 9.1-9.4

REFERENCE BOOKS

1. Ivan Nivan and Herberts Zucherman.2011. An Introduction to Theory of

Numbers. Fifth Edition, Wiley Eastern Limited, New Delhi.

2. *Melvyn.B. Nathanson,* 2006 **Methods in Number Theory**, Springer International Edition.

17UMA43CCORE -X:OPERATIONS RESEARCH-IISEMESTER-IVPREAMBLE

1. To enhance student knowledge in Sequencing, game theory, performance

measures of queues, optimal use of Replacement problem.

2. To enhance student knowledge in Network scheduling with applications.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Learn the basic concepts in Sequencing, Game theory, Replacement, Queuing theory and Network	K1
CO2.	Demonstrate efficient methods to solve complex scheduling problems and strategic decision making using game theory to calculate optimal solution using different Strategies.	K2
CO3.	Construct replacement models in order to know when to replace a machine with considering cost and time	К2
CO4.	Apply queuing theory for infinite population having single channel, Poisson arrivals, and exponential service times and solve them by using various	К3
CO5.	Identify critical path analysis to solve real life project scheduling time and conduct literature search on the internet with the use of Operations Research techniques in various project execution and	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	М	S
CO3	S	S	S	М	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

MAPPING WITH PROGRAMME OUTCOMES

S-Strong: M-Medium: L-Low

17UMA43C CORE -X:OPERATIONS RESEARCH-II SEMESTER-IV Total Credits : 3 Hours Per Week : 4

CONTENTS

UNIT - I

Sequencing Problem: Introduction-Problems of Sequencing-Basic term used in Sequencing- Processing jobs through Two Machines - Processing jobs through Machines - Processing 2 jobs through k Machines- Maintenance Crew Scheduling.

UNIT-II

Game theory: Introduction-Two person zero sum game – The Maxmini – Minimax principle- Games without saddle point –Mixed Strategies – Graphic Solution of and Games – Domination Property.

UNIT - III

Replacement problem: Introduction-Replacement of equipment/asset that deteriorates gradually – Replacement of equipment that fails suddenly.

UNIT – IV

Queuing Theory: Introduction – Queuing system – Element and Operating Characteristics of Queuing system – Classifications of Queuing Models – Definition of Transient and Steady state Problems in (M/M/1): $(\infty/FIFO)$; (M/M/C): $(\infty/FIFO)_{and}$ (M/M/C): $(N/FIFO)_{models}$

UNIT - V

Network scheduling by PERT / CPM : Introduction – Network and basic components – Logical Sequencing - Rules of Network construction – Critical Path Analysis – Probability Consideration in PERT- Distinction Between PERT and CPM.

TEXT BOOK

 Kandiswarup, Gupta, P. K and Man Mohan.2003. Operations Research.
 Sultan Chand& Sons Education Publications, New Delhi, 11th revised edition.
 UNITI : Chapter 12
 UNIT II : Chapter 17 Section: 17.1-17.7
 UNIT III : Chapter 18 Section: 18.1-18.3
 UNIT IV: Chapter 20 Section: 20.1-20.4, 20.6-20.8
 UNITV : Chapter 21

REFERENCE BOOKS

1. *Gupta, P.K. and. Hira, D.S,* 2002.**Problems in Operations Research**. S. Chand Publication.

2. Vittal, P.R, 2013. Operations Research .Margham Publishers, Chennai.

3. *Taha, H.A.* 2006. Operations Research: An Introduction. Eighth Edition.Prentice Hall of India Private Limited, New Delhi.
18UMA43D/
17UMA53DCORE- XI: FUNDAMENTALS OF DATA
SCIENCE AND R PROGRAMMINGSEMESTER -
IV

PREAMBLE

1. The students should have concrete knowledge about the fundamentals of data science.

2. To gain an in-depth understanding of data structure used in R and learn to import/export data in R

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO		Knowledge
Number	CO Statement	Level
CO 1	Describe what is Data Science and the skill sets needed to be a data scientist and R-language.	K1
CO 2	Explain in basic terms what Statistical Inference means. Identity probability distributions commonly used as foundations for statistical modeling.	K1
CO 3	Explain limitations of R and R Objects.	K2
CO 4	Understand the I/O of R, looping functions.	K2
CO 5	Apply basic machine learning algorithms (Linear Regression, k-Nearest (k-NN), k-means Naïve Bayes) for predictive modeling.	К2

Mapping with Programme outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	М	М	М
CO4	S	S	S	S	S
CO5	S	S	S	М	М

18UMA43D/CORE- XI: FUNDAMENTALS OF DATASEMESTER -17UMA53DSCIENCE AND R PROGRAMMINGIV

Total Credits : 2 Hours Per Week : 2

CONTENTS

UNIT -I

Introduction to Data Science - Big Data and Data Science Hype - Getting Past the Hype – Datafication - The Current Landscape - A Data Science Profile – Definition of Meta.

UNIT- II

Statistical Inference – Population and samples – Population and samples of Big Data – Modelling – Exploratory Data Analysis : Philosophy of Exploratory Data Analysis – The Data Science Process.

UNIT -III

Algorithms – Machine learning algorithms – Linear Regression – K-Nearest Neighbor Algorithm.

UNIT -IV

History and Overview of R – Definition of S - Basic Features of R – Design of the System – Limitation of R – Entering Input Evaluation – R Objects – Numbers – Attributes – Creating Vectors – Mixing Objects Explicit Coercion – Matrices – Lists – Factors – Missing Values – Data Frames – Names.

UNIT -V

Getting Data In and Out of R – Reading and Writing Data Reading Data Files with read.table() Reading in Larger Datasets with read.table Calculating

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Memory Requirements for R –Objects Using the reader Package Using Textual and Binary Formats for Storing Data Using dput() and dump() – Control structure – functions – looping functions.

TEXT BOOKS

1. Rachel Schutt, Doing Data Science Straight Talk from the frontline,

O'Reilly Media publisher,1st edition,2013.

- UNIT I : Chapter 1
- UNIT II : Chapter 2
- UNIT III : Chapter 3
- 2. Roger S.Peng, R Programming for Data Science, Lean publisher, 2015.
- UNIT IV : pgno: 4,6-7,12-21
- UNIT V : pgno : 23-26 , 27,28-30, 62-68,70,77.

8UMA43P/	CORE LAB-III: R PROGRAMMING	SEMESTER - IV
17UMA53P		

Total Credits : 2 Hours Per Week : 3

CONTENTS

Using R Programming

- 1. Calculate and print a Multiplication Table.
- 2. Check a number is Prime number or not.
- 3. Print Factorial of a number.
- 4. Find the Armstrong number.
- 5. Print Fibonacci series.
- 6. Check for a leap year.
- 7. Find the sum of N Natural numbers.
- 8. Take input from user.
- 9. Find the minimum and maximum of set of numbers.
- 10. Add two vectors.
- 11. Make a simple calculator.
- 12. Find L.C.M

13. Compute f(x) =
$$\begin{cases} \exp\left(\frac{x + \ln(1 + x^{3})}{x^{2}}\right) & \text{if } x > 0\\ 10 & \text{if } x = 0\\ \frac{2 + x^{3}}{x} & \text{if } x < 0 \end{cases}$$

and plot with line over a value of x as a sequence starting from - 1 to 5 and increasing it by 0.2

14. Compute
$$\frac{\sum_{i=1}^{n} x_i^2}{\sum_{i=1}^{n} y_i^2}$$
 and $\sum_{i=1}^{n} \left(\frac{x_i}{y_i}\right)^2$, where
and $y = (y_1, y_2, \dots, y_n)$ are two vectors.

$$x=(x_1,x_2,\ldots,x_n)$$

15. Import CSV and tabular data file.

16. Create Three Dimensional Scatter plots.

CI4AB

ALLIED -IV: BUSINESS ACCOUNTING - II

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SEMESTER - IV
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PREAMBLE

1. To enable the students to understand the accounting aspects of finance in business

2. To enable the students to understand the accounting aspects Depreciation, Branch accounts, Hire Purchase and Installment System, Single Entry and Budgeting.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO	CO Statement	Knowledge
Number	Co Statement	Level
CO 1	Determine the impact of profits by using different depreciation methods	K1
CO 2	Construct a trading, profit and loss account and balance sheet from the records of single entry system after locating missing information	К2
CO 3	Learn accounting treatment for dependent branches and independent branches	K2
CO 4	Record the transaction in the journal of hire-purchaser and hire vendor	K3
CO 5	Apply financial disciplines to the management of organizations as well as to set up and operate a budgetary control system	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	М	L	М	L	М
CO2	L	М	S	М	М
CO3	М	М	S	М	L
CO4	L	М	М	М	L
CO5	М	М	S	М	S

MAPPING WITH PROGRAMME OUTCOMES

18UCI4AB

ALLIED -IV: BUSINESS ACCOUNTING - II

SEMESTER - IV

Total Credits : 4 Hours Per Week : 5

CONTENTS

UNIT – I

Depreciation - Meaning- Features- Methods- Straight Line Method- Written Down Value Method - Annuity Method.

UNIT – II

Single Entry System – Meaning and Features –Limitations- Advantages-Statement of Affairs Method and Conversion Method.

UNIT – III

Branch Accounts - Introduction - Meaning - Objectives - Types of Branches -Dependent Branches - Features - Supply of Goods at Cost Price - Invoice Price - Branch Account in the books of Head Office -Debtors System Only (Excluding foreign branches).

UNIT – IV

Hire Purchase and Installment Systems- Accounting treatment-Calculation of interest –Default and repossession (Excluding Hire Purchase Trading Account)

UNIT – V

Budgeting- meaning and definition- advantages and disadvantages – production budget, sales budget, Cash budget, flexible budget.

TEXT BOOKS

1. Dr. Maheswari S.N, 2004, "Management Accounting", Sultan Chand

& Sons, New Delhi.

2. Gupta R.L., Gupta V.K., and Shukla M.C., 2008, FinancialAccounting-

New Delhi, Sultan Chand&Sons.

REFERENCE BOOKS

1. Srinivasan and Ramachandran, Management Accounting, Sultan

Chand & Sons Ltd, New Delhi.

2. *JainS.P.*, 2010, **Principles of Accountancy** –Kalyani Publishers, New Delhi.

Note: The question paper shall cover 20% theory and 80% problem

18UMA4SA

SKILL BASED COURSE-II: QUANTITATIVE APTITUDE II

SEMESTER-IV

PREAMBLE:

1. On successful completion of this course the students should gain

knowledge about the course wise aptitude.

2. Solving questions by various methods.

COURSE OUTCOMES:

On the successful completion of the course, student will be able to

CO Number	CO Statement	Knowle dge Level
CO 1	Learn about Sequences and series	K1
CO 2	Learn about Integral calculus	K1
CO 3	To find out the equations of Analytic Plane geometry	K2
CO 4	To find out the equations of Analytic Solid geometry	K2
CO 5	Solve the questions for Statistics and Dynamics	K3

Mapping with Programme Outcomes

COS/POS	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	М	S	S	М
CO 2	М	S	S	S	М
CO 3	S	S	М	S	S
CO 4	S	S	S	М	S
CO 5	S	S	S	S	S

18UMA4SA

SKILL BASED COURSE-II: QUANTITATIVE APTITUDE II

SEMESTER-IV

Credits: 4 Hours Per Week: 4

CONTENTS

UNIT - I

Hours Per Week: 4

Calculus: Differential calculus: Partial differentiation-Sequences and series:

Sequences – Series.

UNIT – II

Integral Calculus: Indefinite integrals - Definite integrals Rectification,

Quadrature, Volume and surfaces.

UNIT - III

Geometry

Analytic Plane geometry: Fundamental concepts of 2D-Staight lines-Pair of straight lines-The circle-The Parabola.

UNIT – IV

Geometry

Analytic Solid geometry: Fundamental concepts of 3D-The Plane- The

SphereThe

Cone.

UNIT-V

Mechanics

Statics :Parallelogram of Forces, Equilibrium of coplanar forces, Moments, and couples-Friction-Centre of gravity and centre of Mass **Dynamics**: Motion of a particle in a straight line- Newton's Law of Motion.

TEXT BOOKS:

1. *Anil kumar Garg & H.B.Pandey*, Objective Mathematics(for civil services). Upkar's Prakashan, Agra.

REFERENCE BOOKS:

1. *Agarwal, R.S.* 2015. **Quantitative Aptitude.** Revised Edition. S.Chand and Company Ltd, Ram Nagar, New Delhi -55.

 Praveen R.V., 2013. Quantitative Aptitude and Logical reasoning.PHI Learning (P) Ltd. Delhi Abhijit Guha. 2017.Quantitative Aptitude. Mc Graw Hill, 6th Edition, New Delhi

3. Abhijit Guha. 2017. Quantitative Aptitude. Mc Graw Hill, 6th Edition, New Delhi

18UNM44B

NMEC-II : MATHEMATICS FOR COMPETITIVE EXAMINATIONS II

SEMESTER: IV

Credits: 2 Hours Per Week: 2

CONTENTS UNIT - I

Differential calculus: Partial Differentiation: Function of two variables – Partial derivatives – Partial derivatives of higher orders – Total differentiation– Deduction – Differentiation of implicit functions – Homogeneous functions-Euler's theorem on homogeneous functions – Approximation.

UNIT – II

Integral Calculus: Indefinite integrals: Integration – Some standard formulae – Integration by substitution – Integration by parts – Integration of Rational functions – Integration by partial fractions – Integration of Irrational functions – Integration of Trigonometric functions – Some standard results.

UNIT – III

Integral Calculus: Definite integrals: Definite integrals – Fundamental theorem of integral calculus – Properties of Definite integrals – Summation of series with the help of integrals – Integration by expansion – Gamma function – Properties of Gamma function – Some important results.

UNIT – IV

Geometry

Analytic Plane geometry: Fundamental concepts of 2D straight lines - Pairs of

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straight lines.

UNIT – V

Geometry

Analytical solid geometry: Fundamental concepts of 3D – The plane – The straight line.

TEXT BOOKS:

1 Anil kumar Garg & H.B.Pandey, Objective Mathematics(for civil services). Upkar's Prakashan, Agra.

REFERENCE BOOKS:

1. Agarwal, R.S. 2015. Quantitative Aptitude. Revised Edition.

S.Chand and Company Ltd, Ram Nagar, New Delhi -55.

2. Praveen R.V., 2013. Quantitative Aptitude and Logical

reasoning.PHI Learning (P) Ltd. Delhi

3. Abhijit Guha. 2017. Quantitative Aptitude. Mc Graw Hill, 6th Edition, New

Delhi

17UFC4FC

PART-IV: GENERAL AWARENESS

SEMESTER - IV

Total Credits: 2 Hours Per Week: 2

CONTENTS

Verbal Aptitude

Numerical Aptitude

Abstract Reasoning

Tamil And Other Literature

General Science And Technology And Education

Computer Science

Economics And Commerce

History And Freedom Struggle

Sports

Current Affairs

17UMA53A

CORE – XII: REAL ANALYSIS I

SEMESTER - V

PREAMBLE

1. The students should gain the knowledge aboutreal number systems,

sets and metric space.

2. The students should gain the knowledge about elements of points set

topology.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Remember the fundamental knowledge in number systems and real number systems	K1
CO 2	Understand the notations and terminology in relations and functions to manipulate the problems.	К2
CO 3	Demonstrate the different types of points in real number system and manipulate the fundamental theorems.	К3
CO 4	Apply the concepts of spaces and manipulate the the the the the the the the the t	К3
CO 5	Abstract thinking of sequences, demonstrate the various sequences and learn basic techniques in continuous functions.	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	М	S	М
CO2	М	М	S	S	М
CO3	S	S	М	S	М
CO4	S	М	S	S	S
CO5	Μ	М	М	S	S

MAPPING WITH PROGRAMME OUTCOMES

CORE - XII: REAL ANALYSIS I

SEMESTER - V

Total Credits : 5 Hours Per Week : 5

CONTENTS

UNIT-I

The Real and Complex Number System: Introduction -The field axioms – The order axioms – Geometric representation of real numbers – Intervals – Integers – The unique factorization theorem for integers – Rational numbers – Irrational numbers – Upper bounds, maximum element, least upper bound (supremum) – The completeness axiom – Some properties of the supremum; Properties of the integers deduced from the completeness axiom – The Archimedean property of the real number system – Rational numbers with finite decimal representation – Finite decimal approximations to real numbers – Infinite decimal representation of real numbers – Absolute values and the triangle inequality – The Cauchy-Schwarz inequality – Plus and minus infinity and the extended real number system R^* .

UNIT -II

Some Basic Notions of Set Theory: Introduction - Notations – Ordered pairs – Cartesian product of two sets – Relations and functions – Further terminology concerning functions – One-to-one functions and inverses – Composite functions – Sequences – Similar (equinumerous) sets – Finite and Infinite sets – Countable and Uncountable sets – Uncountability of the real number system – Set algebra – Countable collection of countable sets.

UNIT- III

Elements of point set topology: Introduction - Euclidean space R^n -Open balls and open sets in R^n - The structure of open sets in R^1 - Closed sets – Adherent points – Accumulation points – Closed sets and Adherent points – The Bolzano– Weierstrass theorem – The Cantor" s intersection theorem.

UNIT- IV

Elements of point set topology: The Lindelof covering theorem – The Heine Borel covering theorem – Compactness in Rⁿ – Metric spaces – Point set topology in metric spaces – Compact subsets of a metric space – Boundary of a set.

UNIT- V

Limits and Continuity: Introduction - Convergent sequences in a metric space – Cauchy sequences – Complete metric spaces – Limit of a function – Limit of vector – valued functions – Continuous functions – Continuity of composite functions – Examples of continuous functions.

TEXT BOOK

1. Tom M. Apostol. 2002. Mathematical Analysis. Narosa Publishing House

Pvt. Ltd. Second Edition.

UNIT I: Chapter 1: Section 1.1 – 1.20 UNIT II: Chapter 2: Section 2.1 – 2.15 UNIT III: Chapter 3: Section 3.1 – 3.9 UNIT IV: Chapter 3: Section 3.10 – 3.16 UNIT V: Chapter 4: Section 4.1 – 4.5, 4.7 – 4.9, 4.11

REFERENCE BOOKS

1. Somasundaram.D,Choudhary.B.2015. A first course in Mathematical

Analysis, Narosa publishing house.

2. *Mainak Mukherjee*. 2015. **A course in Real Analysis**, Narosa publishing house.

3. Shanti Narayan, Dr.M.D. Raisinghania.2014. Elements of Real Analysis,

S.Chand and company Pvt. Ltd., New Delhi

4. Dipak Chatterjee.2005. Real Analysis. Prentice- Hall of India Pvt. Ltd.,

New Delhi.

17UMA53B

CORE -XIII :COMPLEX ANALYSIS - I

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SEMESTER - V
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PREAMBLE

1. The students should gain knowledge about the origin, complex plane

and Analytic function.

2. To know about the concept of application of complex numbers and

complex functions.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO	CO Statement	Knowledge
Number		Level
CO 1	Learn the concepts of equations of straight lines and circles, elementary transformation, infinity and extended complex plane, stereographic projection and C-R equation in polar coordinates	K1
CO 2	Learn the concepts of Bilinear transformation, Special bilinear transformations, Circle and inverse points	K1
CO 3	Distinguish between convergence and uniform convergence, logarithmic functions, function a ^z and Harmonic functions	К2
CO 4	Demonstrate Analyticity of the sum of power series, Uniqueness of representation of a function by a power series	К3
CO 5	Explain integration of complex functions, definite integrals, interior & exterior of closed curve and Simply connected region with Cauchy"s fundamental theorem	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	М	М	М
CO3	S	М	М	М	М
CO4	S	М	М	М	М
CO5	S	М	М	М	М

MAPPING WITH PROGRAMME OUTCOMES

17UM 453B	CORE -XIII :COMPLEX ANALYSIS - I	SEMESTER - V
1/UNIA33D		OLIVILOI LIK

Total Credits : 5 Hours Per Week : 5

CONTENTS

UNIT –I

Complex plane: Angle between two rays – equations of straight lines and circles – elementary transformation – infinity and extended complex plane – stereographic projection – simple problems. **Sets of complex points:** Closed sets – open sets – theorems on bounded infinite sets.

UNIT –II

Analytic functions: Complex functions - Limit of a function – continuity of a function – uniform continuity – differentiability and analyticity of a function – necessary conditions for differentiability – sufficient conditions for differentiability – Simple problems.

UNIT –III

Elementary and conformal mappings: Bilinear transformation – Special bilinear transformations – Circle and inverse points – Transformations $w = z^2$, $w = \sqrt{z}$, $w = e^z$, $w = \sin z$ and $w = \cos z$ – conformal mappings – simple problems.

UNIT-IV

Power Series: Power series - Absolute convergence – uniform convergence - Analyticity of the sum of power series – Uniqueness of representation of a function by a power series. **Elementary functions:** Exponential functions –

logarithmic functions and function a² – branch point - Harmonic functions – simple problems.

UNIT-V

Complex Integration: Simple rectifiable oriented curves – integration of complex functions – simple integrals using definitions – definite integrals – interior and exterior of closed curve - Simply connected region – Cauchy" s fundamental theorem – integral along an arc joining two points – simple problems.

TEXT BOOK

DuraiPandian, kayalal Pachaiyappa.P. 2014. Complex Analysis.
S.Chand&company Pvt. Ltd, New Delhi..
UNIT I : Chapter 2 Sections 2.4 to 2.9, Chapter 3 Sections 3.1 to 3.3
UNIT II : Chapter 4 Sections 4.1 to 4.8 and 4.10
UNIT III : Chapter 7 Sections 7.1 to 7.8
UNIT IV : Chapter 6 Sections 6.1 to 6.9; and 6.12, 6.13
UNIT V : Chapter 8 Sections 8.1 to 8.8

REFERENCE BOOKS

1. Arumugam.S, ThangapandiIssac.A and Somasundaram.A, 2014. Complex Analysis, Scitech publications (India) Pvt Ltd.

2. Venkatachalapathy.S.G. 2014. Complex Analysis.(For B.Sc

Mathematics), Marghampublictions, Chennai.

17UMA53C

CORE - XIV: MODERN ALGEBRA

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SEMESTER – V
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PREAMBLE

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

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the knowledge of fundamental concepts in sets, functions, mappings, relations and integers.	K1
CO 2	Understand the definitions and theorems of group and utilize them to prove related results.	K1
CO 3	Demonstrate an ability to understand and manipulate the theorems in Homomorphisms	К2
CO 4	Manipulating the examples of Rings and special classes of Rings.	К3
CO 5	Apply the concept of Rings, prove the theorems in quotient rings and integral domain	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	М
CO2	М	М	S	S	S
CO3	S	S	М	S	М
CO4	М	М	S	S	S
CO5	М	М	S	М	S

Total Credits : 4 Hours Per Week : 6

CONTENTS

UNIT - I

Preliminary Notions: Set theory – Mappings – Examples of mappings – The integers - Unique factorization theorem. **Group Theory**: Definition of group - Some examples of groups- Some preliminary lemmas.

UNIT - II

Group Theory: Subgroups – Cyclic subgroup – Lagrange" s theorem- Index of a group – Order of an element – Euler theorem – Fermat theorem – A Counting Principle - Normal Subgroups and Quotient Groups.

UNIT - III

Group Theory: Homomorphisms – Fundamental theorem of homomorphism of group - Cauchy" s theorem for Abelian groups – Sylow" s theorem for Abelian groups - Automorphisms – Inner automorphism - Cayley" s theorem - Permutation groups.

UNIT - IV

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

UNIT - V

Ring Theory: Ideals and Quotient Rings – More Ideals and Quotient Rings – Maximal ideal – The field of Quotients of an Integral Domain – Euclidean Rings.

TEXT BOOK

1. Herstein, I. N. 2006. Topics in Algebra. John Wiley & Sons, New York.

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UNIT I : Chapter 1 Section 1.1 to 1.3, Chapter 2 Section 2.1 to 2.3

- UNIT II : Chapter 2 Section 2.4 to 2.6
- UNIT III : Chapter 2 Section 2.7 to 2.10
- UNIT IV : Chapter 3 Section 3.1 to 3.3
- UNIT V : Chapter 3 Section 3.4 to 3.7

REFERENCE BOOKS

1. Surjeet Singh and QaziZameeruddin, 1992. Modern Algebra. Vikas

Publishing House.

2. Vasishtha, A.R. 1994. Modern Algebra. Krishna PrakashanMandir,

Meerut.

3. *S. Arumugam and A.Thangapandi Isaac.* 2014.**Modern Algebra.** Scitech Publications (India) Pvt.Ltd

4. S.G. Venkatachalapathy, Modern Algebra (For B.Sc Mathematics Major),

MarghamPublications, Chennai.

18UMA53D	CORE - XV: PROGRAMMING IN C &C++	SEMESTER - V
DDEAMBLE		

PREAMBLE

1. On successful completion of this course the students should have gain

the knowledge about class structure, member functions & data

members.

2. To learn the concept of constructors, destructors, operator overloading

and inheritance

COURSE OUTCOMES

In the successful completion of the course, student will be able to

СО	CO Statement	Knowledge
Number	Number	
CO 1	Learn the concepts of Keywords and identifiers, Variables data types, declaration of variables and operators	K1
CO 2	Learn the concepts of Simple IF and Switch statement, The ?: Operator, The GOTO statement , The WHILE statement - the DO statement and FOR statement	K1
CO 3	Distinguish between C and C++ and learn the basic concepts of C++ programming	K2
CO 4	Demonstrate classes and objects, constructors and destructors	К3
CO 5	Explain Operator overloading and inheritance also make use of the concept in the programming.	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	М	S
CO4	S	S	М	S	М
CO5	S	S	М	М	S

MAPPING WITH PROGRAMME OUTCOMES

S-Strong : M-Medium : L-Low

CORE - XV: PROGRAMMING IN C &C++

SEMESTER - V

Total Credits : 2 Hours Per Week :3

CONTENTS

UNIT - I

Introduction – Character set – C Tokens - Keywords and identifiers – Constants – Variables - Data types – Declaration of variables – Arithmetic operators -Relational operators - logical operators – assignment operators – increment and decrement operators –Conditional operators – Arithmetic expressions– Evaluation of Expressions.

UNIT - II

Simple IF statement - Switch statement - The ?: Operator - The GOTO statement - The WHILE statement - the DO statement - FOR statement

UNIT - III

Functions in C++: The main function – function prototyping – call by reference – return by reference – inline functions – default arguments – const arguments – Recursion - function overloading – math library functions. Managing Console I/O Operations: C++ streams – C++ stream classes – unformatted console I/O operations – formatted console I/O operations – managing output with manipulators.

UNIT - IV

Classes and Objects: Specifying a class – defining member functions – making an outside function inline – nesting of member functions – private member functions – arrays within a class – memory allocation for objects –arrays of objects – objects as function arguments – friend functions – returning objects – const member functions. Constructors and Destructors: Introduction - constructors – parameterized constructors – multiple constructors in a class – constructors with default arguments – copy constructor.

UNIT - V

Operator Overloading: Introduction – defining operator overloading – overloading unary operators – overloading binary operators – overloading binary operators using friends – rules for overloading operators. Inheritance: Introduction – defining derived classes – single inheritance – making a private member inheritable – multilevel inheritance – multiple inheritances – hierarchical inheritance – hybrid inheritance.

TEXT BOOKS

 Balagurusamy, E. 2004. Programming in ANSI C. Sixth Edition. Tata McGraw - Hill Publishing company limited, New Delhi.
UNIT I: Chapter 2 , Section 2.1 to 2.8
Chapter 3, Section 3.1 to 3.7 ,3.10, and 3.11
UNIT II: Chapter 5, Section 5.1 to 5.3 and 5.7 to 5.9
Chapter 6, Section 6.2 to 6.4
Balagurusamy, E. 2003. Object Oriented Programming with C++.
SixthEdition .McGraw Hill- New Delhi.
UNIT III: Chapter 4, Section 4.2 to 4.12
Chapter 10, Section 10.2 to 10.6
UNIT IV :Chapter5, Section 5.3 to 5.10 and 5.13 to 5.17
: Chapter 6, Section 6.1 to 6.5 and 6.7
UNIT V: Chapter 7, Section 7.1 to 7.5 and 7.8
Chapter 8, Section 8.1 to 8.8

REFERENCE BOOKS

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

2. Robert Lafore. 2001. Object Oriented Programming in Turbo

C++.Galgotia publications Private Ltd, New Delhi- 110002.

3. *BjarneStroustrup*. 2001. **The C++ programming language.** Pearson Education- New Delhi.

CORE LAB-IV: PROGRAMMING IN C++

SEMESTER - V

Total Credits : 2 Hours Per Week :3

CONTENTS

USING C++

1. Create a Program to find the sum of the series sum equal to $1 + (1/2)^2 + (1/3)^3 + (1/4)^4 + \cdots$

2. Create a class FLOAT that contains one float data member. Overload all

the four arithmetic operators so that they operate on the objects of

FLOAT.

3. Write a Program to evaluate a function 'power()', " to raise a number m" to a power "n".

4. Create a Program to compute compound interest using function overloading.

5. Create a class which consists of employee details, Derive a class PAY from the above class and calculate DA, HRA and PF depending on the grade and display the pay slip in a neat format using console I/O.

6. Define two classes POLAR and RECTANGLE to represent points in the polar and rectangle system. Write a program to convert from one system to another.

7. Write a program to calculate the EB bill using class and object.

8. Write a Program to implement North – West Corner Rule.

9. Write a Program to implement Game with saddle point.

10. Write a Program to implement Gauss Jordan Method.

11. Write a Program to implement Gauss Seidel Method.

12. Write a Program to implement Gauss Jacobi Method.

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- 13. Create a Program to implement the Bisection Method.
- 14. Create a Program to implement the Newton Raphson" s Method

17UMA5SP

SKILL BASED COURSE- III: LATEX

SEMESTER - V

Total Credits : 2 Hours Per Week : 3

CONTENTS

USING LATEX

1. Create a document and type mathematical formulas.

2. Obtain the equation of Gauss divergence theorem.

3. Obtain the equation of Green" s theorem.

4. Produce an infinite series.

5. Produce the expression of function in two different intervals.

6. Buckling load of a column loaded by its own weight.

7. Obtain Continued fraction.

8. Obtain a partial differential equation.

9. Insert a graph or picture in a document

10. Insert a table with multiple columns.

11. Create a Power Point Presentation.

12. Produce matrix form of an equation.

17UMA63A	CORE -XVI: REAL ANALYSIS II	SEMESTER- VI
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PREAMBLE

1. The students should gain the knowledge about limits and Continuity,

derivatives, and functions of bounded variations.

2. The students should gain the knowledge about The Riemann - Stieltjes

integral

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Recollect the knowledge in limits and continuity with examples.	K1
CO 2	Abstract thinking of continuity and functions, discuss examples and theorems.	К2
CO 3	Consideration the concept of derivatives, demonstrate the theorems and properties.	К3
CO 4	Apply the concept of functions, manipulate the properties in functions and bounded variations.	К3
CO 5	Construct the theorems and properties of integrals and integration by parts.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	М
CO2	S	М	S	S	М
CO3	S	М	S	S	S
CO4	S	S	М	М	М
CO5	S	S	М	S	S
17UMA63A

CORE -XVI: REAL ANALYSIS II

SEMESTER-VI

Total Credits : 5 Hours Per Week : 5

CONTENTS

UNIT-I

Limits and Continuity: Continuity and inverse images of open or closed sets – Functions continuous on compact sets – Topological mappings (homeomorphisms) – Bolzano[°] s theorem.

UNIT-II

Limits and Continuity: Connectedness – Components of a metric space – Arcwise connectedness-Uniform continuity- Uniform continuity and compact sets – Fixed point theorem for contractions – Discontinuities of real-valued function – Monotonic functions.

UNIT- III

Derivatives: Introduction- Definition of derivative – Derivatives and continuity – Algebra of derivatives – The chain rule – one-sided derivatives and infinite derivatives – Functions with non-zero derivative – Zero derivatives and local extrema. Rolle" s Theorem – The Mean-Value theorem for derivatives – Intermediate-value theorem for derivatives – Taylor's formula with remainder.

UNIT- IV

Function of Bounded Variation and Rectifiable curves: Introduction -Properties of monotonic functions – Functions of bounded variation – Total variation – Additive property of total variation – Total variation on [a, x]as a function of x - Functions of bounded variation expressed 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 variables in a Reimann-Stieltjes Integral – Reduction to a Riemann Integral.

TEXT BOOK

 Tom M. Apostol. 2002. Mathematical Analysis. SecondEdition. Narosa Publishing house Pvt. Ltd.

UNIT I : Chapter 4: Section 4.12 - 4.15

UNIT II : Chapter 4: Section 4.16 - 4.23

UNIT III : Chapter 5: Section 5.1 – 5.12

UNIT IV : Chapter 6: Section 6.1 - 6.8

UNIT V : Chapter 7: Section7.1 - 7.7

REFERENCE BOOKS

1. Somasundaram.D, Choudhary.B.2015. A first course in Mathematical

Analysis, Narosa publishing house.

2. *Mainak Mukherjee*. 2015. **A course in Real Analysis**, Narosa publishing house.

3. Shanti Narayan, Dr.M.D.Raisinghania. 2014. Elements of Real Analysis,

S.Chand and company Pvt. Ltd., New Delhi

4. *Dipak Chatterjee*.2005. **Real Analysis.** Prentice- Hall of India Pvt. Ltd., New Delhi.

17UMA63B	CORE - XVII: COMPLEX ANALYSIS II	SEMESTER- VI
PREAMBLE		

1. The students should gain knowledge about the complex integration and singularities.

2. To know about the concept of application of complex numbers and

complex functions.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Learn the concepts of Cauchy" s integral formula and formulas for derivatives - zeros of a function	K1
CO 2	Learn the concepts of zeros of an analytic function	K1
CO 3	Distinguish between Singularity, Isolated singularity, Removable singularity, Essential singularity, Behavior of a function at an isolated singularity	K2
CO 4	Demonstrate Residues and calculation of residues	K3
CO 5	Explain Taylor" s series , zeros of an analytic function, Laurent" s series and Meromorphic functions, Function meromorphic in the extended plane	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	М	S	М
CO3	S	М	S	S	М
CO4	S	S	S	М	S
CO5	S	S	М	S	М

MAPPING WITH PROGRAMME OUTCOMES

17UMA63B	CORE - XVII: COMPLEX ANALYSIS II	SEMESTER- VI
1/UNIA03D		

Total Credits : 5 Hours Per Week : 5

CONTENTS

UNIT- I

Complex integration: Cauchy" s integral formula and formulas for derivatives - zeros of a function – related integral theorems – term by term differentiation and integration of uniformly convergent series – Examples.

UNIT -II

Taylor's series and Laurent's series: Taylor" s series – zeros of an analytic function – Laurent" s series - Cauchy" s product and division – Examples.

UNIT -III

Singularities: Singularity – Isolated singularity – Removable singularity – Essential singularity – Behaviour of a function at an isolated singularity – determination of nature of singularity – nature of singularity at infinity – Examples.

UNIT-IV

Residues: Residues – calculation of residues – real definite integral –Examples.

UNIT -V

Meromorphicfunctions: Meromorphic functions – Function meromorphic in the extended plane – Examples.

TEXT BOOK

 DuraiPandian, KayalalPachaiyappa.P 2014. Complex Analysis. S.Chand and Sons Publications, New Delhi.
UNIT I : Chapter 8 Section 8.9 to 8.13
UNIT II : Chapter 9 Section 9.1 to 9.4 and 9.13
UNIT III : Chapter 9 Section 9.5 to 9.13
UNIT IV : Chapter 10 Section 10.1 to 10.4
UNIT V : Chapter 11 Section 11.1 to 11.3

REFERENCE BOOKS

 Arumugam.S, ThangapandiIssac.A and Somasundaram.A, 2014. Complex Analysis, Scitech publications (India) Pvt Ltd.
Venkatachalapathy.S.G. 2014. Complex Analysis.(For B.Sc Mathematics), Marghampublictions, Chennai.

PROGRAMMING SEMESTER - VI	17UMA63C PROGRAMMING SEMESTER - VI
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PREAMBLE

1. The students should learn the basic Java programming concepts.

2. The student should learn about wide range of Applications and

Applets using Java.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

СО		Knowledge
Number	CO Statement	Level
CO 1	Identify and reproduce the features of Object Oriented programming paradigm	K1
CO 2	Learn the constants, variables and data types, decision making and Branches, Operators and Looping.	K1
CO 3	Describe the Java Packages, multithreading, and interface concepts.	K2
CO 4	Manage errors and exception, design Applet and execute Applet, draw graphs and shapes.	К3
CO 5	Use I/O functionality to code basic file operations and experiment with exceptions handling.	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	М
CO4	S	S	S	S	М
CO5	S	S	М	М	М

Mapping with Programme outcomes

17UMA63C

CORE XVIII: JAVA PROGRAMMING

SEMESTER - VI

Total Credits : 2 Hours Per Week : 3

CONTENTS

UNIT - I

Fundamentals of Object – Oriented Programming- Java Evolution – Overview of Java Language.

UNIT - II

Constants, Variables and Data Types – Operators and Expressions – Decision Making and Branching- Decision Making and Looping - Classes, Objects and Methods.

UNIT - III

Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting classes together – Multithreaded programming.

UNIT - IV

Managing Errors and Exceptions – Applet Programming – Graphics Programming.

UNIT - V

Managing Input / Output Files in Java: Concepts of streams – stream classes – Byte stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading/Writing characters, Byte – Handling primitive data types – Random Access Files – Other stream classes .

TEXT BOOK

1. Balagurusamy. E, **PROGRAMMING WITH JAVA – A PRIMER**, 5th Edition. Mc.

Graw Hill Education (India) Pvt. Ltd.

UNIT I: Chapter 1, 2, 3

UNIT II : Chapter 4, 5, 6, 7, 8

UNIT III : Chapter 9, 10, 11, 12

UNIT IV : Chapter 13, 14, 15

UNIT V: Chapter 16

REFERENCE BOOKS

1. Patrick Naughton& Hebert Schildt, JAVATM 2:THE COMPLETE

REFERENCE, 3rd Edition, Tata MC Graw Hill education Pvt. Ltd.

2. *John R. Hubbard* ,**PROGRAMMING WITH JAVA**, 2nd Edition, Tata MC Graw Hill education Pvt. Ltd

17UMA63P

CORE LAB-V: JAVA PROGRAMMING

SEMESTER - VI

Total Credits : 2 Hours Per Week : 3

CONTENTS

Write a Java Program

- 1. To print the triangle of numbers.
- 2. To create and display a message on the windows.
- 3. To draw several shapes in the created window.
- 4. To find odd or even numbers among n numbers.
- 5. To calculate standard deviation.
- 6. To extract a portion of a character string and print the extracted string.
- 7. To implement the concept of multiple inheritance using interfaces.
- 8. To implement the concept of multithreading.
- 9. To create a frame with four text field such as name, street, city, and pin code with suitable table with one button.
- 10. To implement the concept of exception handling.
- 11. To check whether a given number is Armstrong number or not.
- 12. To sort an array of elements using bubble short algorithm.
- 13. To perform Matrix multiplication.
- 14. To get the prime numbers between a given range.
- 15. To print Floyd Triangle

17UMA6SP

SKILL BASED COURSE- IV: ADVANCED EXCEL

SEMESTER- VI

Total Credits : 2 Hours Per Week : 3

CONTENTS

- 1. Solve Linear Programming Problem using Excel Solver.
- 2. Obtain a solution for Integer Programming Problem using Excel Solver.
- 3. Solve Quadratic Programming problem using Excel Solver
- 4. Perform the following Built-in-functions
- (i) Math
- (ii) Trigonometry
- (iii) Statistical
- (iv) Financial
- (v) Text
- 5. Generate ANOVA table using analysis tool pack.
- 6. Find the correlation and regression using analysis tool pack.
- 7. Create different types of charts for a give data.
- 8. Create a formula for financial applications:

PV, PMT, NPER, RATE & Depreciation Calculations

- 9. Format Pivot Table and make Dynamic Pivot Tables
- 10. Format Pivot charts and makes Dynamic Pivot Charts

11. Create a file in Excel that describes a grading system for a class using

advanced Excel features.

12. Simulate Deal or No-Deal game in Excel.

17UMA5EA

SEMESTER – V

PREAMBLE

1. The students should gain knowledge about Celestial sphere

2. The students should gain knowledge about Astronomy.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO		Knowledge
Number	CO Statement	Level
CO 1	Learn the current accepted theories of solar systems, spherical trigonometry and the Kepler's law of motion.	K1
CO 2	Discuss the scientific reasoning of Equator, Zenith, nadir and variation in length of the day.	К2
CO 3	Demonstrate the Latitude and Longitude, Twilight.	K2
CO 4	Discuss and manipulate the tangent formula and Cassinis formula.	К3
CO 5	Interpret the motion of interior and superior planets, Relation between true eccentric and mean anamolies.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	Μ	Μ	L
CO2	S	S	S	Μ	L
CO3	М	Μ	М	Μ	Μ
CO4	М	М	L	L	L
CO5	М	М	L	L	L

17UMA5EA

ELECTIVE- I: ASTRONOMY - I

SEMESTER – V

Total Credits:4 Hours Per Week:5

CONTENTS

UNIT - I

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

UNIT - II

Celestial sphere - Pole - Equator - Zenith, nadir, meridian, Celestial co -

ordinates - Diurnal motion and simple problems - Variation in length of the day

- Representation of celestial objects on the celestial sphere.

UNIT - III

Dip of the horizon – perpetual day, duration of day – Latitude and Longitude – Night variations -Twilight – Geocentric parallex.

UNIT - IV

Refraction – aberration, heliocentric parallax definitions and formula - Tangent formula – Cassinis formula.

UNIT - V

Kepler's laws of planetary motion – motion of inferior and superior planets – Relation between true eccentric and mean anamolies.

TEXT BOOK

1. *Kumaravelu and S. Susheela* . 2005. **ASTRONOMY.** S.Chand and Company Ltd, Ram Nagar, New Delhi

ELECTIVE- I: NUMERICAL METHODS – I

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SEMESTER - V
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PREAMBLE

1. The student gains the knowledge about solving the linear equations

numerically.

2. The student gains the knowledge about finding interpolation by using

difference formulae.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

СО	CO Statement	Knowledge
Number	co statement	Level
CO 1	Recall numerical solutions of nonlinear equations in single variable	K1
CO 2	Understand elementary linear algebra techniques and how to apply them to numerical methods	K2
CO 3	Identify the interpolation for equal and unequal intervals and solve them	K2
CO 4	Construct the numerical methods in modern scientific computing	К3
CO 5	Illustrate the fundamental mathematical theories and algorithms underlying modern numerical methods	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	М	S	S	М
CO3	S	S	S	S	S
CO4	S	М	S	М	S
CO5	S	S	М	S	S

ELECTIVE- I: NUMERICAL METHODS – I

SEMESTER - V

Total Credits:4 Hours Per Week:5

CONTENTS

UNIT - I

The solution of numerical algebraic and transcendental Equations:

Introduction - Bisection method - Iteration Method - Convergence condition -RegulaFalsi Method - Newton - Raphson method - Convergence Criteria -Order of Convergence.

UNIT - II

Solution of simultaneous linear algebraic equations: Introduction – Direct methods - Gauss elimination method – Gauss Jordan method – Method of Triangularization – Crout" s method –Iterative methods - Gauss Jacobi method – Gauss Seidel method.

UNIT - III

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

UNIT - IV

Interpolation for equal intervals: Introduction - Newton" s forward and backward interpolation formula – Error in Newton" s forward and backward interpolation formula - equidistant terms with one or more missing values. **Central differences interpolation formulae :**Central differences and central difference table – Gauss's forward and backward interpolation formulae.

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UNIT - V

Interpolation with unequal interval: Introduction - Divided differences – Properties of divided differences – Relation between divided differences and forward differences – Newton's divided differences formula – Lagrange's interpolation formula – inverse interpolation.

TEXT BOOK

1. Kandasamy. P, Thilagavay. K and Gunavathy. K. 2014. Numerical

Methods. S. Chand and Company PVT Ltd, New Delhi.

UNIT I: Chapter 3 Section 3.1-3.4

UNIT II: Chapter 4 Section 4.1-4.9

UNIT III: Chapter 5 Section 5.1-5.5

UNIT IV : Chapter 6 Section 6.1-6.7 Chapter 7 Section 7.1-7.4

UNIT V: Chapter 8 Section 8.1-8.8

REFERENCE BOOKS

1. Venkataraman. M. K. 1999. Numerical Methods in Science and

Engineering. V Edition. National Publishing Company. Chennai

2. Arumugam. S, ThangapandiIssac. A, Somasundaram.A, 2007, Numerical

Methods. Second Edition, Scitech publications India Pvt.Ltd.

3. *Sastry.S.S*, **Introductory Methods of Numerical Analysis**, 2006, 4th Edition.prentice Hall of India Private Limited, New Delhi.

17UMA5EC	ELECTIVE- I: DISCRETE	SEMESTED V
	MATHEMATICS	SEIVIESTER - V

PREAMBLE

1. On successful completion of this course the students should gain knowledge

about Functions, Relations, Digraphs, Lattices and Boolean algebra.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO	CO Statement	Knowledge
Number	CO Statement	Level
	Define the basic concepts of functions, Relations,	
CO 1	Language, Grammar, and Boolean Algebra.	K1
	List the fundamental algorithms used by the computer	
CO 2	programmers.	K1
	Understand finite state to represent the special	
CO 3	grammars and languages.	K2
	Apply the relation to map X – values and Y – values	
CO 4	by ordered pairs.	K2
	Apply the logical solution and writing program using	
CO 5	the concept of Boolean algebra.	K3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	М	L	L
CO2	S	S	S	М	М
CO3	L	L	S	S	М
CO4	М	М	S	S	S
CO5	М	М	S	S	S

17UMA5EC

ELECTIVE- I: DISCRETE MATHEMATICS

SEMESTER - V

Total Credits:4 Hours Per Week:5

CONTENTS

UNIT-I

Logic: Propositions and logical operations-Conditional statements-Methods of proof- Mathematical induction. **Counting:** Permutations – Combinations-Recurrence relations.

UNIT-II

Relations and Digraphs: Product sets and Partitions-Relations and digraphs – paths in relations and digraphs – properties of relations – Equivalence Relations – Manipulation of Relations.

UNIT – III

Functions: Functions – Functions for computer science – Permutation Functions – Growth of functions. **Trees**: Trees – Labeled Trees.

UNIT – IV

Order relations and Structures: Partially ordered sets – Extremal elements of Partially ordered sets – Lattices – Finite Boolean Algebra – Functions of Boolean Algebra.

UNIT – V

Languages and finite state machines: Languages – Representations of Special Languages and Grammars– Finite State Machines – Semigroup, Machines and Languages – Machines and Regular Languages- Simplification of Machines. 164 Dr.N.G.P Arts and Science College (Autonomous)

TEXT BOOK

1. Kolman . B, Busby. R.C. and Ross. S. 2006. Discrete Mathematical Structures.

3rd Edition. Prentice hall of India Pvt. Ltd. New Delhi.

- UNIT I : Chapter 2 and 3
- UNIT II : Chapter 4 Section 4.1 to 4.5 and 4.7
- UNIT III : Chapter 5, Chapter 8 Section 8.1-8.2
- UNIT IV : Chapter 7 Section 7.1-7.5
- UNIT V : Chapter 10

REFERENCE BOOK

 Sharma.J.K. 2007. Discrete Mathematics. 2nd Edition. Macmillan India Pvt. Ltd. Newdelhi.

17UMA6EA	ELECTIVE- II: ASTRONOMY - II	SEMESTER - VI
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PREAMBLE

1. The students should gain knowledge about Annual Parallax.

2. The students should gain knowledge about Astronomy.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO		Knowledge
Number	CO Statement	Level
CO 1	Recall the equation of time and seasons.	K1
CO 2	Describe the direct and retrograde motion.	K2
CO 3	Classify the different kinds of years and nutation.	K2
CO 4	Relate the Eclipses, Ecliptic limits and number of Eclipses in a year.	К3
CO 5	Describe the stellar system and identify the transit	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	М	S
CO2	S	S	S	S	М
CO3	S	М	L	S	М
CO4	S	S	М	S	S
CO5	S	М	S	М	S

17I M A 6F A	ELECTIVE- II: ASTRONOMY - II	SEMESTER - VI
I/UMA6EA		SLIVILSILK - VI

Total Credits:4 Hours Per Week:5

CONTENTS

UNIT - I

Time: Equation of time - Siderial Time - Convertion of time - Local Mean Time

- Mean Siderial Time - Seasons - Calendar.

UNIT - II

Annual Parallax - Abberation - Direct and Retrograde motion - Stationary

points.

UNIT - III

Precession - Precession of the equinoxes on different kinds of years - Nutation.

UNIT - IV

The Moon - Phases of the moon - Eclipses, Ecliptic Limits - Number of

Eclipses in a year.

UNIT - V

Planetory Phenomenon - Stellar Universe - The Stellar system - Constellations

- Galaxy, Cluster, Nebula - Transit circle.

TEXT BOOK

1. *Kumaravelu and Susheela Kumaravelu,S.* 2007. **ASTRONOMY**. S. Chand and Company Ltd, New Delhi.

17UMA6EB	ELECTIVE- II:	SEMESTER - VI
	NUMERICAL METHODS - II	

PREAMBLE

1. The student gain the knowledge about solving the Ordinary

Differential Equations numerically

2. To find differentiation and integration numerically.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

СО		Knowledge
Number	CO Statement	Level
CO 1	Recall numerical differentiation and integration	K1
CO 2	Identify numerical methods to obtain approximate solutions to mathematical problem	K2
CO 3	Acquire knowledge about numerical solutions of Ordinary Differential Equations	К3
CO 4	Construct the numerical methods in modern scientific computing	K3
CO 5	Solve ODE using Milne" s and Adam Predictor and Corrector formula.	K3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	М	S	S	S
CO3	S	S	S	М	S
CO4	S	М	М	S	М
CO5	S	S	S	S	S

17UMA6EB

ELECTIVE- II: NUMERICAL METHODS – II

SEMESTER - VI

Total Credits:4 Hours Per Week:5

CONTENTS

UNIT - I

Numerical differentiation: Introduction - Newton" s forward and backward formulae to compute the derivatives – Derivative using Stirlings formulae – maxima and minima of the function given the tabular values.

UNIT - II

Numerical Integration: Introduction - Newton - Cote's formula - Trapezoidal rule - geometrical interpolation - Truncation error in Trapezoidal rule -Romberg's method - Simpson's one - third rule and Simpson's three - eight rule.

UNIT - III

Difference Equations: Definition - Order and degree of a difference equation – Linear difference equations- To find complementary function and particular integral- solution of homogeneous linear equation.

UNIT -IV

Numerical solution of ODE: Introduction - Taylor series method for first and second order ODE – Picard's method- Euler's method – improved and modified Euler method –RungeKutta method-RungeKutta method for first and second order ODE.

UNIT - V

Numerical solution of O.D.E: predictor – corrector methods – Milne's predictor corrector formulae – Adam-Bashforth predictor corrector formulae.

TEXT BOOK

1. Kandasamy. P, Thilagavathy. K and Gunavathy. K. 2014. Numerical

Methods. S. Chand and Company Pvt Ltd, New Delhi.

UNIT I: Chapter 9 Section 9.1-9.6

UNIT II : Chapter 9 Section 9.7-9.14

UNIT III: Chapter 10 Section 10.1-10.7

UNIT IV: Chapter 11 Section 11.1-11.15

UNIT V : Chapter 11 Section 11.16-11.18

REFERENCE BOOKS

 Venkataraman, M.K.. 2003..Numerical Methods in Science and Engineering. National Publishing Company. Chennai

Arumugam. S, ThangapandiIssac. A, Somasundaram.A, 2007, Numerical Methods.
Second Edition, Scitech publications India Pvt.Ltd.

3. Sastry.S.S, Introductory Methods of Numerical Analysis, 4th Edition 2006,

prentice Hall of India Private Limited, New Delhi.

17UMA6EC

ELECTIVE- II:DIGITAL ELECTRONICS AND COMPUTER FUNDAMENTALS

PREAMBLE

1. To acquire the basic knowledge of computer fundamentals and

application of knowledge to understand digital electronics.

2. To prepare students to perform the analysis and design of various digital electronic.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO		Knowledge
Number	CO Statement	Level
CO 1	Learn the fundamental concepts and techniques used in digital electronics.	K1
CO 2	Demonstrate various number system, codes, Boolean laws and rules to simplify simple expressions.	K2
CO 3	Experiment combinational and sequential circuits.	K2
CO 4	Acquired the memory concepts, I/O devices and peripherals.	К3
CO 5	Identify and illustrate basic organization of computer	К3

Mapping with Programme outcomes

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	М	S
CO2	S	S	S	S	М
CO3	S	М	L	S	М
CO4	S	S	М	S	S
CO5	S	М	S	М	S

17UMA6EC

ELECTIVE- II: DIGITAL ELECTRONICS AND COMPUTER FUNDAMENTALS

SEMESTER -VI

Total Credits:4 Hours Per Week:5

CONTENTS

UNIT - I

Representation of information Number System and Codes – Binary to Decimal Conversion - Decimal to Binary Conversion – Octal Numbers – Hexadecimal Numbers – ASCII Code – Excess-3 Code – Gray Code

UNIT - II

Logic circuits: Gates – AND, OR, NOT, NAND and NOR gates – Truth tables – Boolean Algebra – Karnaugh Maps – Product of sum and Sum of product methods – Don't care conditions – Multiplexers and Demultiplexers – Flip flops – RS, JK, D, T flip flops – Decoders.

UNIT - III

Shift Registers – Counters – Arithmetic circuits – Half adder – Full Adder – Half &full Subtractor – Binary adder &Subtractor – Serial & Parallel Binary Adders – BCD Adder.

UNIT - IV

I/O devices: Punched tape – Tape readers – Alphanumeric codes – Character recognition – CRT – Output Device: Magnetic tape Output offline Operation – Error detecting and correcting codes – Printers: Dot Matrix, Laser, CRT, Keyboards – Terminals.

UNIT - V

The Memory Element :RA Semiconductor memories -ROM - RAM - Static RAM,

Dynamic RAM – Magnetic disc memories – Magnetic tape – Digital recording techniques

TEXT BOOKS

1. Albert Malvino and Donald P Leach. 2003. Digital Principles and

Applications .

2. *Bartee,* T.C. 2007.**Digital Computer fundamentals**, 6th Edition. Tata MC Graw-Hill Edition.

17UMA6ED

ELECTIVE- III:AUTOMATA THEORY AND FORMAL LANGUAGES

SEMESTER - VI

PREAMBLE

1. The student gains the knowledge about formal languages.

2. To know about Automata.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Recall the Sets, Relations, Functions, Graph theory, Strings, Languages, Expression and Grammars.	K1
CO2.	Understand the concept of finite automata, Regular expression, Context Free Grammar and Push down Automata.	K2
CO3.	Construct properties of regular set and minimization of finite automata using MyhillNerode theorem.	K3
CO4.	Analyze Context Free Grammars, ambiguous grammars, simplification of CFG" S and Normal forms.	K3
CO5.	Identify a fundamental understanding of core concept relating to the Deterministic and Non-deterministic push down automata.	К3

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	М	L	S	S
CO4	S	S	М	S	S
CO5	S	М	S	М	S

MAPPING WITH PROGRAMME OUTCOMES

17UMA6ED

ELECTIVE- III:AUTOMATA THEORY AND FORMAL LANGUAGES

SEMESTER - VI

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT - I

Introduction to theory of computation: Symbol and Alphabet-Strings and Languages. **Finite State Machines**: Deterministic Finite Automata (DFA) –Non-Deterministic Finite Automata (NFA)- Equivalence of NFA and DFA Finite Automata with outputs.

UNIT-II

Regular Expression and Regular Grammars: Regular Expressions- Equivalence of Regular Expression and Finite Automata

UNIT - III

Regular sets and properties: Pumping lemma for Regular sets-Applications of Pumping lemma-Closure properties of Regular sets-Decision algorithms for Regular sets-The Myhill-Nerode theorem and Minimization of finite Automata

UNIT IV

Context Free Language(CFL): Introduction-C ontext free grammars (CFG) - Derivation Trees-left most derivation and right most derivation-Ambiguity in CFG – simplification of CFG- Normal forms.

UNIT - V

Push Down Automata (PDA): Deterministic Push Down Automata - Non Deterministic Push Down Automata- Equivalence of acceptance by final state and empty stack-Push Down Automata and CFL's - The Pumping lemma for CFL's- Applications of Pumping lemma- Closure properties of CFL's- decision algorithm for CFL's-Membership.

TEXT BOOK

 SaradhiVarma.G.P and Thirupathi Rao.B.2011. Theory of Computation Formal Languages and Automata Theory. 8th Edition. SciTech publications(India) Pvt. Ltd.
UNIT I: Chapters 1 and 2.
UNIT II: Chapter 3
UNIT III: Chapter 4
UNIT IV: Chapter 5

UNIT V: Chapter 6

REFERENCE BOOKS

 John E. Hopcroft and Jeffrey D.Ullman.1999.Introduction to Automata theory,languages and computation.19th Edition, Narosa Publishing House
John C. Martin, .2009. Introduction to languages and the theory of computation.15th Edition- Tata McGraw-Hill publishing company limited.

17UMA6EE

ELECTIVE -III: FUZZY LOGIC AND NEURAL NETWORKS

SEMESTER - VI

PREAMBLE

1. To introduce the concept of soft computing to the students, to take up research projects in these areas

2. To enable the students to apply the soft computing methodologies in their fields of Work

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO 1	Learn the basic concepts of feed forward neural	K1
	networks and fuzzy logic.	
CO 2	Demonstrate the various feedback networks.	K2
CO 3	Understand the concept of fuzziness involved in various systems and fuzzy set theory.	К2
CO 4	Construct the fuzzy logic control and adaptive fuzzy logic and to design the fuzzy control using genetic algorithm.	К3
CO 5	Build the application of fuzzy logic control to real time systems.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	М	S
CO2	S	S	S	S	М
CO3	S	М	L	S	М
CO4	S	S	М	S	S
CO5	S	М	S	М	S

17UMA6EE

ELECTIVE -III: FUZZY LOGIC AND NEURAL NETWORKS

SEMESTER - VI

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT - I

Fuzzy set theory: Fuzzy versus crisp- Crisp sets: Operations on crisp sets – Properties of crisp sets – Partition and covering .Fuzzy sets: Membership function basic fuzzy set operations – Properties of fuzzy sets. Crisp relations: Cartesian product – Other crisp relations –Operations on fuzzy relations. Fuzzy relations: Fuzzy Cartesian product – Operations on fuzzy relations.

UNIT - II

Fuzzy systems: Crisp Logic: Laws of prepositional Logic- Inference in prepositional Logic. Predicate Logic : Interpretations of Predicate Logic formula – Inference in predicate Logic . Fuzzy logic : Fuzzy Quantifiers – Fuzzy inference – Fuzzy rule based System – Defuzzification Methods – Applications.

UNIT - III

Fuzzy Associative Memories : FAM an introduction – Single Association FAM: Graphical method of inference – Correlation Matrix Encoding . Fuzzy Hebb FAMS- FAM involving a rule base – FAM Rules with multiple Antecedents / Consequents: Decomposition rules. Applications.

UNIT - IV

Fundamentals Of Neural Network: Basic Concepts of Neural Networks – Human Brain – Model of an Artificial Neuron – Neural Network Architectures: Single Layer Feed Forward Network – Mutlilayer Feed forward Network – Recurrent Networks .Characteristic of neural Networks – Learning Methods – Taxonomy of neural Network Architectures – History of neural Network Research – Early neural Network Architectures – Rosenblatt" s percetron – ADALINE network – MADALINE Network – Some Application Domains.

UNIT - V

Back Propagation Networks: Architecture of a Back Propagation Network: The Perceptron Model – The solution – Single Layer Artificial Neural Network. Model for Multi Perceptron .Bank Propogation Learning : Input Layer computation – Hidden Layer Computation Output Layer Computation – Calculation of Error – Training of neural network – Method of steepest Descent – Effect of learning Rate - Adding a Momentum Term – Back Propogation Algorithm.

TEXT BOOK

1. *Rajasekaran,S and Vijayalakshmi Pai, G.A.*2003.**Neural Networks, Fuzzy Logic and Genetic Algorithms – Synthesis and Applications**. Prentice Hall of India Pvt. Ltd., New Delhi.

REFERENCE BOOK

1. *Timothy and Ross, J.* 1997. Fuzzy Logic with Engineering Applications , McGrow Hill .
17UMA6EF

ELECTIVE -III: GRAPH THEORY

SEMESTER - VI

PREAMBLE

1. To translate real life situations to diagrammatic representations

2. To develop problem solving skills and there by solve real life

problems.

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand fundamentals of graphs, degree,	K1
	circuits and trees.	
CO 2	Illustrate the basic principles of trees, spanning tree and its properties.	K2
CO 3	Discuss about circuits, connectivity and planar graphs, manipulate the examples and theorems.	K2
CO 4	Abstract thinking of directed and undirected graphs are to be represented by matrices.	K3
CO 5	Compute chromatic characteristic and applications of coloring.	K3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	М	М	S
CO2	S	S	М	М	М
CO3	S	М	S	S	М
CO4	S	М	S	S	S
CO5	S	S	S	S	S

S-Strong; M-Medium; L-Low

ELECTIVE -III: GRAPH THEORY

SEMESTER - VI

Total Credits:4 Hours Per Week:6

CONTENTS

UNIT- I

Introduction: Graphs-Finite and Infinite graphs- Incidence and Degree- Isolated vertex, Pendent vertex and Null graph. **Paths and circuits**: Isomorphisms - Subgraphs-walk, path and circuits connected graphs, Disconnected graphs and Components- Euler graphs- Hamiltonian paths and circuits – Traveling salesman problem.

UNIT- II

Trees and fundamental circuits :Trees- Properties –pendent vertices in a tree-Rooted and Binary trees- Spanning trees-Fundamental circuits- Finding all Spanning trees of a graph –Spanning trees in a weighted graph.

UNIT- III

Cut-sets and Cut-vertices: Cut- sets: Properties- All Cut- Sets in a graph-Fundamental circuits and cut-sets-Connectivity and Separability. **Planar and dual graphs:** Planar graph- Kuratowski^w s two graphs.

UNIT-IV

Matrix representation of graphs: Incidence matrix- Sub matrices- Circuit matrix.**Directed graphs:** Directed graph -Types- Directed Paths and Connectedness- Euler Digraphs-Trees with directed edges-fundamental circuits in digraphs- Adjacency Matrices of Diagraphs.

UNIT -V

Coloring, Covering and Partitioning: Chromatic number-chromatic partitioning-chromatic polynomial-matching's-coverings-the four color problem.

TEXT BOOK

1. NarsinghDeo .1999. Graph Theory with Applications to Engineering and

computer Sceince, Prentice Hall. New Delhi.

UNIT I : Chapter 1 Section 1.1 - 1.6

Chapter 2 Section 2.1 – 2.10

UNIT II : Chapter 3 Section 3.1 - 3.10

UNIT III : Chapter 4 Section 4.1 to 4.5

Chapter 5 Section 5.2 and 5.3

UNIT IV : Chapter 7 Section 7.1 to 7.3

Chapter 9 Section 9.1 to 9.7 and 9.9

UNIT V : Chapter 8 Section 8.1 - 8.6

REFERENCE BOOKS

1. *Arumugam, S and Ramachandran S* .2001.**Invitation to Graph Theory** by *Scitech* Publications.

2. Harary. 2001. Graph Theory .Narosa Publishing House Pvt. Ltd.New Delhi.

17UMASS1

SELF STUDY PAPER - I VEDIC MATHEMATICS

SEMESTER - III

PREAMBLE

1. To enable students gain fundamental knowledge about the Vedic

Mathematics and its calculations

COURSE OUTCOMES

In the successful completion of the course, student will be able to

CO	CO Statement	Knowledge
Number	CO Statement	Level
CO 1	Observe mathematical concepts and examine the subtraction and multiplication using simple	K1
CO 2	Illustrate the basic method of sum and product of two Numbers	К2
CO 3	Manipulate the multiplication with eleven	K3
CO 4	Construct the secondary basis of 50 and 500	К3
CO 5	Practice the two digits and three digits multiplication.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	М	S
CO2	S	S	S	S	М
CO3	S	М	L	S	М
CO4	S	S	М	S	S
CO5	S	М	S	М	S

S-Strong; M-Medium; L-Low

	SELF STUDY PAPER – I VEDIC	
17UMASS1	MATHEMATICS	SEMESTER III

Total Credit: 1

CONTENTS

UNIT-I

Simple techniques :Subtraction from 100/1000/10000 - Normal method - Vedic method - Multiplication with a series of 9s.

UNIT-II

Operations with 9: Computation of remainder on dividing a number by 9: Basic method - First enhancement - Second enhancement - Verification of the product of two numbers, sum of two numbers.

UNIT-III

Operations with 11:Multiplication – Divisibility Test of numbers by 11 – Multiplication with 111.

UNIT – IV

Multiplication (Nikhilam) :Secondary Bases of 50 - Secondary Bases of 500

UNIT – V

(Multiplication (UrdhaTiryak): 2 Digit Multiplication - 3Digit multiplication

TEXT BOOK

1. Atul Cupta, The Power of Vedic maths, 2005, Jaico Publishing House Mumbai.

17UMASS2

SELF STUDY PAPER - II HISTORY OF MATHEMATICS

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SEMESTER - III
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PREAMBLE

1. To enable students gain knowledge about historical perspectives

2. To know about the international dimension of mathematics

COURSE OUTCOMES

In the successful completion of the course, student will be able to

СО		Knowledge
Number	CO Statement	Level
CO 1	Learn the significance of the history of mathematics.	K1
CO 2	Demonstrate understanding of the concepts of numbers, number systems, representations of numbers, techniques and methods	К2
CO 3	Demonstrate the deeply interconnected nature of mathematics and excellent communications skills in mathematics.	K2
CO 4	Build the significance of mathematical models over the course of mathematics history	К3
CO 5	Acquire the significance and nature of axiomatic reasoning and ability to read and discuss mathematical proofs.	К3

MAPPING WITH PROGRAMME OUTCOMES

COS/POS	PO1	PO2	PO3	PO4	РО
					5
CO1	S	S	S	М	S
CO2	S	S	S	S	М
CO3	S	М	L	S	М
CO4	S	S	М	S	S
CO5	S	М	S	М	S

S-Strong; M-Medium; L-Low

17UMASS2SELF STUDY PAPER - II
HISTORY OF MATHEMATICSSEMESTER - III

Total Credit: 1

CONTENTS

UNIT- I

Traces: Concepts and Relationships - Early Number Bases - Number Language and Counting - Spatial Relationships. **Ancient Egypt:** The Era and the Sources -Numbers and Fractions - Arithmetic Operations - "Heap" Problems - Geometric Problems - Slope Problems - Arithmetic Pragmatism. **Mesopotamia:** The Era and the Sources - Cuneiform Writing - Numbers and Fractions: Sexagesimals – Positional Numeration - Sexagesimal Fractions – Approximations – Tables – Equations - Measurements: Pythagorean Triads - Polygonal Areas - Geometry as Applied Arithmetic.

UNIT-II

Euclid of Alexandria: Alexandria - Lost Works - Extant Works - The Elements. **Archimedes of Syracuse:** The Siege of Syracuse - On the Equilibriums of Planes - On Floating Bodies - The Sand- Reckoner - Measurement of the Circle - On Spirals - Quadrature of the Parabola - On Conoids and Spheroids - On the Sphere and Cylinder - Book of Lemmas - Semiregular Solids and Trigonometry - The Method. **Apollonius of Perge:** Works and Tradition - Lost Works -Cycles and Epicycles - The Conics.

UNIT-III

Crosscurrents: Changing Trends - Eratosthenes - Angles and Chords -Ptolemy" s Almagest - Heron of Alexandria - The Decline of Greek Mathematics - Nicomachus of Gerasa - Diophantus of Alexandria - Pappus of

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Alexandria - The End of Alexandrian Dominance - Proclus of Alexandria-Boethius - Athenian Fragments - Byzantine Mathematicians. Ancient and Medieval China: The Oldest Known Texts - The Nine Chapters - Rod Numerals
The Abacus and Decimal Fractions - Values of Pi - Thirteenth Century Mathematics.

UNIT-IV

Early Modern Problem Solvers: Accessibility of Computation - Decimal Fractions - Notation - Logarithms - Mathematical Instruments - Infinitesimal Methods: Stevin - Johannes Kepler **Analysis, Synthesis, the Infinite and Numbers:** Galileo" s Two New Sciences - Bonaventura Cavalieri - Evangelista Torricelli - Mersenne's Communicants - Rene' Descartes - Fermat's Loci -Gregory of St. Vincent - The Theory of Numbers - Gilles Persone de Roberval -Girard Desargues and Projective Geometry - Blaise Pascal - Philippe de Lahire -Georg Mohr - Pietro Mengoli - Frans van Schooten - Jan de Witt - Johann Hudde - Rene' Francois de Sluse - Christiaan Huygens.

UNIT- V

British Techniques and Continental Methods: John Wallis - James Gregory -Nicolaus Mercator and William Brouncker - Barrow's Method of Tangents -Newton - Abraham De Moivre - Roger Cotes - James Stirling - Colin Maclaurin - Textbooks - Rigor and Progress - Leibniz - The Bernoulli Family -Tschirnhaus Transformations - Solid Analytic Geometry - Michel Rolle and Pierre Varignon - The Clairauts - Mathematics in Italy - The Parallel Postulate -Divergent Series. B.Sc., Mathematics with Computer Applications (Students Admitted for the A.Y 2018-2019)

TEXT BOOK

1. UtaC .Merzbach and Carl B. Boyer, 2010, A History of Mathematics, Third

Edition, John Wiley & Sons, Inc.

UNIT I : Chapter 1, 2, 3

UNIT II :Chapter 5, 6 and 7

UNIT III: Chapter 8 and 9

UNIT IV: Chapter 14 and 15

UNIT V : Chapter 16

REFERENCE BOOK

1. *David M. Burton*.2011. **The History of Mathematics an Introduction**. Seventh Edition. McGraw-Hill.

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