

MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE

(An Autonomous College)

Affiliated to Periyar University, Salem | Accredited by NAAC with 'A' Grade

Recognized by UGC under Section 2(f) & 12 (B)



ESTD-1994

**MUTHAYAMMAL
COLLEGE OF ARTS
AND SCIENCE**

(Autonomous)

A UNIT OF VANETRA GROUP

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DEGREE OF BACHELOR OF SCIENCE

Learning Outcomes - Based Curriculum Framework

- Choice Based Credit System

Syllabus for B.Sc., Mathematics (Semester Pattern)

(For Candidates admitted from the academic year
2021 -2022 and onwards)

MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)

RASIPURAM – 637408

VISION

- ❖ To redefine the scope of higher education by infusing into each of our pursuits, initiatives that will encourage intellectual, emotional, social and spiritual growth, thereby nurturing a generation of committed, Knowledgeable and socially responsible citizens.

MISSION

- ❖ To Ensure State of the world learning experience
- ❖ To espouse value based Education
- ❖ To empower rural education
- ❖ To instill the sprite of entrepreneurship and enterprise
- ❖ To create a resource pool of socially responsible world citizens

QUALITY POLICY

To seek – To strive – To achieve greater heights in Arts & Science, Engineering, Technological and Management Education without compromising on the quality of education.

DEPARTMENT OF MATHEMATICS

VISION

- ❖ To train the students through Mathematical Analysis and Research of holistic persons to promote better living conditions of the under privileged.

MISSION

- ❖ To learn Mathematical concepts and develop capability through indications.
- ❖ To instill the spirit of humanity through value based training.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Graduates will be able to promote learning environment to meet the industry expectation.

PEO2: Graduates will be incorporated with critical thinking, good Communication and Leadership skills to become self-employed

PEO3: Graduates will uphold the human values and environmental sustenance for the betterment of the society.

GRADUATE ATTRIBUTES (GAs)

The Graduate attributes of B.Sc., Mathematics are

GA1: Analytical Reasoning

GA2: Critical Thinking

GA3: Problem Solving Skills

GA4: Communication Skills

GA5: Leadership Quality

GA6: Team work

GA7: Lifelong Learning

PROGRAMME OUTCOMES (POs)

PO1: Graduates will acquire dynamic skills through proper perception of the course objectives that leads to scientific and analytical comprehension of the concepts;

PO2: Graduates will focus on sustainable goals that might bring about spherical developments

PO3: Graduates will infuse a spirit converging on bricking a team work, interpersonal and administrative skills to think critically and execute effectively

PO4: Graduates will apply reasoning appropriately to scale the humps in learning and solute them to the core.

PO5: Graduates will engage the skills obtained in independent and collaborative learning as a perennial process.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Students are able to understand and view mathematical structures.

PSO2: Students shall acquire Aptitude skills that will help to take up research in pure and applied mathematics.

PSO3: Students shall learn various techniques to solve numerical problems, think critically and communicate clearly the mathematical concepts and solutions for real world problems.

PSO4: Students are able to apply positive approach towards Higher Education in Mathematics.

PSO5: Students are able to be equipped with mathematical modeling ability, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE(Autonomous) - Rasipuram-637408

Scheme of Examinations LOCF – CBCS Pattern

(for the Students Admitted from the Academic Year: 2021-2022 Onwards)

Programme: B.Sc. MATHEMATICS

S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER-I										
1	I	LANGUAGE - I	21M1UFTA01	TAMIL - I	5	-	3	25	75	100
2	II	LANGUAGE - II	21M1UCEN01	COMMUNICATIVE ENGLISH - I	5	-	3	25	75	100
3	III	DSC THEORY - I	21M1UMAC01	CLASSICAL ALGEBRA	4	-	4	25	75	100
4	III	DSC THEORY - II	21M1UMAC02	CALCULUS	4	-	3	25	75	100
5	III	GEC THEORY - I	21M1UPHA01	ALLIED: PHYSICS - I	5	-	4	25	75	100
6	III	GEC PRACTICAL - I	21M2UPHAP1	PRACTICAL : ALLIED - PHYSICS	-	2	-	-	-	-
7	IV	AECC-VALUE EDUCATION	21M1UVED01	YOGA	2		2	100		
8	IV	PROFESSIONAL ENGLISH - I	21M2UPES01	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCE - I	3		2	25	75	100
				TOTAL	28	2	21	250	450	600
SEMESTER-II										
1	I	LANGUAGE - I	21M2UFTA02	TAMIL - II	5	-	3	25	75	100
2	II	LANGUAGE - II	21M2UCEN02	COMMUNICATIVE ENGLISH - II	5	-	3	25	75	100
3	III	DSC THEORY - III	21M2UMAC03	ANALYTICAL GEOMETRY OF 2D AND 3D	4	-	4	25	75	100
4	III	DSC THEORY - IV	21M2UMAC04	TRIGONOMETRY AND VECTOR ANALYSIS	4	-	3	25	75	100
5	III	GEC THEORY - II	21M2UPHA02	ALLIED: PHYSICS - II	5		4	25	75	100
6	III	GEC PRACTICAL - I	21M2UPHAP1	PRACTICAL : ALLIED PHYSICS	-	2	2	40	60	100
7	IV	AECC - ENVIRONMENTAL STUDIES	21M2UEVS01	ENVIRONMENTAL STUDIES	2	-	2	100		
8	IV	PROFESSIONAL ENGLISH - II	21M2UPES02	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCE - II	3		2	25	75	100
				TOTAL	28	2	23	290	510	700

S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTA
SEMESTER-III										
1	I	LANGUAGE - I	21M3UFTA03	TAMIL - III	5	-	3	25	75	100
2	II	LANGUAGE - II	21M3UCEN03	COMMUNICATIVE ENGLISH - III	5	-	3	25	75	100
3	III	DSC THEORY - V	21M3UMAC05	STATICS	5	-	4	25	75	100
4	III	DSC THEORY - VI	21M3UMAC06	DIFFERENTIAL EQUATIONS	4	-	4	25	75	100
5	III	GEC THEORY - III	21M3USTA06	ALLIED : MATHEMATICAL STATISTICS-I	5	-	4	25	75	100
6	III	GEC PRACTICAL - II	21M4USTAP1	PRACTICAL : ALLIED STATISTICS	-	2	-	-	-	-
7	III	SEC THEORY - I	21M3UMAS01	QUANTITATIVE APTITUDE	2	-	2	25	75	100
8	IV	NMEC - I		NMEC - I	2	-	2	25	75	100
				TOTAL	28	2	22	175	525	700
SEMESTER-IV										
1	I	LANGUAGE - I	21M4UFTA04	TAMIL - IV	5	-	3	25	75	100
2	II	LANGUAGE - II	21M4UCEN04	COMMUNICATIVE ENGLISH - IV	5	-	3	25	75	100
3	III	DSC THEORY - VII	21M4UMAC07	DYNAMICS	4	-	4	25	75	100
4	III	DSC THEORY - VIII	21M4UMAC08	LAPLACE TRANSFORMS AND FOURIER SERIES	3	-	3	25	75	100
5	III	GEC THEORY - IV	21M4USTA07	ALLIED : MATHEMATICAL STATISTICS-II	5	-	4	25	75	100
6	III	GEC PRACTICAL - II	21M4USTAP1	PRACTICAL : ALLIED-STATISTICS	-	2	2	40	60	100
7	IV	SEC PRACTICAL - I	21M4UMASP1	PRACTICAL : LATEX PRACTICAL	-	4	2	40	60	100
8	IV	NMEC - II		NMEC - II	2	-	2	25	75	100
				TOTAL	24	6	23	230	570	800

S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER-V										
1	III	DSC THEORY - IX	21M5UMAC09	MODERN ALGEBRA	5	-	4	25	75	100
2	III	DSC THEORY - X	21M5UMAC10	REAL ANALYSIS - I	6	-	4	25	75	100
3	III	DSC THEORY - XI	21M5UMAC11	COMPLEX ANALYSIS	6	-	4	25	75	100
4	III	DSE - I		ELECTIVE - I	5	-	4	25	75	100
5	III	DSE - II		ELECTIVE - II	5	-	4	25	75	100
6	IV	SEC PRACTICAL - II	21M5UMASP2	PRACTICAL : PROGRAMMING IN C	-	3	2	40	60	100
				TOTAL	27	3	22	165	435	600
SEMESTER-VI										
1	III	DSC THEORY - XII	21M6UMAC12	LINEAR ALGEBRA	5	-	4	25	75	100
2	III	DSC THEORY - XIII	21M6UMAC13	REAL ANALYSIS - II	5	-	4	25	75	100
3	III	DSC THEORY - XIV	21M6UMAC14	DISCRETE MATHEMATICS	4	-	4	25	75	100
4	III	DSE - III		ELECTIVE - III	4	-	4	25	75	100
5	III	DSE - IV		ELECTIVE - IV	4	-	4	25	75	100
6	III	PROJECTWORK	21M6UMAPR1	PROJECTWORK	4	-	4	40	60	100
7	III	ONLINE-COMPETITIVE EXAMINATION	21M6UBCOE1	COMPETITIVE ONLINE EXAMINATION IN MATHEMATICS	-	-	2	100		
8	IV	SEC PRACTICAL - III	21M6UMASP3	PRACTICAL : PROGRAMMING IN PYTHON	-	4	2	40	60	100
9	V	EXTENSION ACTIVITY	21M6UEXA01	EXTENSION ACTIVITY		-	1	100		
				TOTAL	26	4	29	405	495	700
				OVER ALL TOTAL	160	20	140	1515	2985	4100
		EXTRA CREDIT COURSE	21M6UMAEC1	MOOC Courses offered in SWAYAM/NPTEL	-	-	2	-	-	-

UG-REGULATION

1. Internal Examination Marks- Theory

Components	Marks
CIA I&II	15
Attendance	5
Assignment	5
Total	25

Attendance Percentage	Marks
96 % to 100%	5
91% to 95%	4
86% to 90%	3
81% to 85%	2
75% to 80%	1
Below 75%	0

2. QUESTION PAPER PATTERN FOR CIA I, II AND ESE(3HOURS)

MAXIMUM:75Marks

SECTION-A (10 Marks) (Objective Type)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks

(10 x1=10 marks)

SECTION-B(10 Marks) (Short Answer)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks

(5 x 2 = 10 marks)

SECTION-C (25 Marks) (Either or Type)

Answer any **FIVE** questions

ALL Questions Carry **EQUAL** Marks

Either or Type.

(5 x 5 = 25 marks)

SECTION-D (30 Marks) (Analytical Type)

Answer any **THREE** Questions out of **FIVE** questions

ALL Questions Carry **EQUAL** Marks

(3 x 10 = 30 marks)

(Syllabus for CIA-I 2.5 Unit, Syllabus for CIA-II All 5 Unit)

2a) Components for Practical CIA.

Components	Marks
CIA -I	15
CIA - II	15
Observation Note	5
Attendance	5
Total	40

2.b) Components for Practical ESE.

Components	Marks
Completion of Experiments	50
Record	5
Viva	5
Total	60

3. Guidelines for Value Education Yoga and Environmental Studies (Part IV)

- The Course Value Education Yoga is to be treated as 100% CIA course which is offered in I Semester for I year UG students.
- The Course Environmental Studies is to be treated as 100% CIA course which is offered in II Semester for I year UG students.
- Total Marks for the Course=100

Components	Marks
Two Tests(2 x30)	60
Field visit and report(10+10)	20
Two assignments(2 x10)	20
Total	100

The passing minimum for this course is 40%

- In case, the candidate fails to secure 40% passing minimum, he/she may have to reappear for the same in the subsequent odd/even semesters.

4. Guidelines for Extension Activity (Part V)

- Atleast two activities should be conducted within semester consisting of two days each.
- The activities may be Educating Rural Children, Unemployed Graduates, Self Help Group etc.

The marks may be awarded as follows

No of Activities	Marks
2 x50 (Each Activity for two days)	100

5. Internship/Industrial Training, Mini Project and Major Project Work

Internship/Industrial Training		Mini Project	Major Project Work	
Components	Marks	Marks	Components	Marks
CIA* ²			CIA	
Work Diary	25	-	a) Attendance	10 Marks
Report	50	50	b) Review	30 Marks
Viva-voce	25	50	/Work Diary* ¹	
Examination				40
Total	100	100	ESE* ²	
			a)Final Report	40 Marks
			b)Viva-voce	20 Marks
			Total	100

*¹Review is for Individual Project and Work Diary is for Group Projects
(Group consisting of minimum 3 and maximum 5)

*²Evaluation of report and conduct of viva voce will be done jointly by Internal and External Examiners

6. Guidelines for Competitive Exams- Online Mode (Part III)- Online Exam 3 hours

Components	Marks
100 Objective Type Questions 100*1=100 Marks	100

Objective type Questions from Question Bank.

- The passing minimum for this paper is 40%
- In case, the candidate fails to secure 40% passing minimum, he/she may have to reappear for the same in the subsequent semesters.

B.Sc - Mathematics Syllabus LOCF - CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAC01	CLASSICAL ALGEBRA	DSC THEORY - I	I	4	4	-	-	4
Objective	Gain knowledge about exponential series and logarithmic series and Develop the ability of solving different types of algebraic equations.							
Unit	Course Content					Knowledge Levels	Sessions	
I	Binomial Theorem: Binomial theorem for a positive integral index -Multinomial Theorem - Vandermonde's Theorem- Binomial theorem for a rational index - Problems. Chapter 3 : Section 1 - 6					K1-K3	10	
II	Exponential and Logarithmic Series: Summation - Logarithmic series - Modification of Logarithmic series - Problems. Chapter 4 : Section 3-7					K3,K4	10	
III	Theory of equations: Imaginary and Irrational roots - Relation between the roots and coefficients of an equation - Symmetric functions of the roots-Problems. Chapter 6 : Section 9-12					K4	10	
IV	Theory of equations: Transformation of equation-Reciprocal equations - To increase or decrease the roots of an equation by a quantity- Removal of a term - Descarte's rule of signs- Problems. Chapter 6 : Section 15 -19 & 24					K4	9	
V	Matrices: Condition for consistency - Eigen value and Eigen vector - Similarity of matrices - Cayley- Hamilton theorem. Chapter 2 : Section 14-16					K1-K3	9	
Course Outcome	CO1: Recall the basic concepts and gain the knowledge about binomial series					K1		
	CO2: Understand the concepts of exponential and logarithmic series					K2		
	CO3: Apply the application of relations between the roots and coefficients of an equation					K3		
	CO4: Analyze the method of solving reciprocal equations and diminishing the roots of an equation					K4		
	CO5: Evaluate the consistency of linear equations and application of Cayley-Hamilton theorem					K5		

Learning Resources

Text Books	1. T.K.Manickavasagam Pillai, T.Natarajan & K.S.Ganapathy,AlgebraVolume I, S.V.Publications,1985.(ForUnit1-4) 2. T.K.Manickavasagam Pillai, T.Natarajan & K.S.Ganapathy,AlgebraVolume II, S.V.Publications,1985.(ForUnit5)
Reference Books	1. Dr.P.R.Vittal & Malini, Algebra, Analytical Geometry & Trigonometry, Margham Publications,Chennai-17. 2. Dr.P.R.Vittal & Malini, Allied Mathematics, Margham Publications,Chennai-17.
Website Link	1. https://www.britannica.com/science/mathematics/Theory-of-equations 2. https://www.onlinemath4all.com/how-to-check-consistency-of-linear-equations-using-matrices.html 3. https://www.brainkart.com/article/Introduction-to-Binomial,-Exponential-and-Logarithmic-series_35107/

L-Lecture

T-Tutorial

P-Practical

C-Credit

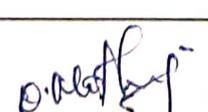
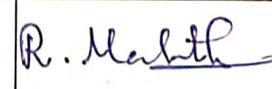
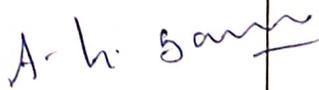
B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAC01	CLASSICAL ALGEBRA	DSC THEORY - I	I	4	4	-	-	4

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	M	S	S	S	S	M
CO2	S	S	S	S	M	S	M	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	M	M	S	S	S	S	M	S	S
CO5	S	S	S	S	S	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	
Teaching and Learning Methods	Lecture, Smart class presentation, Chalk and Talk method
Assesment Methods	Assignment , Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 D.MOTHIDHRSHAA	 R. MALATHI	



B.Sc - Mathematics Syllabus LOCF - CBCS with effect from 2021 - 2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAC02	CALCULUS	DSC THEORY-II	I	4	3	1	-	3
Objective	Obtain the knowledge of integrations and its geometrical applications and Identify a special function and evaluate an Integral.							
Unit	Course Content						Knowledge Levels	Sessions
I	Curvature - Circle, radius and centre of curvature - Cartesian formula for the radius of curvature -The coordinates of the centre of curvature - Evolute and involute - Radius of curvature when the curve is given in polar coordinates - Pedal equation of a curve. Volume I : Chapter 10 (Section 2.1 - 2.7)						K1,K2	10
II	Integration by parts, Reduction formulae , Bernoulli's formula, Integration assumption. Geometrical application so fintegration : Areas under plane curves, Areas of a closed curve, Areas in polar coordinates. Volume II : Chapter 1 (Section 12,13.1-13.10,15.1,15.2) & Chapter 2 (Section 1.1,1.2,1.4)						K2	10
III	Definition of the double integral -Evaluation of the double Integral - Double integral in polar Co-ordinates - Triple Integrals - Applications of multiple integrals. Volume II : Chapter 5 (Section 2.1,2.2,3.1,3.2,4,5.1-5.4)						K3	9
IV	Change of Variables - Jacobians-Two important results regarding jacobians - change of variables in the case of two and three variables -Transformation from Cartesian to polar and spherical coordinates - Improper integrals. Volume II : Chapter 6(Section 1.1,1.2,2.1-2.4) & Chapter 7 (Section 1.1-1.5)						K4	10
V	Beta and Gamma Functions - Properties of Beta functions-Relation between Beta and Gamma functions - Evaluation of definite integrals using Gamma functions. Volume II : Chapter 7 (Section 2.1-2.3,3,4,5)						K4	9
Course Outcome	CO1: Acquire the knowledge about areas under plane curve, closed curve.						K1	
	CO2: Understand the curvature, radius of curvature in Cartesian and polar coordinates						K2	
	CO3: Determine the area and volume by applying the techniques of double and triple integrals						K3	
	CO4: Analyze the double and triple integrals.						K4	
	CO5: Evaluate the integral by using Beta and Gamma function						K5	

Learning Resources

Text Books	<ol style="list-style-type: none"> 1. T.K.ManicavachagomPillayandS.Narayanan,Calculus-Volumel,S.Viswanathan(Printers&Publishers),Pvt.Ltd,2011 (Unit-I). 2. T.K.ManicavachagomPillayandS.Narayanan,Calculus-Volumell,S.Viswanathan(Printers&Publishers),Pvt.Ltd,2011 (Unit-II,III,IV,V).
Reference Books	<ol style="list-style-type: none"> 1. P.KandasamyandK.Thilagavathy,MathematicsforB.Sc.-Vol.IandVol.II,S.ChandandCompany2004. 2. ShanthynarayananandJ.N.Kapoor,ATextbookofCalculus,S.ChandandCompany.
Website link	<ol style="list-style-type: none"> 1. https://openstax.org/details/book/calculus.volume-1 2. https://youtu.be/L6_c6qvlB8I 3. https://nptel.ac.in/courses/111104144

L-Lecture

T-Tutorial

P-Practical

C-Credit

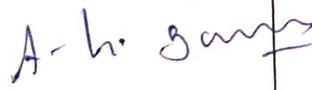
B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAC02	CALCULUS	DSC THEORY - II	I	4	3	1	-	3

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
C01	S	S	S	S	S	S	S	M	S	S
C02	S	S	S	S	S	M	S	S	S	S
C03	S	S	S	S	S	S	S	S	M	S
C04	S	S	M	S	S	S	S	S	S	S
C05	S	S	S	M	M	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	Problem solving session and Group Discussion.
Teaching and Learning Methods	Lecture, Smart class presentation, Chalk and talk method.
Assesment Methods	Assignment , Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 D.MOTHIDHRSHAA	 R. MALATHI	



B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAC03	ANALYTICAL GEOMETRY OF 2D AND 3D	DSC THEORY-III	II	4	4	-	-	4
Objective	The objective of this course to teach the students about the importance of analytic geometry is that it establishes a correspondence between geometric curves and algebraic equations.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Analytical Geometry of 2D: Polar Equations: Polar Co-ordinates - Polar equation of a conic - chord - tangent - normal - equation of the pair of tangents drawn from the point to the conic - problems. Chapter IX: Section 1 - 15				K1,K2	10		
II	The Straight line: Symmetrical form - The plane and the straight line - Coplanar lines - Shortest distance between two given lines - The equation of two skew lines in a simplified form - problems. Chapter III: Section 1 - 8.2				K4	10		
III	Sphere: Equation of the sphere - Plane Section of a sphere - equation of a circle on a sphere - equation of a sphere passing through a given circle - equation of the tangent plane to the sphere. Chapter IV: Section 1 - 8				K4	9		
IV	Cone: Cone - Right circular cone - Intersection of a straight line and quadric cone - tangent plane and normal - condition for the plane to touch the quadric cone - Angle between the lines in which the plane cuts the cone. Cylinder: The equation of the cylinder - equation of the right circular cylinder - enveloping cylinder. Chapter V: Section 1 - 8.3				K3,K4	10		
V	Central quadrics: Definition - The intersection of a line and a quadric - Tangents and tangent planes - condition for the plane to touch the conicoid. Chapter V: Section 9 - 12				K4	9		

Course Outcome	CO1: knowledge about Conic 2D	K1
	CO2: Understand the concepts of coplanar lines and skew lines and find the shortest distance between them	K2
	CO3: Applying the fundamental concepts of cone and cylinder	K3
	CO4: Analyze the sphere and identify the characteristics of sphere	K4
	CO5: Evaluate the concepts of coincides.	K5

Learning Resources

Text Books	1. T.K. Manicavachagam Pillay and T. Natarajan, A Text Book of Analytical Geometry part I - 2D, S.Viswanathan Pvt. Ltd., 2001 (Unit - I). 2. T.K. Manicavachagam pillay and T. Natarajan, A Text Book of Analytical Geometry part II - 3D, S.Viswanathan Pvt. Ltd., 2001 (Unit - II to Unit V).
Reference Books	1. P.R.Vittal, Analytical Geometry of 2D & 3D, Pearson publications. 2. Shanti Narayan & Dr. P.K. Mittal, Analytical Solid Geometry, 16th Edition, S. Chand and Company Limited.
Website Link	1. https://www.cuemath.com/geometry/analytical-geometry/ 2. https://www.exp11.com/t/equation-of-a-sphere-1321 3. https://www.cuemath.com/geometry/right-circular-cone/

L-Lecture

T-Tutorial

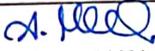
P-Practical

C-Credit

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	M	S	S	S	S	M	S
CO2	S	S	S	S	M	S	S	S	M	S
CO3	S	M	S	S	S	S	M	S	S	S
CO4	M	S	S	M	S	M	S	S	S	M
CO5	S	S	S	S	M	M	S	M	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	Problem solving session and Group Discussion.
Teaching and Learning Methods	Lecture, Smart class presentation, Chalk and talk method.
Assessment Methods	Assignment , Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 A.MENAKA	For  R. Mahith	



B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAC04	TRIGONOMETRY AND VECTOR ANALYSIS	DSC THEORY - IV	II	4	3	1	-	3
Objective	Obtain the knowledge of the Hyperbolic functions, Inverse hyperbolic functions and Logarithms of complex quantities and Analyze the various integral theorems in Vector Analysis.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Expansions: Expansions of $\cos n\theta$, $\sin n\theta$ and $\tan n\theta$ - Expansions of $\cos^n\theta$ and $\sin^n\theta$ - Expansions of $\sin \theta$ and $\cos \theta$ in a series of ascending powers of θ -problems Chapter 3: Section 1- 5				K1-K3	10		
II	Hyperbolic functions: Hyperbolic functions - Inverse hyperbolic functions - Logarithm of complex quantities - Problems Chapter 4: Section 1 & 2 Chapter 5: Section 5				K3	10		
III	Vector Differentiation: Scalar and vector point functions - level surfaces - Directional derivative of a scalar point function - Gradient of a scalar point function - Summation notation for gradient - Divergence and curl of a vector point function - Summation notation for divergence and curl - Problems Chapter 2: Section 2.1 - 2.7				K2	9		
IV	Vector Integration: Line Integrals - Independenc of path of integration - Conservative field and scalar potential - Line integral of a conservative vector - Surface integrals - Volume integrals. Chapter 3: Section 3.1 - 3.6				K3	10		
V	Integral Theorems: Integral Theorems - Gauss' divergence theorem - Integral theorems derived from the divergence theorem - Green's theorem in plane - Stokes' theorem (Statement only) Chapter 4: Section 4.1 - 4.5				K4	9		

Course Outcome	CO1: Recall the basic concepts and understand the expansions of Trigonometric functions	K1
	CO2: Acquire knowledge on Hyperbolic functions and Logarithm of complex numbers	K2
	CO3: Apply the concept of divergence, curl and integration of vector point functions	K3
	CO4: Analyse and work with the problems related to line integrals, surface and volume integrals	K4
	CO5: Solve the problems related to Gauss Stoke's and Green's theorems	K5
Learning Resources		
Text Books	1. S.Narayanan, T.K.Manicavachagom Pillay, Trigonometry, S.Viswanathan Pvt. Ltd- 1994. (For Unit I & II). 2. P.Duraipandian and Laxmi Duraipandian, Vector Analysis, Emerald Publishers, Chennai, 2003 (For Unit III, IV & V).	
Reference Books	1. Dr.P.R.Vittal, Allied Mathematics, Margham Publications, Chennai, 2012. 2. T.K.Manickavasagam Pillai, Vector Analysis, Vijay Nicole Imprints Pvt. Ltd, Chennai, 2004.	
Website Link	1. https://nptel.ac.in/courses/122101003/downloads/Lecture-44.pdf 2. https://unacademy.com/plus/goal/PESHE 3. https://youtu.be/94UNKDQ-Aum	

L- Lecture

T- Tutorial

P - Practical

C- Credit

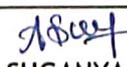
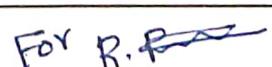
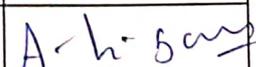
B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAC04	TRIGONOMETRY AND VECTOR ANALYSIS	DSC THEORY - IV	II	4	3	1	-	3

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	M	S	S	S	S	S
CO2	S	S	S	M	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	M	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Chalk and talk method, Power Point Presentation
Assessment Methods	Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 A.SUGANYA	 R. Malith	 A. K. Sanyal



B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UMAC05	STATICS	DSC THEORY - V	III	5	4	1	-	4
Objective	To understand mechanical forces and energy in physical structures							
Unit	Course Content						Knowledge Levels	Sessions
I	Forces Acting at a Point: Resultant and Components - Parallelogram of Forces - Triangle of Forces - Perpendicular Triangle of Forces - Converse of Triangle of Forces - The Polygon of Forces - Lami's Theorem - Problems. Parallel Forces and Moments: Introduction - Like and Unlike Parallel Forces - Conditions of Equilibrium of Three Coplanar Parallel Forces - Centre of Two Parallel Forces - Moment of Force - Varignon's Theorem - Problems. Chapter 2: Section 1 - 9 Chapter 3: Section 1 - 12						K1-K4	12
II	Couples: Couples - Equilibrium of two couples - Equivalence of two couples - Couples in Parallel Planes - Resultant of Coplanar couples - Resultant of Couple and Force - Problems Chapter 4: Section 1 - 10						K1-K4	12
III	Friction: Introduction - Statical, Dynamical and Limiting Friction - Coefficient of Friction - Angle of Friction - Cone of Friction - Equilibrium of a particle on a rough inclined plane - Equilibrium of a particle on a rough inclined plane under a force parallel to the plane - Equilibrium of a particle on a rough inclined plane under any force - Problems. Chapter 7: Section 1 - 12						K1-K3	12
IV	Centre of Gravity: Centre of like parallel forces - Centre of Mass - Centre of Gravity - Distinction between C.G and C.M -The Centre of Gravity of the body is unique - Centre of Gravity by Symmetry - C.G of triangular lamina - C.G of three rods forming triangle - General formulae for determination of the C.G Chapter 8: Section 1 - 12						K3	12

V	<p>Equilibrium of Strings: Uniform string under the action of gravity - Equation of the common catenary - Tension at any point - Geometrical Properties of the common catenary - Approximations to the shape of the catenary -The parabolic catenary</p> <p>Chapter 11: Section1 - 8</p>	K4	12
Course Outcome	CO1: Know the basic principles of statics and to develop the ability to describe the concepts.	K1	
	CO2: Understand and work with the problems related to moments and couples.	K2	
	CO3: Understand the concept of centre of gravity and gain the ability to apply the results from physical models.	K2	
	CO4: Ability to analyze the statics trusses, frames and machine.	K3	
	CO5: Examine the properties of catenary.	K4	
Learning Resources			
Text Books	1. M.K.Venkataraman, Statics (Eighteenth Edition), Agasthiar Publications, Trichy, 2016.		
Reference Books	1. S.Narayanan, Statics, Sultan Chand and Co., Chennai, 1986. 2. P.Duraipandian and Lakshmi Duraipandian, Mechanics, Emerald Publishers, Chennai, 1987.		
Website Link	1. https://nptel.ac.in/courses/112/105/112105164/ 2. https://nptel.ac.in/courses/122/102/122102004/ 3. https://www.khanacademy.org/science/ap-physics-1		

L-Lecture

T-Tutorial

P-Practical

C-Credit

B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UMAC05	STATICS	DSC THEORY - V	III	5	4	1	-	4

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	M	S	S	S	S	S	S	S	S
CO3	S	S	S	S	M	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	M	S	S	S	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
<i>A. Suganya</i> A.SUGANYA	<i>R. Malathi</i> Mrs. R.MALATHI	<i>A. h. b. ...</i>



B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards								
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UMAC06	DIFFERENTIAL EQUATIONS	CORE PAPER - VI	III	4	3	1	-	4
Objective	The objective of this course to recognize differential equations that can be solved by each of the three methods - direct integration, separation of variables and integrating factor method.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Equations of the First order and of the First degree - Variables separable -Homogeneous equations-Non homogeneous equations of the first degree in x and y-Linear Equation-Bernoulli's Equation-Equations of the First Order but of higher degree-Equations solvable for dy/dx -Equations solvable for y-particular cases-Equations that do not contain x explicitly. Chapter II (section 1-5) & Chapter IV (section 1-4)				K1-K3	10		
II	Linear Equations with Constant Co-efficient-Definitions-The operator D-Complementary function of a Linear Equations with Constant Co-efficient-Particular Integral. Chapter V (Section 1-4)				K2,K3	10		
III	Linear equations with variable coefficients - Equations reducible to the linear equations. Chapter V (Section 5 & 6)				K2-K4	10		
IV	Partial Differential Equations: Definition-Formation of Partial Differential Equations-First Order Partial Differential Equations-Solving First Order PDE. Chapter 4: Section (4.1 to 4.4)				K1,K3	9		
V	Partial differential equations : Solution of equation of Standard types $f(p,q)=0$, $z= px+qy+f(p,q)$ $f(z,p,q)=0$, $f_1(x,p)=f_2(y,q)$, Charpit's Method Chapter 4: Section (4.5&4.6)				K2	9		

Course Outcome	CO1: Gain knowledge about first order and higher order differential equations	K1
	CO2: Understand the distinguish between linear and nonlinear, partial and ordinary differential equations.	K2
	CO3: Illustrate the concept of linear equation with constant and variable co-efficient	K3
	CO4: Analyze the solution of first and higher-order linear differential equations.	K4
	CO5: Examine the solutions of differential equations	K5
Learning Resources		
Text Books	1. S.Narayanan and T.K.Manickavachagom Pillay, Differential Equation and its Applications, S.Viswanathan (Printers & Publishers) Pvt. Ltd. - 2011.(Unit 1 - 3) 2. S.Arumugam, A.Thangapandi Isaac, A.Somasundaram, Differential Equation and its Applications, Yes dee Publishing Pvt. Ltd. - 2020.(Unit 4&5)	
Reference Books	1. T.K. Manikavasagam Pillai and S.Narayanan, Calculus, Vijay Nicole Imprints pvt,Ltd. Nelson Chambers, 115 Nelson Manickan Road, Chennai-600029,2004. 2.S. G. Venkatachalapathi, Allied Mathematics, Margham publication, Chennai-17, Reprint 2011.	
Website Link	https://byjus.com/maths/methods-of-solving-first-order-first-degree-differential-equations/ https://www.cliffsnotes.com/study-guides/differential-equations/second-order-equations/constant-coefficients https://www.cuemath.com/calculus/partial-differential-equations/	
L-Lecture T-Tutorial P-Practical C-Credit		

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	S	S	M	S	S	M	S
CO2	M	S	S	S	S	M	S	M	S	S
CO3	M	S	S	S	M	S	S	S	S	M
CO4	S	M	S	S	S	S	M	S	S	S
CO5	S	S	S	S	S	M	S	S	M	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UMAS01	QUANTITATIVE APTITUDE	SEC-I	III	2	2	-	-	2
Objective	The objective of the course is to enhance the problem-solving skills of students and to acquire in-depth knowledge in solving Speed, Time, Distance, SI, CI problems improve the basic mathematical skills in speed the develop knowledge in logarithm, to understand the volume and area of the objects. To enhance the problem-solving skills in Odd man out & Series.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Arithmetical Ability : Chain Rule - Time and Work - Time and Distance Chapter: 14,15 and 17				K1-K3	5		
II	Arithmetical Ability : Problems on Trains - Boats and Streams - Alligation or Mixture Chapter: 18 - 20				K1,K2	5		
III	Arithmetical Ability : Simple Interest - Compound Interest - Logarithms . Chapter: 21 - 23				K3, K4	5		
IV	Arithmetical Ability : Area - Volume and Surface Areas Chapter: 24 and 25				K3, K4	5		
V	Arithmetical Ability : Calendar -Clocks - Odd man out & Series Chapter: 27,28 and 35				K4	4		

Course Outcome	CO1: Recall the basic concepts of Time and Work , Area - Volume	K1
	CO2: Understand the problems, develop strategies to find solutions and persevere in solving them.	K2
	CO3: Apply the acquired knowledge on Problems on Trains - Boats and Streams.	K3
	CO4: Analyze the problems on Calender and Clock and inspect the odd man out series.	K4
	CO5: Evaluate the problem on Simple Interest, Compound Interest, logarithms	K5
Learning Resources		
Text Books	1. Dr. R.S. Aggarwal, Quantitative Aptitude, S. Chand and Company Ltd., New Delhi, Reprint 2019.	
Reference Books	1. Abhijit Guha, Quantitative Aptitude Tata McGraw Hill Publishing Company Limited, New Delhi. Reprint 2005.	
Website Link	1. https://youtu.be/imYQJOGUx7Y 2. https://youtu.be/xaHkXIWcgP8 3. https://youtu.be/U9JZaM7aIQQ 4. https://en.wikipedia.org/wiki	

L-Lecture

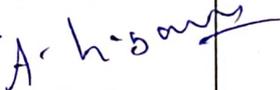
T-Tutorial

P-Practical

C-
Credit**CO-PO Mapping**

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	M	S	S	S	S	S	S	M	S
CO3	S	M	S	S	S	S	S	S	M	S
CO4	S	S	S	M	S	S	S	S	M	S
CO5	S	S	S	M	S	S	S	S	M	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	
Teaching and Learning Methods	Chalk and Talk method, Lecture, Smart class Presentation.
Assesment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assesment suggested in the regulations.

Designed By	Verified By	Approved By
 R.PARVATHA	 R.MALATHI	



B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMAC07	DYNAMICS	DSC THEORY - VII	IV	4	4	-	-	4
Objective	To equip the student with fundamental knowledge of dynamics of mechines so that student can appreciate problems of dynamic force balance, transmissibility of forces, isolation of systems, vibrations.							
Unit	Course Content					Knowledge Levels	Sessions	
I	Projectiles: Definitions- Two fundamental principles - Path of a projectile - Characteristic of the motion of the projectile - Range on an inclined plane - Problems. Chapter VI: Section 6.1- 6.8,6.12 - 6.16					K1-K4	10	
II	Collision of elastic bodies: Introduction - Definitions - Fundamental laws of impact - Impact of a smooth sphere on a smooth fixed plane -Direct impact of two smooth spheres - Oblique impact of two smooth spheres - Loss of kinetic energy- Problems. Chapter VIII: Section 8.1 - 8.8					K2-K4	10	
III	Simple harmonic motion : Introduction - SHM in a straight line - General solution of the SHM equation- Geometric representation of SHM - Change of origin - Problems - Composition of two SHMs of the same period and in the same straight line - Composition of two SHMs of the same period in two perpendicular directions - Simple problems. Chapter X: Section 10.1 - 10.7					K3,K4	10	
IV	Central forces : Introduction - Velocity and Acceleration in polar Coordinates - Equations of motion in polar coordinates- Note on the equiangular spiral- Problems - Motion under a central forces- Differential equation of central orbits- Pedal equation to the central orbit - Two fold problems in the central orbits- Problems . Chapter XI: Section 11.1 to 11.6 ,11.8 and 11.11.					K3,K4	9	

V	Moment of inertia : Definition - The theorem on parallel axes - The theorem of perpendicular axes - M.I of uniform rod - Rectangular lamina - Uniform circular ring - Uniform circular disc- Uniform elliptic lamina - Solid sphere- Hollow sphere - Hollow cone- Problems . Chapter XII : Section 12.1- 12.4	K3	9
Course Outcome	CO1: Know the basic concepts of projectiles to analyze the problems relating to the motion of a projectile	K1	
	CO2: Understand impulsive forces and Central forces	K2	
	CO3: Apply the concepts composition of simple Harmonic Motion in two directions and categorize the differential equation of Central Orbits.	K3	
	CO4: Ability to analyze loss of K.E due to direct and oblique impact.	K4	
	CO5: Illustrate the methods of finding Moment of inertia	K5	
Learning Resources			
Text Books	1. Dr. M. K Venkataraman, Dynamics, Agasthiyar publications, Tenth edition - 2001.		
Reference Books	1. Narayanan S, Dynamics, Sultan chand and co., 1986. 2. Duraipandiyar P, Mechanics, Emerald Publishers, 1988.		
Website Link	1. https://nptel.ac.in/courses/115/106/115106119 2. https://www.askiitians.com/iit-jee-physics/mechanics/motion-of-projectile.aspx		

L-Lecture

T-Tutorial

P-Practical

C-Credit

B.Sc -Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMAC07	DYNAMICS	DSC THEORY - VII	IV	4	4	-	-	4

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
C01	S	S	M	S	S	S	M	S	S	S
C02	S	S	S	S	S	S	M	S	S	S
C03	S	S	S	S	S	S	M	S	S	S
C04	M	S	S	S	S	S	M	S	S	S
C05	S	S	S	S	M	S	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
<i>A.Suganya</i> A.SUGANYA	<i>R. Malathi</i> Mrs. R.MALATHI	<i>A. h. S...</i>



B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMAC08	LAPLACE TRANSFORMS AND FOURIER SERIES	DSC THEORY - VIII	IV	3	3	-	-	3
Objective	The course aims to know about the definition of the laplace transform and its properties and obtain the knowledge of the Fourier transform and its properties.							
Unit	Course Content						Knowledge Levels	Sessions
I	The Laplace Transform: Piece - wise or sectional continuity- Function of Exponential order - Function of Class A - The transform concept - Laplace transform - Notation - Some standard results (Except- Laplace transform of some special Functions) . Chapter I- Part I : Section 1.0 - 1.6						K1-K3	8
II	The Inverse Laplace transform: Definition - Null function - Uniqueness of inverse laplace transform- Partial Fractions - Heaviside`s expansion formula - Problems. Chapter I Part II: Section 1.0 - 1.4						K1,K2	7
III	Fourier Series: Fourier series- Even and odd functions - Simple problems. Chapter 6: Section 1 -3						K3	7
IV	Fourier Series: Half range Fourier series- Development in cosine and sine series - Change of interval - combination of series- Problems. Chapter 6 :Section 4 - 7						K4	7
V	Fourier Transform: Complex form of Fourier integral formula - Properties of Fourier transform - Fourier cosine and Fourier sine transforms - Parsival`s identity - Convolution - Problems. Chapter 6 : Section 9 - 15						K4	7

Course Outcome	CO1: Knowledge of Laplace Transform and its properties	K1
	CO2: Understanding sufficient exposure to get the solution of certain linear differential equation using Laplace Transform and inverse Laplace Transform	K2
	CO3: Applying Fourier series and boundary value problem	K3
	CO4: Analysis Fourier series and half range of Fourier series	K4
	CO5: Evaluating Fourier Transform and its properties for solving Partial Differential Equations by reducing the number of independent variable by one.	K5
Learning Resources		
Text Books	1. Dr. J. K. Goyal & K.P. Gupta, Laplace and Fourier transforms, Pragathi Prakashan publications, Meerut, Eighteen Revised Edition -2005. (Unit I and II) 2. T.K. Manickavasagam pillai and S. Narayanan, Calculus (Vol III), Vijay Nicole Imprints Pvt Ltd -2004 (Unit III, IV and V)	
Reference Books	1. T. Veerarajan, Differential Equations and Laplace Transforms, Yes Dee Publishing - 2020.	
Website Link	1. https://onlinecourses.nptel.ac.in/noc22_ma62/preview	

L-Lecture

T-Tutorial

P-Practical

C-Credit

B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMAC08	LAPLACE TRANSFORMS AND FOURIER SERIES	DSC THEORY - VIII	IV	3	3	-	-	3

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	S	S	M	M	M	S	S	S
CO2	M	M	S	S	M	M	M	S	S	M
CO3	M	M	M	S	S	M	M	S	S	S
CO4	M	S	M	S	S	M	M	S	S	M
CO5	M	M	S	S	S	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S- STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation,
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
<i>R. Mohan Ram</i> R.MOHAN RAM	<i>R. Malathi</i> R.MALATHI	<i>A. K. Suresh</i>



B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMASP1	LATEX PRACTICAL	SEC-II	IV	4	-	-	4	2

Objective The course aims to document preparation system for high-quality typesetting and use various methods to either create or import graphics into Latex document.

S.No.	Course Content	Knowledge Levels	Session
1	Type a Document in different alignments (Left, Right, Center, Justify, Bold, Italic, Underline)	K1-K3	6
2	Type a Letter for applying a job.	K1-K3	6
3	Draw a Table structure.	K1-K3	6
4	Type your own Resume.	K4	6
5	Type a Mathematical Equations - Differentiation, Integration and Trigonometry.	K4	4
6	Type a Mathematical Inequalities	K4	4
7	Type a Matrix	K4	4
8	Type a Binomial Equations.	K4	4
9	Draw any picture and insert in LaTeX file.	K4	4
10	Type a Question paper	K4	4

Course Outcome	CO1: Rembering complex mathematical formulae using latex	K1
	CO2: Understanding tabular and array environments within latex	K2
	CO3: Applying Various methods to either create or import graphics into latex documents	K3
	CO4: Analyses Typesetting of journal articles, technical reports, thesis, books and slide presentations	K4
	CO5: Evaluating Automatic generations of table of content bibliographies and indexes	K5
Learning Resources		
Text Books	1. David F Griffiths and Desmond J. Higham, Learning LaTeX, SIAM (Society for Industrial and Applied Mathematics) Publishers, Phidel Phia, 1996	
Reference Books	1. Martin J. Erickson and Donald Bindner, A Student's Guide to the Study, Practice and Tools of Modern Mathematics, CRC Press, Boca Raton, FL, 2011. 2. L. Lamport. LATEX: A Document Preparation System, User's Guide and Reference Manual. Addison- Wesley, New York, second edition, 1994	
Website Link	1. https://onlinecourses.swayam2.ac.in/aic20_sp17/preview	

L-Lecture

T-Tutorial

P-Practical

C-Credit

B.Sc-Mathematics Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

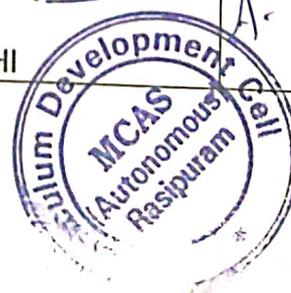
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMASP1	LATEX PRACTICAL	SEC-II	IV	4	-	-	4	2

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	S	M	S	S
CO2	M	M	S	S	M	M	M	S	S	S
CO3	M	S	S	M	S	M	S	S	M	S
CO4	S	M	S	S	S	S	M	S	S	S
CO5	M	M	S	S	S	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S- STRONG							

Tutorial Schedule	Problem solving session and Discussion
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Model Practical

Designed By	Verified By	Approved By
<i>R. Mohan Ram</i> R.MOHAN RAM	<i>R. Malathi</i> R.MALATHI	<i>A. K. S...</i>



Mathematics (Allied)



MUTHAYAMMAL
COLLEGE OF ARTS
AND SCIENCE
(Autonomous)
A UNIT OF VIGNETRA

Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and Communication, B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the B.Sc., Mathematics
LOCF-CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022

S.No.	Sem	COURSE_CODE	TITLE OF THE COURSE
1	I	21M1UMAA01	ALLIED : ALGEBRA AND CALCULUS
2	II	21M2UMAA02	ALLIED : DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS
3	II	21M2UMAAP1	PRACTICAL : ALLIED - MATHEMATICS

Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and Communication, B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the
Department of UG- Mathematics

SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAA01	ALLIED-ALGEBRA AND CALCULUS	GEC THEORY- I	I	5	4	1	-	4
Objective	Learn the concepts of Characteristic equation and roots and basic Concepts and problem solving in Theory of equations.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Matrices: Definition of Characteristic equation of a matrix - Characteristic roots of a matrix - Eigen values and the corresponding Eigen vectors of matrix - Cayley Hamilton theorem (Statement only)-Verifications of Cayley Hamilton Theorem-Problems only. Chapter-5				K1,K2	12		
II	Theory of Equations: Imaginary roots - Irrational roots - Formation of equations - Solution of equations -Diminishing the roots of an equation & solutions-Removal of the second term of an equation & solutions-Descarte's rule of sign-Problems only. Chapter-6				K1,K2	12		
III	Radius of Curvature: Formula of Radius of Curvature in Cartesian coordinates, Parametric coordinates and Polar coordinates (no proof for formulae) - Problems only. Chapter-11				K1-K3	12		
IV	Integration: Definite Integral - Properties of Definite Integrals - Bernoulli's Formula - Integration by parts - Simple problems; Reduction formula for $\int_0^{\frac{\pi}{2}} \sin^n x dx$ and $\int_0^{\frac{\pi}{2}} \cos^n x dx$ - simple Problems. Chapter - 15 &16				K3,K4	12		
V	Partial Differential Equations: Formation of Partial Differential Equations by eliminating the arbitrary constant and arbitrary functions - Lagrange's linear Partial Differential Equations - Problems only. Chapter - 26				K3,K4	12		
Course Outcome	CO1: Recall the basic concepts and gain the knowledge about binomial series				K1			
	CO2: Understand the exponential and logarithmic series				K2			
	CO3: Apply the application of relations between the roots and coefficients of an equation				K3			

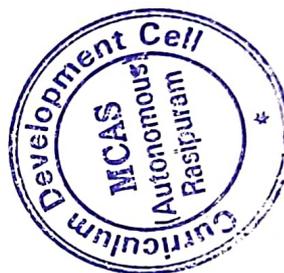
	CO4: Analyze the method of solving reciprocal equations and diminishing the roots of an equation	K4
	CO5: Evaluate the consistency of linear equations and application of Cayley-Hamilton theorem	K5
Learning Resources		
Text Books	1. Dr. P. R. Vittal, Allied Mathematics, Margham publication, Chennai-17, Reprint 2012.	
Reference Books	1. S. G. Venkatachalapathi, Allied Mathematics, Margham publication, Chennai-17, Reprint 2011.	
Website Link	1. https://nptel.ac.in/courses/111106146 2. https://onlinecourses.nptel.ac.in/noc22_ma13/preview 3. https://youtu.be/9MCjyQSRmR8	
	C-Credit	L-Lecture
		T-Tutorial
		P-Practical

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	M	S	S	S	S
CO2	S	S	S	S	S	S	S	S	M	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	M	M	M	M	S	S	S
CO5	S	S	S	M	M	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation, Chalk and Talk method
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 D.MOTHIDHRSHAA	 R.MALATHI	



Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and Communication, B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the Department of UG- Mathematics
SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAA02	ALLIED - DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS	GEC THEORY II	II	5	4	1	-	4
Objective	The course aims to learn about the first and second order differential equation and constant coefficient and definition of the laplace transform and its properties and understand the concept of Inverse Laplace transform and its properties.							
Unit	Course Content	Knowledge Levels	Sessions					
I	Jacobian and Maxima & Minima: Jacobian of two variables and three variables - Maxima and Minima of functions of two variables -Problems only	K1-K3	12					
II	Finite Differences: First difference- Higher differences - Construction of difference table - Interpolation of missing value-Newton's Forward and Newton's Backward difference formula (no proof)-Lagrange's Interpolation formula (no proof)- simple problems only.	K1,K2	12					
III	Second Order Differential Equations: Second Order Differential Equations with constant coefficients- Complementary function-particular Integral and Solution of the type: e^{ax} , x^n , $\cos ax$ (or) $\sin ax$, $e^{ax}x^n$, $e^{-ax} \sin bx$, $e^{-ax} \cos bx$ - only	K3	12					
IV	Laplace Transforms: Definition of Laplace Transforms - standard formula -Linearity property - Shifting property - Change of scale property - Laplace Transforms of derivatives- Problems.	K4	12					
V	Inverse Laplace Transforms: Standard formula - Elementary theorems (no proof) - Applications to solutions of second order differential equations with constant coefficients -Simple problems.	K4	12					

Course Outcome	CO1: Remembering the concepts of Jacobian and Maxima and Minima.	K1
	CO2: Understanding problem Numerical Methods.	K2
	CO3: Applying the concept of the second order differential equations with constant coefficients	K3
	CO4: Analysis the basic properties of Laplace Transforms.	K4
	CO5: Evaluation the simple problems in Inverse Laplace and its applications.	K5
Learning Resources		
Text Books	1. Dr P R. Vittal, Allied Mathematics, Margham publication, Chennai-17, Reprint 2012.	
Reference Books	1.S G.Venkatachalapathi, Allied Mathematics, Margham publication, Chennai- 17, Reprint, 2011.	
Website Link	1. https://byjus.com/maths/methods-of-solving-first-order-first-degree-differential-equations/ 2. https://www.cliffsnotes.com/study-guides/differential-equations/second-order-equations/constant-coefficients 3. https://www.cuemath.com/calculus/partial-differential-equations/	

L- Lecture

T- Tutorial

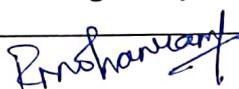
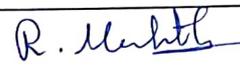
P - Practical

C- Credit

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	S	S	M	M	M	S	S	M
CO2	S	M	S	S	M	S	M	S	S	M
CO3	M	S	S	M	M	S	S	M	S	M
CO4	S	M	S	S	M	S	M	S	S	M
CO5	M	M	S	S	M	M	M	S	S	M
Level of Correlation between CO and PO	L- LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 R. MOHAN RAM	 R. MALATHI	



Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and Communication, B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the Department of UG- Mathematics
SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAAP1	PRACTICAL - ALLIED MATHEMATICS	GEC PRACTICAL	II	2	-	-	2	2
Objective	This course provides a wide spectrum of basic mathematical concepts including matrices and divergence of vector point functions, Curl of vector point functions to the learners.							
Unit	Course Content						Knowledge Levels	Sessions
I	Matrices: Rank of Matrix - Problems upto (3x3) Matrix - Characteristic equation of a Matrix - Cayley Hamilton Theorem (statement only)-Problems to verify Cayley Hamilton Theorem.						K1-K3	9
II	Leibnitz formula for nth derivative: Leibnitz formula (without proof) for nth derivative - Problems (Page no. 8.23 to 8.39 of the Text Book).						K1,K2	9
III	Partial Differentiation: Euler's theorem on homogeneous function (without proof)- Problems to verify Euler's Theorem-Partial derivative - problems (Page no. 9.1 to 9.13 and 9.18 to 9.27 of the Text Book).						K3	10
IV	Scalar and Vector point functions: Scalar point functions - Gradient of scalar point functions - Vector point functions - Problems only.						K4	10
V	Divergence and Curl of Vector point functions: Divergence of vector point functions - Curl of vector point functions -Solenoidal of vector - Irrotational of vector - Problems only.						K4	10
Course Outcome	CO1: Remembering the concepts of Cayley Hamilton Theorem						K1	
	CO2: Understanding to solve the problems in Leibnitz formula for nth derivative						K2	
	CO3: Applying to solve the problems in Euler's theorem on homogeneous function						K3	
	CO4: Analysing the concepts of Scalar and Vector point functions.						K4	
	CO5: Evaluating the concept of divergence and curl of vector point functions						K5	

Learning Resources

Text Books

1. Dr. P. R. Vittal, Allied Mathematics, Margham publication, Chennai-17, Reprint 2012.

Reference Books

1. S. G. Venkatachalapathi, Allied Mathematics, Margham publication, Chennai- 17, Reprint 2011.

Website Link

1. <https://byjus.com/maths/methods-of-solving-first-order-first-degree-differential-equations/>
2. <https://www.cliffsnotes.com/study-guides/differential-equations/second-order-equations/constant-coefficients>
3. <https://www.cuemath.com/calculus/partial-differential-equations/>

L-Lecture

T-Tutorial

P-Practical

C-Credit

Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and Communication, B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the Department of UG- Mathematics SYLLABUS - CBCS Pattern EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022								
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAAP1	PRACTICAL - ALLIED MATHEMATICS	GEC PRACTICAL	II	2	-	-	2	2

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	S	M	S	M	S	S	M	M
CO2	S	S	S	M	S	S	M	S	S	M
CO3	S	S	S	S	S	S	M	M	S	S
CO4	M	M	S	S	S	M	S	S	M	M
CO5	S	S	S	S	S	M	M	S	S	M
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S- STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Model Practical

Designed By	Verified By	Approved By
<i>R. Mohan Ram</i> R. MOHAN RAM	<i>R. Malathi</i> R. MALATHI	<i>A. K. Suresh</i>





**MUTHAYAMMAL
COLLEGE OF ARTS
AND SCIENCE**
(AUTONOMOUS)
KUPPAM VANDIYAPALLE

XII - MATHS

**Allied Subjects for Degree B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered
by the B.Sc., Mathematics
LOCF-CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023
Onwards LIST OF GEC -ALLIED COURSES**

S.No.	Sem	COURSE_CODE	TITLE OF THE COURSE
1	I	21M1UMAA01	ALLIED : ALGEBRA AND CALCULUS
2	II	21M2UMAA02	ALLIED : DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS
3	II	21M2UMAAP2	PRACTICAL : ALLIED - MATHEMATICS

XII MATHS

**Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and
Communication offered by the B.Sc., Mathematics
LOCF-CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023
Onwards LIST OF GEC -ALLIED COURSES**

S.No.	Sem	COURSE_CODE	TITLE OF THE COURSE
1	I	21M1UMAA03	ALLIED : ALGEBRA AND DISCRETE MATHEMATICS
2	II	21M2UMAA04	ALLIED : DIFFERENTIAL EQUATIONS AND INTEGRATIONS
3	II	21M2UMAAP2	PRACTICAL : ALLIED - MATHEMATICS

**Allied Subjects for Degree B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics
offered by the Department of UG-Mathematics SYLLABUS-CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAA01	ALLIED-ALGEBRA AND CALCULUS	GEC THEORY- I	I	5	4	1	-	4
Objective	Learn the concepts of Characteristic equation and roots and basic Concepts and problem solving in Theory of equations.							
Unit	Course Content						Knowledge Levels	Sessions
I	Matrices: Definition of Characteristic equation of a matrix - Characteristic roots of a matrix - Eigen values and the corresponding Eigen vectors of matrix - Cayley Hamilton theorem (Statement only)-Verifications of Cayley Hamilton Theorem-Problems only. Chapter-5						K1,K2	12
II	Theory of Equations: Imaginary roots - Irrational roots - Formation of equations - Solution of equations -Diminishing the roots of an equation & solutions-Removal of the second term of an equation & solutions-Descarte's rule of sign-Problems only. Chapter-6						K1,K2	12
III	Radius of Curvature: Formula of Radius of Curvature in Cartesian coordinates, Parametric coordinates and Polar coordinates (no proof for formulae) - Problems only. Chapter-11						K1-K3	12
IV	Integration: Definite Integral - Properties of Definite Integrals - Bernoulli's Formula - Integration by parts - Simple problems; Reduction formula for $\int_0^{\frac{\pi}{2}} \sin^n x dx$ and $\int_0^{\frac{\pi}{2}} \cos^n x dx$ - simple Problems. Chapter - 15 &16						K3,K4	12
V	Partial Differential Equations: Formation of Partial Differential Equations by eliminating the arbitrary constant and arbitrary functions - Lagrange's linear Partial Differential Equations - Problems only. Chapter - 26						K3,K4	12
Course Outcome	CO1: Recall the basic concepts and gain the knowledge about binomial series						K1	
	CO2: Understand the exponential and logarithmic series						K2	
	CO3: Apply the application of relations between the roots and coefficients of an equation						K3	
	CO4: Analyze the method of solving reciprocal equations and diminishing the roots of an equation						K4	
	CO5: Evaluate the consistency of linear equations and application of Cayley-Hamilton theorem						K5	

Learning Resources

Text Books	1. Dr. P. R. Vittal, Allied Mathematics, Margham publication, Chennai-17, Reprint 2012.
Reference Books	1. S. G. Venkatachalapathi, Allied Mathematics, Margham publication, Chennai-17, Reprint 2011.
Website Link	1. https://nptel.ac.in/courses/111106146 2. https://onlinecourses.nptel.ac.in/noc22_ma13/preview 3. https://youtu.be/9MCjyQSRmR8

L-Lecture

T-Tutorial

P-Practical

C-Credit

**Allied Subjects for Degree B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics
offered by the Department of UG-Mathematics SYLLABUS-CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAA01	ALLIED-ALGEBRA AND CALCULUS	GEC THEORY- I	I	5	4	1	-	4

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	M	S	S	S	S
CO2	S	S	S	S	S	S	S	S	M	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	M	M	M	M	S	S	S
CO5	S	S	S	M	M	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation, Chalk and Talk method
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
<i>D. Mothidhirshaa</i> D.MOTHIDHIRSHAA	<i>R. Malathi</i> R. MALATHI	<i>A. h. Saran</i>



**Allied Subjects for Degree B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the
Department of UG- Mathematics SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAA02	ALLIED-DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS	GEC THEORY II	II	5	4	1	-	4
Objective	The course aims to learn about the first and second order differential equation and constant coefficient and definition of the laplace transform and its properties and understand the concept of Inverse Laplace transform and its properties.							
Unit	Course Content	Knowledge Levels	Sessions					
I	Jacobian and Maxima & Minima: Jacobian of two variables and three variables - Maxima and Minima of functions of two variables -Problems only	K1-K3	12					
II	Finite Differences: First difference- Higher differences - Construction of difference table - Interpolation of missing value-Newton's Forward and Newton's Backward difference formula (no proof)-Lagrange's Interpolation formula (no proof)- simple problems only.	K1,K2	12					
III	Second Order Differential Equations: Second Order Differential Equations with constant coefficients- Complementary function-particular Integral and Solution of the type: e^{ax} , x^n , $\cos ax$ (or) $\sin ax$, $e^{ax}x^n$, $e^{ax} \sin bx$, $e^{ax} \cos bx$ - only	K3	12					
IV	Laplace Transforms: Definition of Laplace Transforms - standard formula -Linearity property - Shifting property - Change of scale property - Laplace Transforms of derivatives- Problems.	K4	12					
V	Inverse Laplace Transforms: Standard formula - Elementary theorems (no proof) - Applications to solutions of second order differential equations with constant coefficients -Simple problems.	K4	12					

Course Outcome	CO1: Remembering the concepts of Jacobian and Maxima and Minima.	K1	
	CO2: Understanding problem Numerical Methods.	K2	
	CO3: Applying the concept of the second order differential equations with constant coefficients	K3	
	CO4: Analysis the basic properties of Laplace Transforms.	K4	
	CO5: Evaluation the simple problems in inverse Laplace and its applications.	K5	
Learning Resources			
Text Books	1. Dr P R. Vittal, Allied Mathematics, Margham publication, Chennai-17, Reprint 2012.		
Reference Books	1.S G.Venkatachalapathi, Allied Mathematics, Margham publication, Chennai- 17, Reprint, 2011.		
Website Link	1. https://byjus.com/maths/methods-of-solving-first-order-first-degree-differential-equations/ 2. https://www.cliffsnotes.com/study-guides/differential-equations/second-order-equations/constant-coefficients 3. https://www.cuemath.com/calculus/partial-differential-equations/		

L- Lecture

T- Tutorial

P - Practical

C- Credit

**Allied Subjects for Degree B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the
Department of UG- Mathematics SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAA02	ALLIED-DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS	GEC THEORY II	II	5	4	1	-	4

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	S	S	M	M	M	S	S	M
CO2	S	M	S	S	M	S	M	S	S	M
CO3	M	S	S	M	M	S	S	M	S	M
CO4	S	M	S	S	M	S	M	S	S	M
CO5	M	M	S	S	M	M	M	S	S	M
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
<i>R. Mohan Ram</i> R.MOHAN RAM	<i>R. Malathi</i> R.MALATHI	<i>A. L. Sankar</i>



**Allied Subjects for Degree BCA, B.Sc., Computer Science,
B.Sc., Electronics and Communication offered by the Department of
UG- Mathematics SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UAAA03	ALLIED-ALGEBRA AND DISCRETE MATHEMATICS	GEC THEORY I	I	5	4	1	-	4

Objective To Learn about the basic concepts of theory of equations and learn to find and use Eigen values and Eigen vectors of a matrix. Learn the concepts of mathematical logic.

Unit	Course Content	Knowledge Levels	Sessions
I	Theory of Equations: Relation between the roots and coefficients of an equation- Imaginary roots - Irrational roots - Removal of a term-Diminishing the roots of an equation- Descarte's rule of sign - problem only. Chapter 6 (Sections 3,4,9&12)	K1-K2	12
II	Matrices : Characteristics equation of matrix - The Characteristics vectors of a matrix - Eigen values and the corresponding Eigen vectors of matrix - Cayley Hamilton theorem(statement only) - verifications of Cayley Hamilton Theorem - problem only. Chapter 5	K1-K3	12
III	Mathematical logic: Statements and Notations - Connectives - Negation - Conjunction - Disjunction - Statement formulas and Truth table - Conditional and Bi- conditional - well-formed formulas. Tautologies. Chapter 1- Sections (1.1, 1.2.1 to 1.2.4, 1.2.6 to 1.2.8)	K1-K2	12
IV	Mathematical logic: Normal forms - Disjunctive Normal forms - Conjunctive Normal forms - Principal Disjunctive Normal forms - Principal conjunctive normal forms-ordering and uniqueness of normal forms. Chapter 1- Sections (1.3.1 to 1.3.5)	K2-K3	12
V	Mathematical logic: Theory of inference for the statement calculus-validity using truth tables - Rules of inference- Consistency of premises and Indirect method of Proof. Chapter 1- Sections (1.4.1 to 1.4.3)	K1-K2	12
Course Outcome	CO1: Recall the fundamental concepts of imaginary roots and irrational roots	K1	
	CO2: Understand the mathematical logical proportions via truth table	K2	
	CO3: Apply the concepts of matrices and Cayley-hamilton theorem for problem solving	K3	
	CO4: Analyze the concepts of inference for statements and rules of inference	K4	
	CO5: Evaluate the concepts of conjunctive normal forms and disjunctive normal forms	K5	

Learning Resources

Text Books	1. Dr.P.R.Vittal, Allied Mathematics, Margham Publication, Chennai-17, 2012 (Unit I, II). 2. J.P. Trembley, R. Manohar, Discrete Mathematical Structure with Applications to Computer Science, Tata McGrew-Hill, 2011 (Unit III, IV,V).
Reference Books	1. S.G. Vegadachalapathi, Allied Mathematics, Margham Publication, Chennai-17, Reprint -2011 2. Dr M.K.Son and Dr B.C.Charraborthy, Introduction to Discrete Mathematic, Son Books & Allied Pvt. Ltd. 8/1 Chintamani Das Lanc, Kokata-700009, Reprinted in 2016.
Website Link	1. https://www.freetechbooks.com/discrete-mathematics-f65.html 2. https://www.freetechbooks.com/algebra-f63.html 3. https://nptel.ac.in/courses/111104026 4. https://nptel.ac.in/courses/111101001

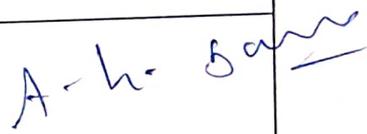
**Allied Subjects for Degree BCA, B.Sc., Computer Science,
B.Sc., Electronics and Communication offered by the Department of
UG- Mathematics SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UMAA03	ALLIED-ALGEBRA AND DISCRETE MATHEMATICS	GEC THEORY I	I	5	4	1	-	4

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	S	M	M	S	S
CO2	S	M	S	S	S	M	S	S	S	M
CO3	S	S	S	S	M	S	S	M	M	S
CO4	S	S	M	S	S	S	S	S	M	M
CO5	S	S	S	S	S	S	S	S	M	M
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation, Chalk and Talk method
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 B. MOHANAPRIYA	 R. MALATHI	



**Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and Communication
offered by the Department of UG- Mathematics
SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UMAA04	ALLIED : DIFFERENTIAL EQUATIONS AND INTEGRATIONS	GEC THEORY II	II	5	4	1	-	4
Objective	The objective of this course differentiation and integration to solve real world problems such as rate of change, optimization, and area problems.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Second Order Differential Equations: Second Order Differential Equations with constant coefficients- Complementary function- particular Integral and Solution of the type: e^{ax} , $\cos ax$ (or) $\sin ax$, x^m , $e^{ax}x^m$, $e^{ax} \sin bx$, $e^{ax} \cos bx$ - only Chapter - 23 (Page No : 23.6 - 23.36)				K1,K3	12		
II	Partial Differential Equations: Formation of Partial Differential Equations by eliminating the arbitrary constant and arbitrary functions-Problems only Chapter - 26 (Page No : 26.1 - 26.16)				K2	12		
III	Partial Differentiation: Partial derivative-Higher derivatives- Homogeneous Function-Euler`s Theorem on homogeneous functions - Problems. Chapter -9 (Page No : 9.1 - 9.30)				K3,K4	12		
IV	Finite Differences: First difference- Higher differences - Construction of difference table - Interpolation of missing value- Newton's Forward and Newton's Backward difference formula (no proof)-Lagrange's Interpolation formula (no proof)- simple problems only. Chapter -7 (Page No : 7.1 - 7.30)				K4	12		
V	Integration: Definite Integral-Properties of Definite Integral-simple problems only Chapter -15 (Page No : 15.54-15.79)				K4	12		

Course Outcome	CO1: Knowledge about the concepts second order differential equation.	K1
	CO2: Understanding the forward and backward formulas & problems and the Definite integral and their properties.	K2
	CO3: Applying Euler`s Theorem on homogeneous functions.	K3
	CO4: Analyze the Partial Differential Equations	K4
	CO5: Evaluate the eliminating the arbitrary constant and arbitrary functions	K5

Learning Resources

Text Books	1. Dr P.R. Vittal, Allied Mathematics, Margham publication, Chennai-17, Reprint 2012
Reference Books	1. S. G. Venkatachalapathi, Allied Mathematics, Margham publication, Chennai- 17, Reprint 2011.
Website Link	1. https://www.cliffsnotes.com/study-guides/differential-equations/second-order-equations/constant-coefficients 2. https://en.wikipedia.org/wiki/Partial_differential_equation 3. https://mathworld.wolfram.com/FiniteDifference.html 4. https://www.cuemath.com/calculus/integration/ 5. https://tutorial.math.lamar.edu/classes/calciiii/partialderivatives.aspx

L-Lecture

T-Tutorial

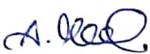
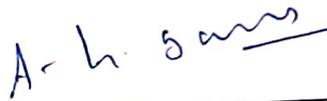
P-Practical

C-Credit

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	M	S	S	S	S	S	S	S
CO2	S	S	S	S	S	M	S	S	M	S
CO3	S	M	S	S	S	S	S	S	S	M
CO4	M	S	S	M	S	S	S	S	S	S
CO5	S	S	S	S	M	S	S	M	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	Problem solving session and Group Discussion.
Teaching and Learning Methods	Lecture, Smart class presentation, Chalk and talk method.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 A.MENAKA	 R. MALATHI	



Allied Subjects for Degree BCA, B.Sc., Computer Science, B.Sc., Electronics and Communication, B.Sc., Physics, B.Sc., Chemistry and B.Sc., Statistics offered by the Department of UG- Mathematics
SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2022-2023 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C	
21M2UMAAP2	PRACTICAL : ALLIED MATHEMATICS (SCILAB)	GEC PRACTICAL	II	2	-	-	2	2	
Objective	The language provides an interpreted programming environment with matrices as the main data type. By using matrix-based computation, dynamic typing, and automatic memory management, many numerical problems may be expressed in a reduced number of code lines.								
S.No.	List of Experiments / Programmes					Knowledge Levels	Sessions		
1	Elementary Math and Trigonometric functions					K1,K2	2		
2	Largest of list of Numbers					K2,K3	2		
3	User input vector					K2,K4	2		
4	User input Matrix					K1,K2	2		
5	Matrix Multiplication					K5	2		
6	Finding determinant and inverse of a Matrix					K1,K5	2		
7	Transpose of a Matrix					K3	2		
8	Bisection Method					K2,K5	2		
9	False Position Method					K2,K5	2		
10	Newton Raphson Method					K2,K5	2		

Course Outcome	CO1: Recall the basic concepts in scilab	K1
	CO2: Understand the need for simulation/implementation for the verification of mathematical functions.	K2
	CO3: Apply mathematical Modelling in scilab	K3
	CO4: Analyze plot results	K4
	CO5: Evaluate Numerical methods in Scilab	K5

Learning Resources

Text Books	1. Stephen L. Campbell, Jean-Philippe Chancelier and Ramine Nikoukhah, Modeling and Simulation in Scilab/Scicos, Springer, 2000.
Reference Books	1. G. Allaire and S. Kaber. Introduction a Scilab - Exercices pratiques corriges d'algebre lineaire, Ellipses, Paris, 2002.
Website Link	<ol style="list-style-type: none"> 1. https://www.youtube.com/watch?v=6TTvXPZM1yo 2. https://www.youtube.com/watch?v=aLYUTBjEXks 3. https://www.youtube.com/watch?v=4PtGDpnA2rE 4. https://www.youtube.com/watch?v=csisfSaswRQ 5. https://www.youtube.com/watch?v=nTw710_aeZc 6. https://www.youtube.com/watch?v=n0E6WlvPUk0 7. https://www.youtube.com/watch?v=Beg86vKrBOs 8. https://www.youtube.com/watch?v=f90pejG3gO0&t=585s 9. https://www.youtube.com/watch?v=A2wUoDGtms0 10. https://www.youtube.com/watch?v=h2CSRxa3KFM

L-Lecture

T-Tutorial

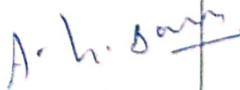
P-Practical

C-Credit

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
C01	S	S	S	S	S	S	M	S	S	S
C02	S	M	S	S	S	S	M	S	S	S
C03	S	M	S	S	S	S	S	S	S	S
C04	S	S	S	M	S	S	S	S	S	S
C05	S	S	S	M	S	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Model Practical

Designed By	Verified By	Approved By
 P.SUBHA	 R.MALATHI	



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List of Non Major Elective Course (NMEC) offered by the B.Sc., Mathematics
SYLLABUS - LOCF-CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022 Onwards

S.No.	SEM	COURSE_CODE	TITLE OF THE COURSE
1	III	21M3UMAN01	QUANTITATIVE APTITUDE - I
2	III	21M3UMAN02	BASICS OF ALGEBRA
3	IV	21M4UMAN03	QUANTITATIVE APTITUDE - II
4	IV	21M4UMAN04	NUMERICAL METHODS

**NMEC Subjects for Degree BCA, B.Sc., Computer Science, B.Com., B.Com(CA) offered by the
Department of UG- Mathematics
SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UMAN01	QUANTITATIVE APTITUDE-I	NMEC	III	2	2	-	-	2
Objective	The objective of the course Understanding Enhance the problem-solving skills in number system. Improve the basic mathematical skills in decimal fraction. Develop knowledge in averages. Understand the surds and indices. Enhance the problem-solving skills in ratios and proportions							
Unit	Course Content				Knowledge Levels	Sessions		
I	Arithmetical Ability: Numbers - H.C.F. & L.C.M. of Numbers. Chapter;: 1 and 2				K1	5		
II	Arithmetical Ability: Decimal Fractions - Square Roots & Cube Roots. Chapter: 3 and 5				K1,K2	5		
III	Arithmetical Ability: Average - Problems on Ages. Chapter: 6 and 8				K3	5		
IV	Arithmetical Ability: Surds & Indices - Percentages. Chapter: 9 and 10				K3, K4	5		
V	Arithmetical Ability: Ratio & Proportion - Chain Rule. Chapter: 12 and 14				K4	4		

Course Outcome	CO1: Recall the basic concepts of Numbers, H.C.F. & L.C.M , Average.	K1
	CO2: Understand the basic concepts of Surds and indices, Chain Rule.	K2
	CO3: Apply the acquired knowledge on Problems on Ratio & Proportion, Ages.	K3
	CO4: Analyze the problems on Decimal Fractions and Square Roots.	K4
	CO5: Evaluate the Problems on Cube Roots.	K5

Learning Resources

Text Books	1. Dr. R.S. Aggarwal, Quantitative Aptitude, S. Chand and Company Ltd., New Delhi, Reprint 2019.
Reference Books	1. Abhijit Guha, Quantitative Aptitude Tata McGraw Hill Publishing Company Limited, New Delhi. Reprint 2005
Website Link	1. https://youtu.be/h3ijy5zXRGM 2. https://youtu.be/SGj_uTJ83s0 3. https://youtu.be/OD5PLdHTPws

L-Lecture

T-Tutorial

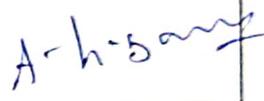
P-Practical

C-Credit

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	M	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	S	M	S
CO4	S	S	S	M	S	S	M	S	S	S
CO5	S	S	S	M	S	S	S	S	M	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	
Teaching and Learning Methods	Lecture, Smart class Presentation.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 R. PARVATHA	 R. MALATHI	



**NMEC Subjects for Degree BCA, B.Sc., Computer Science, B.Com., B.Com(CA) offered by the
Department of UG- Mathematics SYLLABUS - CBCS Pattern EFFECTIVE FROM THE ACADEMIC YEAR
2021-2022 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UMAN02	BASICS OF ALGEBRA	NMEC	III	2	2	-	-	2
Objective	To Know about the Cayley Hamilton theorem and Understand the series Improve the basic mathematical skills in matrix and Know about the Cayley Hamilton theorem and understand the series.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Series: Binomial Series-Exponential Series-Problems Chapter - 2,3				K1-K3	5		
II	Matrices : Definition of matrices - Addition, Subtraction and Multiplication of matrices -Transpose of a matrix - Adjoint of a square matrix - Rank of a matrix - Problems only. Chapter - 5				K1-K3	5		
III	Matrices : Characteristic equation of matrix - Cayley Hamilton Theorem (statement only) -Verification of Cayley Hamilton Theorem - Simple problems only. Chapter - 5				K2,K3	5		
IV	Vector Differentiation : Gradient - Curl - Divergence - Problems. Chapter - 28				K2,K3	5		
V	Vector Integration : Vector Integration - Line Integral - Problems. Chapter - 29				K1,K2	4		
Course Outcome	CO1:Understand the solve sum of in finite series and values of certain algebraic and arithmetical quantities				K1			
	CO2: Acquire the knowledge to do basic operation of the matrices and solve the problems on Matrices				K2			
	CO3: Able to use the knowledge in equation of characteristics.				K3			
	CO4: Enhance the knowledge of Differentiation and solve the problems in differentiation				K4			

	CO5: Evaluate to solve the Integration problems.	K5	
Learning Resources			
Text Books	1. Dr P. R. Vittal , Allied Mathematics, Margham publication, Chennai-17, Reprint 2012		
Reference Books	1. S.G.Venkatachalapathi, Allied Mathematics, Margham publication, Chennai- 17, Reprint 2011.		
Website Link	1. https://www.freetechbooks.com/basic-algebra-second-edition-t963.html 2. https://nptel.ac.in/courses/111106137 3. https://nptel.ac.in/courses/111101001		

L-Lecture

T-Tutorial

P-Practical

C-Credit

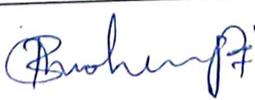
**NMEC Subjects for Degree BCA, B.Sc., Computer Science, B.Com., B.Com(CA)
offered by the Department of UG- Mathematics SYLLABUS - CBCS Pattern EFFECTIVE
FROM THE ACADEMIC YEAR 2021-2022 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UMAN02	BASICS OF ALGEBRA	NMEC	III	2	2	-	-	2

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
C01	S	M	S	S	S	S	M	M	M	M
C02	S	S	S	S	S	S	S	S	M	M
C03	S	S	S	S	S	S	S	S	M	S
C04	M	S	S	S	S	S	S	M	S	S
C05	S	S	S	S	M	S	S	M	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 B. MOHANAPRIYA	 R. MALATHI	 D. GNAN



**NMEC Subjects for Degree BCA, B.Sc., Computer Science, B.Com., B.Com(CA) offered by the
Department of UG- Mathematics
SYLLABUS - CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMAN03	QUANTITATIVE APTITUDE-II	NMEC	IV	2	2	-	-	2
Objective	The objective of the course is to enhance the problem-solving skills of students and to acquire in-depth knowledge in solving Speed, Time, Distance, SI, CI problems improve the basic mathematical skills in speed the develop knowledge in logarithm, to understand the problems on trains boats and streams of the objects. To enhance the problem-solving skills in Odd man out & Series.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Arithmetical Ability: Time & Work - Time & Distance. Chapter: 15 and 17				K1-K3	5		
II	Arithmetical Ability: Problems on trains - Boats & Streams. Chapter: 18 and 19				K1,K2	5		
III	Arithmetical Ability: Logarithms - Permutations & Combinations Chapter: 23 and 30				K3	5		
IV	Arithmetical Ability: Simple Interest - Compound Interest Chapter: 21 and 22				K4	5		
V	Arithmetical Ability: Calendar - Clocks. Chapter: 27 and 28				K4	4		

Course Outcome	CO1: Recall the basic concepts of Time and Work , Logarithms, Calendar.	K1
	CO2: Understand the basic concepts of trains - Boats & Streams.	K2
	CO3: Apply the acquired knowledge on Problems on Permutations & Combinations.	K3
	CO4: Analyze the problems on Simple Interest - Compound Interest	K4
	CO5: Evaluate the Problems on Clocks and Calendar.	K5

Learning Resources

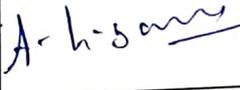
Text Books	1.Dr. R.S. Aggarwal, Quantitative Aptitude, S. Chand and Company Ltd., New Delhi, Reprint 2019.
Reference Books	1.Abhijit Guha, Quantitative Aptitude Tata McGraw Hill Publishing Company Limited, New Delhi. Reprint 2005
Website Link	1. https://youtu.be/w8VmNXgpbC0 2. https://youtu.be/HrPyldM4D8I 3. https://youtu.be/kQcVMYJrFyE

L-Lecture T-Tutorial P-Practical C-Credit

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	S	S	S	M	S
CO2	S	M	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	M	S	S	M	S
CO4	S	S	S	S	S	S	M	S	S	S
CO5	S	S	S	M	S	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class Presentation.
Assessment Methods	Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 R.PARVATHA	 R.MALATHI	



**NMEC Subjects for Degree BCA, B.Sc., Computer Science, B.Com., B.Com(CA) offered
by the Department of UG- Mathematics SYLLABUS - CBCS Pattern EFFECTIVE FROM THE
ACADEMIC YEAR 2021-2022 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMAN04	NUMERICAL METHODS	NMEC	IV	2	2	-	-	2
Objective	To describing and understanding of the several errors and approximation in numerical methods and Understand the difference operators and the use of interpolation and learn how to obtain numerical solution of Newton's forward and its table.							
Unit	Course Content				Knowledge Levels	Sessions		
I	Solution to algebraic and Transcendental Equations : Bisection method - Newton Raphson Method (Statement only). Chapter 3 : Section 3.1.1,3.4				K1,K2	5		
II	Solution of linear system: Horner's method-Gauss Elimination Method-Gauss Jordan Method Chapter 3: Section3.5,Chapter4 : Section 4.2,4.2.1				K2,K3	5		
III	Finite Differences: Definitions-First differences-Higher differences-Construction of difference table- Operator Δ , and E only- Interpolation of missing value- Expression of any value of y in terms of the initial value y_0 - Simple problems. Chapter 5 : Section 5.1 to 5.4				K3	5		
IV	Numerical Differentiation and Integration: Newton's forward and backward difference formula (without proof)-Construction of difference table- Simple problems only. Chapter 9 : Section 9.2,9.3				K2,K3	5		
V	Numerical Differentiation and Integration: Trapezoidal Rule- Simpson's 1/3 - Rule - Simpson's 3/8-Rule. Chapter9:Section9.9,9.13, 9.14				K3	4		
Course Outcome	CO1: Understand the roots of polynomial equation with and roots of real valued function				K1			
	CO2: Acquire the knowledge about able to solve systems of linear equation and helps to find the inverse of any invertible matrix				K2			
	CO3: Able to use different operators of finite difference during problem solving				K3			
	CO4: Enhance the knowledge to estimate the value of function for any intermediate value of independent variables				K4			
	CO5: Evaluate the definite integral where function has to determined from observed readings				K5			

Learning Resources

Text Books	1. P.Kandasamy, K. Thilagavathy, Numerical Methods, S.Chand & Company Ltd,2010.
Reference Books	1. Balagurusamy, Numerical Methods,Tata Me Graw Hill Publishing Company Ltd, Third Edition, New Delhi, 2002. 2. Dr. P.R. Vittal & Malini, Allied Mathematics, Margham Publications, Chennai-17.
Website link	1. https://www.freetechbooks.com/fundamental-numerical-methods-and-data-analysis-t458.html 2. http://www.nptel.ac.in/courses/111107105 3. http://www.nptel.ac.in/courses/111105038

L-Lecture

T-Tutorial

P-Practical

C-Credit

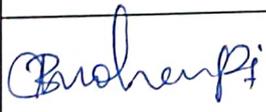
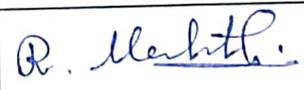
**NMEC Subjects for Degree BCA, B.Sc., Computer Science, B.Com., B.Com(CA)
offered by the Department of UG- Mathematics SYLLABUS - CBCS Pattern EFFECTIVE
FROM THE ACADEMIC YEAR 2021-2022 Onwards**

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UMAN04	NUMERICAL METHODS	NMEC	IV	2	2	-	-	2

CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S	S	S	S	S	S	S	S	M	S
CO2	S	S	S	S	M	S	S	S	M	S
CO3	S	S	S	S	S	S	M	M	M	S
CO4	M	S	S	S	S	S	S	S	M	S
CO5	S	S	S	M	S	S	S	M	M	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Problem solving session and Group Discussion
Teaching and Learning Methods	Lecture, Smart class presentation.
Assessment Methods	Assignment, Periodical assessment will be conducted and Followed the common pattern of Internal and External assessment suggested in the regulations.

Designed By	Verified By	Approved By
 B.MOHANAPRIYA	 R.MALATHI	 D. POORNIMA





MUTHAYAMMAL
COLLEGE OF ARTS
AND SCIENCE
(Autonomous)
KUMARAVELUVAHAR

List of Elective Course (DSE) Details for B.Sc., Mathematics SYLLABUS - LOCF-CBCS Pattern		
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022 Onwards		
S.No.	COURSE_CODE	TITLE OF THE COURSE
1	21MXUMAE01	OPERATIONS RESEARCH
2	21MXUMAE02	C PROGRAMMING-THEORY
3	21MXUMAE03	NUMERICAL ANALYSIS
4	21MXUMAE04	PYTHON-THEORY
5	21MXUMAE05	FUZZY SETS AND FUZZY LOGIC
6	21MXUMAE06	NUMBER THEORY