FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A" Grade by NAAC (3rd Cycle)
74th Rank in India Ranking 2020 (NIRF) by MHRD
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: MATHEMATICS

NAME OF THE PROGRAMME : B.Sc

PROGRAMME CODE : UAMA

ACADEMIC YEAR : 2022 – 2023

Minutes of the Board of Studies
Department of Mathematics
To be implemented from 2022-2023 onwards.

Venue : B5
Convened on : 16.3.2022 Convened at : 2pm.

Members Present : (Names with Initial and Designation)

1.	Dr. Pandia Raja Principal Thyagaraja College, Madurai - 625009 Mail ID : pandiaraja.d@gmail.com Mobile No : 7708091177	University Nominee
2.	Dr. M. Navaneethakrishnan Associate Professor & Head Department of Mathematics Kamaraj College, Thoothukudi - 628003 Mail ID : navaneetha n65@yahoo.co.in Mobile No : 9443871893	Subject Expert.
3.	Dr. D. Muthuramakrishnan, Dean of Science. Head of the Department, Department of Mathematics National College. Trichy - 620001 Mail ID : dmuthuramakrishnan@gmail.com	Subject Expert.

4.	MS. S. Sindhuja Senior Statistical officer National Statistical office (FOD) Ministry of Statistics and Programme implementation B Wing 2nd Floor Shastri Bhavan, Haddows Road Nungambakkam, Chennai - 600006	Industrialist.
5.	Dr. K.P.V. Preethi Assistant Professor Department of Mathematics Saiva Bhanu Kshatriya College Aruppukottai - 626101 Mail ID: vpreethi90@yahoo.com Mobile No: 9655234040	Alumna.
6.	Dr. A. PAULIN MARY	Head of the Department
7.	Mrs. A. Sheela Roselin. Dr. Sr. M. Fatima Mary Dr. C. Prasanna Devi Dr. E. Helena Mrs. Nigila Raghavan Mrs. M. Teresa Nirmala Dr. V. Vanitha Dr. M.V. Selvi Meenakshi Mrs. R. Tenovi Rosary Deepa	

Mrs. B. Velkamary Jackquiline
Mrs. J. Annal Mercy.

Minutes of the Board of Studies.
1. Presentation of the Action Taken Report.

Action Taken Report for 2021-2022 - UG

S.No.	Common Suggestions offered in the Previous Board	Action Taken for the Academic year 2021-2022.
1.	The Board recommended to Shift Computer programming with C and object oriented Programming with C^{++} from V and VI Semesters to I and II Semesters respectively as Allied papers.	Computer programming with C and object oriented programming with C^{++} are Shifted to I and II Semesters as Allied Papers.
2.	The Board passed the Syllabus for new Self-learning interdisciplinary Course, "Mathematics and Economics for Competitive Examinations" (21UGLM2SL) for advanced learners of I UG.	The Syllabi passed by the Board for new Self-Learning Interdisciplinary Course, "Mathematics and Economics for Competitive Examinations" (21UGLM2SL) for advanced learners of I UG was Implemented

Action Taken Report for 2021-2022 - PG.

S.No.	Common Suggestions offered in the Previous Board	Action Taken for the Academic year 2021-2022
1.	The Board recommended to remove "Crisp Sets and Fuzzy Sets - Unit I, Classical logic an over View, Fuzzy logic & Necessity measures in Unit IV of 19PG3ME1 - Fuzzy Sets and its Applications.	Removed Classical Logic an over View, Fuzzy logic in Unit I: Crisp Sets and Fuzzy Sets & Neccessity measure, in Unit IV, Fuzzy Measures of 19PG3ME1- Fuzzy Sets and its Applications and the code no is changed to 21PG3ME
2.	The Board passed the Syllabi for new Self-Learning Course, "Verbal and Numerical Aptitude for National Examination", (21PGLM2SL) for advanced learners of I PG.	The Syllabi passed by the Board for new Self-learning Interdisciplinary Course, "Verbal and Numerical Aptitude for National Examination (21PGLM2SL) for advanced learners of I PG was Implemented.

Change of Course Title : Nil

S.NO	Old Course Code	New Course Code	Old course Title	New Course Title	Need for Change

New Courses Introduced - UG.

S.No.	Course Code	Course Title	Relevance To Global	Scope for Emp	Need for Introduction
1.	21UGLM2SL	Mathematics and Economics for Competitive Examinations	✓	✓	Enable the Students to appear for Competitive Exams

New Courses Introduced - PG.

S.No	Course Code	Course Title	Relevance To National level	Scope for Emp.	Need for Introduction
1.	21PGLM2SL	Verbal and Numerical Aptitude for National Examinations	✓	✓	Enable the Students to appear for National Examinations

Revised Courses.

S.No	Course Code	Course Title	No & Title of Units Revised with the Content Specified	% Of Revision	Need For Revision
1.	21PG3MEI	Fuzzy Sets and its applications	Unit I: Crisp Sets and		

		Fuzzy sets: Classical Logic: an overview, Fuzzy Logic Unit IV Fuzzy Measurers: Neccessity Measures.	10% removed	Based on the feed back from the Students. Syllabus is too heavy for 4 hrs.

2. Updations of open Educational Resources in the list of references of each Course - UG.

S.No	Course code	Course Title	Details of Updation
1.	19M3CC5/19M3CC5	Modern Algebra	1. https://www.khanacademy.org 2. https://www.britanica.com/
2.	19M4CC5/19M4CC7	Sequences and series	1. https://www.cuemath.com/ 2. https://www.ncert.nic.in/
3.	19M6ME3	Object Oriented Programming with C++.	1. https://www.cplusplus.com/ 2. https://www.cppreference.com/
4.	19M3ACC1	Allied Mathematics - I	1. https://mathworld.wolfram.com 2. www.britannica.com

Updation of open Educational Resources in the list of reference of Course - PG.

S.No.	Course code	Course Title	Details of Updation.
1.	19PG3M10	Optimization Techniques	http://books.google.com/books/about Mathematical Optimization Techniques./
2.	19PG4ME3	Formal Languages	1. http://cse.iitkgp.ac.in/Course theory 2. https://people.cs.uchicago.edu/

3. Revision of Courses - UG.

S.No	Course Code	Course Title	No & Title of Units Revised with the Revised Content.	Y. of Revision	Need for Revision
1.	19M2CC3/ 19C2CC3	Differential Equations	Unit I, Differential Equations of First order; variable Separable Method	21 Included	It is the basic for the other Content of the Unit
2.	21M2AC P2	Allied Mathematics-II	Unit I, Diff. Equations of First order	21 included	Basic of the Unit.

		Variable Separable method			
3.	21M3AcC1	Allied Mathematics - I	Unit III, Differential equations of the first order, variable Separable method.	5% included	Basic for the other Content of the Unit
4.	22M6CC14	Dynamics	Unit IV; Simple Harmonic Motion is removed and "Moment of Inertia" is included. Units are rearranged according to the chapters given in the text book	20% changed	Students learn "Simple Harmonic Motion" in XII std Physics.

Revisions of Courses - PG.

S.No	Course Code	Course Title	No of Units With the Content	% Of Revision	Need for Revision
1.	19PG1M4	Classical Mechanics	Unit V Bertrand's Theorem	2% Removed	Too heavy for the Students.
2.	19PG2M7	Differential Equations	Unit II - Linear Equations	2% Included	It is needed to

			with variable Coefficients Section 9 of Chapter - 3.		prove other theorems
3.	19PM1M2	Real Analysis	Unit I: Remove appendix.	2% Removed	Too heavy for the Students
4.	22PM2M6	Advanced Real Analysis	Unit V - Functions of Several variables removed and other four Units are converted into V units.	20% Removed.	Board felt the Syllabus is too heavy.
5.	22PM3M9	Measure and Integration	Unit V - Measure and Integration in a Product Space is removed and the first Unit is divided into two Units	20% Removed.	Board felt the Syllabus is heavy.
6.	19PM3M12	Topology	Unit V - Countability and Separation axioms - Tychonoff's Theorem.	2% Introduced	It is an important Concept in Topology

4. New Courses Introduced - UG

S.NO.	Course Code	Course Title	Relevance to Global	Scope for Skill Dev.	Need for Introduction
1.	22M4SB2/ 22G4SB2	Trigonometry	✓	✓	To enhance Conceptual understanding and problem solving ability
2.	22UGMA4 SL	Financial Mathe-matics	National Level	Emp. S.D ✓ ✓	To enhance employabi-lity Skills

New Courses Introduced - PG. - Nil.

5. Introduction of Purely Skill - Embedded certificate / Diploma / Advanced Diploma value added Course other than the value added Course that is already being offered.

The Certificate Course 'Speed Arithmetic' is changed Also 'Computational Mathematics' is changed.

S.No	Course Code	Course Title		Skills Sharpened	Course Out Come
1.	22UGVACM1	Quantitative and Qualitative Methods for Competitive Examinations.	NEW	Analytical Reasoning Skills	1. Develop General Mental Ability 2. Apply Analytical Reasoning 3. Understand Pattern, and Problem Solving techniques to apply for Competitive exams.
2	22UGVACG1	Concrete Mathematics	NEW	Analytical Reasoning Skills	

6. Rubrics for Internship / Project

S.No.	C_1 20mks	C_2 20mks	CIA Total 40mks	External 60mks.
1.	Followup after 15 days	Viva Voce after Completion	40	60.

For the 2020-2023 Batch, the V and VI Semester Elective papers are interchanged as.

19M5ME1/- Computer Programming with C
19G5ME1

19M5MEP1/19G5MEP1 - C Practical

19M5ME2/- Object oriented Programming
19G5ME2 with C++

19M5MEP2/- C++ Practical
19G5MEP2

19M6ME3/- Fuzzy Mathematics
19G6ME3

19M6ME4 - Theory of Numbers.

For 2021-2024 Batch the following are the 2nd and 3rd year papers.

19M3CC5/19G3CC5 - Modern Algebra,
19M3CC6/19G3CC6 - Advanced Statistics
19M4CC7/19G4CC7 - Sequences & Series
19M4CC8/19G4CC8 - Linear Algebra
19M5CC9/19M5CC9 - Real Analysis
19M5CC10/19G5CC10 - Statics
19M5CC11/19G5CC11 - Linear Programming

19M5CC12/19G5CC12 – Graph Theory
19M6CC13/19G6CC13 – Complex Analysis
22M6CC14/22G6CC14 – Dynamics
19M6CC15/19G6CC15 – Operations Research
19M3SB1/19G3SB1 – Applications of Calculus and Differential Equations.
22M4SB2/22G4SB2 – Trigonometry

Name	Signature
1. Dr. A. Paulin Mary	
2. Dr D. Pandia Raja	Absent
3. Dr. M. Navaneetha Krishnan	
4. Dr. D. Muthuramakrishnan	
5. Dr. K. P. V. Preethi	
6. Ms. S. Sindhuja	Absent
7. Dr N. Malathi	16/03/22
8. Mrs. A. Sheela Roselin	
9. Dr. Sr. M. Fatima Mary	
10. Dr. C. Prasanna Devi	
11. Dr. E. Helena	

12. Mrs. Nigila Ragavan

13. Mrs. M. Teresa Nirmala

14. Dr. V. Vanitha

15. Mrs. R. Jenovi Rosary Deepa.

16. Mrs. B. Vetha Mary Jackelin

17. Mrs. J. Annal Mercy

18.

18. Dr. K. Amutha

19 Dr. M. Rasi

20. Dr. M. V. Sethu Meenakshi

16/3/22

VISION OF THE DEPARTMENT

To empower students both as individuals and as citizens in the society through Mathematics with sound knowledge and investigate new methodologies for future applications.

MISSION OF THE DEPARTMENT

- To achieve high standards of excellence in generating and propagating knowledge in Mathematics
- To lay a solid foundation for the concept of numeracy and scientific thinking
- To give the students, opportunities for developing, manipulative skills that will enable them function effectively in the society within the limits of their capacity
- To contribute to the development of students as Mathematical thinkers and to continue to grow in their chosen professions
- To enable the students to become lifelong learners and to function as productive citizens

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1	Our graduates will be academic, digital and information literates; creative, inquisitive, innovative and desirous for the "more" in all aspects
PEO 2	They will be efficient individual and team performers, exhibiting progress, flexibility, transparency and accountability in their professional work
PEO 3	The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills
PEO 4	They will engage locally and globally, evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment

GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

I. SOCIAL COMPETENCE	
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy
GA 2	Hone creativity, passion for innovation and aspire excellence
GA 3	Enthusiasm towards emancipation and empowerment of humanity
GA 4	Potentials of being independent
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research
GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill- sets to interpret, analyse and solve social and environmental issues in diverse environments
GA 10	Self-awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to face and make changes building their strengths and improving on their weaknesses
GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for

GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised
GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario
II. PROFESSIONAL COMPETENCE	
GA 18	Optimism, flexibility and diligence that would make them professionally competent
GA 19	Prowess to be successful entrepreneurs and employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap Potentials
III. ETHICAL COMPETENCE	
GA 25	Integrity and discipline in bringing stability leading a systematic life promoting good human behaviour to build better society
GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life

GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
GA 30	Right life skills at the right moment

PROGRAMME OUTCOMES (PO)

The learners will be able to

PO 1	Apply acquired scientific knowledge to solve complex issues.
PO 2	Attain Analytical skills to solve complex cultural, societal and environmental issues.
PO 3	Employ latest and updated tools and technologies to analyse complex issues.
PO 4	Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of B.Sc. Mathematics programme, the graduates would be able to

PSO 1	Gain broad knowledge and understanding in pure Mathematics and applications of Mathematics.
PSO 2	Demonstrate a computational ability and apply logical thinking skills to solve problems that can be modelled Mathematically.
PSO 3	Read, understand, analyse and formulate Mathematical theorems.
PSO 4	Acquire proficiency in the use of technology to assist in learning and investigating, Mathematical ideas and in problem solving.
PSO 5	Communicate Mathematical concepts accurately, precisely and effectively with clarity and coherence both verbal and in written form

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF MATHEMATICS

For those who joined in June 2019 onwards

PROGRAMME CODE:

PART – I – TAMIL / FRENCH / HINDI– 12 CREDITS

PART – I – TAMIL

Offered by The Research Centre of Tamil

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19TL1C1	Language-Modern Literature - nghJj;jkpo; - ,f;fhy ,yf;fpak;	5	3	40	60	100
2.	II	19TL2C2	Language - Bakthi Literature - nghJj;jkpo; - gf;jp ,yf;fpak;	5	3	40	60	100
3.	III	19TL3C3	Language- Epic Literature - nghJj;jkpo; - fhg;gpa ,yf;fpak;	5	3	40	60	100
4.	IV	19TL4C4	Language-Sangam Literature - nghJj;jkpo; - rq;f ,yf;fpak;	5	3	40	60	100
			TOTAL	20	12			

PART – I – FRENCH

Offered by The Department of French

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RL1C1	PART 1 LANGUAGE FRENCH - LE NIVEAU INTRODUCTIF	5	3	40	60	100
2.	II	19RL2C2	PART 1 LANGUAGE FRENCH - LE NIVEAU DÉCOUVERTE	5	3	40	60	100
3.	III	19RL3C3	PART 1 LANGUAGE FRENCH - LE NIVEAU INTERMEDIAIRE – LA CIVILISATION, LA LITTERATURE ET LA GRAMMAIRE	5	3	40	60	100
4.	IV	19RL4C4	PART 1 LANGUAGE FRENCH - LE NIVEAU DE SUIVRE – LA CIVILISATION, LA LITTERATURE ET LA GRAMMAIRE	5	3	40	60	100
			TOTAL	20	12			

PART – I – HINDI

Offered by The Department of Hindi

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19DL1C1	PART 1 LANGUAGE HINDI - बोलचाल की हिंदी	5	3	40	60	100
2.	II	19DL2C2	PART 1 LANGUAGE HINDI - कार्यालयीन हिंदी	5	3	40	60	100
3.	III	19DL3C3	PART 1 LANGUAGE HINDI - हिंदी साहित्य का आदिकाल और भक्तिकाल	5	3	40	60	100
4.	IV	19DL4C4	PART 1 LANGUAGE HINDI - हिंदी साहित्य का आधुनिक काल	5	3	40	60	100
			TOTAL	20	12			

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19EL1LB/ 19EL1WB	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.		19EL1LI/ 19EL1WI	INTERMEDIATE COMMUNICATIVE ENGLISH					

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKS
3.		19EL1LA/ 19EL1WA	ADVANCED COMMUNICATIVE ENGLISH					
4.	**II**	19EL2LB/ 19EL2WB	ENGLISH COMMUNICATION SKILLS	5	3	40	60	100
5.		19EL2LI/ 19EL2WI	ENGLISH FOR EMPOWERMENT					
6.		19EL2LA/ 19EL2WA	ENGLISH FOR CREATIVE WRITING					
7.	**III**	19EL2LA/ 19EL2WA	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
8.	**IV**	19EL4LN/ 19EL4WN	ENGLISH FOR INTEGRATED DEVELOPMENT	5	3	40	60	100
			TOTAL	**20**	**12**			

PART – III -MAJOR, ALLIED & ELECTIVES – 95 CREDITS

MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19M1CC1	Calculus	6	4	40	60	100
2.		19M1CC2	Classical Algebra	6	4	40	60	100
3.	II	19M2CC3	Differential Equations	6	4	40	60	100
4.		19M2CC4	Statistics	6	4	40	60	100
5.	III	19M3CC5	Modern Algebra	6	4	40	60	100
6.		19M3CC6	Advanced Statisics	6	4	40	60	100
7.	IV	19M4CC7	Sequences and Series	6	4	40	60	100
8.		19M4CC8	Linear Algebra	6	4	40	60	100
9.	V	19M5CC9	Real Analysis	5	4	40	60	100
10.		19M5CC10	Statics	5	4	40	60	100
11.		19M5CC11	Linear Programming	5	4	40	60	100
12.		19M5CC12	Graph Theory	5	4	40	60	100
13.	VI	19M6CC13	Complex Analysis	5	4	40	60	100
14.		22M6CC14	Dynamics	5	4	40	60	100
15.		19M6CC15	Operations Research	5	4	40	60	100
			TOTAL	**83**	**60**			

ALLIED COURSES- 20 CREDITS

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	21B1ACM1	Computer Programming in C	3	5	40	60	100
2.	I	21B1ACM2	C-Practicals	2		40	60	100
3.	II	21B2ACM3	Object Oriented Programming with C++	3	5	40	60	100
4.	II	21B2ACM4	C++ - Practicals	2		40	60	100
			TOTAL	**20**	**20**			

ELECTIVES-15 CREDITS

S. No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	V	19M5ME1 & 19M5MEP1/ 19M5ME2 & 19M5MEP2	Computer Programming in C & C-Practicals Object oriented Programming with C++ (or) C++ Practicals	3+2/5	3+2/5	40+40/40	60+60/60	100+100/100
2.	VI	19M6ME3 (or) 19M6ME4	Fuzzy Mathematics (or) Theory of Numbers	3+2/5	3+2/5	40+40/40	60+60/60	100+100/100
3.		19M6ME5 / (or) 19M6ME6	Lattices and Boolean Algebra / (or) Discrete Mathematics	5	5	40	60	100
			TOTAL	**15**	**15**			

ALLIED COURSES OFFERED FOR OTHER DEPARTMENTS

S. No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	21M1ACP1	Allied Mathematics – I (offered to Physics Department)	5	5	40	60	100
2.	II	21M2ACP2	Allied Mathematics – II (offered to Physics Department)	5	5	40	60	100
3.	III	21M3ACC1	Allied Mathematics – I (offered to Chemistry Department)	5	5	40	60	100
4.	IV	21M4ACC2	Allied Mathematics – II (offered to Chemistry Department)	5	5	40	60	100
5.	III	21M3ACB1	Linear Programming (offered to Computer Science Department)	5	5	40	60	100
6.	IV	21M4ACB2	Algebra and Graph Theory (offered to Computer Science Department)	5	5	40	60	100

PART – IV – 20 CREDITS

- **VALUE EDUCATION**
- **ENVIRONMENTAL AWARENESS**
- **NON-MAJOR ELECTIVE**

- **SKILL BASED COURSES**

S. No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	21G1VE1	Personal Values	1	1	40	60	100
2.		19M1NME	Quantitative Aptitude	2	2	40	60	100
3.	II	21G2VE2	Values for Life	1	1	40	60	100
4.		19M2NME	Quantitative Aptitude	2	2	40	60	100
5.	III	21G3EE	Environmental Education	1	1	40	60	100
6.		19M3SB1	Applications of Calculus and Differential Equations	2	2	40	60	100
7.	IV	21G4EE	Gender Studies	1	1	40	60	100
8.		22M4SB2	Trigonometry	2	2	40	60	100
9.	V	19M5SB3	Data Interpretation and Analytical Aptitude	2	2	40	60	100
10.		19M5SB4	Cryptography	2	2	40	60	100
11.	VI	19M6SB5	MATLAB	2	2	40	60	100
12.		19M6SB6	Combinatorial Mathematics	2	2	40	60	100
			TOTAL	**20**	**20**			

EXTRA CREDIT COURSES

COURSE CODE	COURSE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
21UGME2SL	Mathematics and Economics for Competitive Exams	-	2	II	40	60	100
22UGMA4SL	Financial Mathematics	-	2	VI	40	60	100
19UGM6SL	History of Mathematics	-	2	VI	40	60	100
	MOOC COURSES / International Certified online Courses (Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC	-	Minimum 2 Credits	I – VI	-	-	

OFF CLASS PROGRAMMES

21UGVAM1 – Value Added Crash Course (Verbal and Non Verbal Reasoning)

22UGVACM1 – Value Added Crash Course (Quantitative and Qualitative Methods for Competitive Examinations)

PART – V – 1 CREDIT

OFF-CLASS PROGRAMMES - ALL PART-V

SHIFT - I

S. No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	TOT. Mks
1.	I – IV	21S4PED	Physical Education	30/ SEM	1	100
2.		21S4NSS	NSS			
3.		21S4NCC	NCC			
4.		21S4WEC	Women Empowerment Cell			
5.		21S4ACUF	AICUF			

OFF-CLASS PROGRAMMES

ADD-ON COURSES

COURSE CODE	COURSE TITLE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA Mks	ESE Mks	TOTAL Mks
19UAD2CA	**COMPUTER APPLICATIONS** (offered by the	40	2	I & II	40	60	100

COURSE CODE	COURSE TITLE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA Mks	ESE Mks	TOTAL Mks
	department of PGDCA for Shift I)						
19UADFCA	**ONLINE SELF LEARNING COURSES**- Foundation Course for Arts	40	2	I	40	60	100
19UADFCS	**ONLINE SELF LEARNING COURSE-** Foundation Course for Science	40	2	II	40	60	100
21UADES3	Social & Professional Ethics	15	1	III	40	60	100
21UADES4	Personality Development	15	1	IV	40	60	100
21UADES5	Family Life Education	15	1	V	40	60	100
21UADES6	Life Skills	15	1	VI	40	60	100

COURSE CODE	COURSE TITLE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA Mks	ESE Mks	TOTAL Mks
19UAD5HR	**HUMAN RIGHTS**	15	2	V	100	-	100
19UADRS	**OUTREACH PROGRAMME**- Reach Out to Society through Action **ROSA**	100	3	V & VI	100	-	100
19UADPR	**PROJECT**	30	4	VI	40	60	100
19UADRC	**READING CULTURE**	10/ Semester	1	II-VI	-	-	-
	TOTAL		**20**				

II B.Sc Mathematics

SEMESTER –IV

For those who joined in 2022 onwards

SKILL DEVELOPMENT-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UAMA	22M4SB2	TRIGONOMETRY	Lecture	2	2

COURSE DESCRIPTION

This course helps the students to develop their problem solving skills.

COURSE OBJECTIVES

To enable the students learn some basic concepts of Trigonometry and to solve problems.

.

UNIT I: EXPANSIONS -I [6 HRS]

Expansion of sinnx, cosnx, tannx

UNIT II : EXPANSIONS -II [6 HRS]

Expansion of $\sin^n x$, $\cos^n x$, $\sin^m x \cos^n x$

UNIT III: EXPANSIONS -III [6 HRS]

Expansions of $\cos\theta$, $\sin\theta$ and $\tan\theta$ in a series of ascending powers of θ

UNIT III: HYPERBOLIC FUNCTIONS [6 HRS]

Hyperbolic functions , Relations between hyperbolic functions,Inverse Hyperbolic functions.

UNITV:LOGARITHMS OF COMPLEX QUANTITIES [6 HRS]

Logarithms of complex quantities, Definition, Logarithm of x+iy, General value of logarithm of x+iy

TEXT BOOKS:

1. S. Narayanan and T. K. Manicavachagam Pillai - Trigonometry , S. Viswanathan (Printers and Publishers), Pvt. Ltd, 2008.

   UNIT I, II & III Chapter 3

   UNIT IV Chapter 4

   UNIT V **C**hapter 5(Section 5.1 & 5.2)

REFERENCE BOOKS:

1. P.R.Vittal & V.Malini - Algebra & Trigonometry, Margham Publications, 2008.
2. Sudhir K Pundir singh- Algebra & Trigonometry, Meerat Pragathi prakashan,2003

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**EXPANSIONS -I**			
1.1	Expansion of sinnx	2	Chalk & Talk	Black Board
1.2	Expansion of cosnx	2	Chalk & Talk	Black Board
1.3	Expansion of tannx	2	Chalk & Talk	Black Board
UNIT - 2	**EXPANSIONS -II**			
2.1	Expansion of $\sin^n x$	2	Discussion	Black Board
2.2	Expansion of $\cos^n x$	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.3	Expansion of $\sin^m x \cos^n x$	2	Chalk & Talk	Black Board
UNIT - 3	**EXPANSIONS -III**			
3.1	Expansions of cos θ in a series of ascending powers of θ	2	Chalk & Talk	Black Board
3.2	Expansions of sin θ in a series of ascending powers of θ	2	Chalk & Talk	Black Board
3.3	Expansions of tan θ in a series of ascending powers of θ	2	Chalk & Talk	Black Board
UNIT - 4	**HYPERBOLIC FUNCTIONS**			
4.1	Hyperbolic functions	2	Chalk & Talk	Black Board
4.2	Relations between hyperbolic functions	2	Chalk & Talk	Black Board
4.3	Inverse Hyperbolic functions	2	Chalk & Talk	Black Board
UNIT - 5	**LOGARITHMS OF COMPLEX QUANTITIES**			
5.1	Logarithms of complex quantities	2	Chalk & Talk	Black Board
5.2	Definition, Logarithm of x+iy,	2	Chalk & Talk	Black Board
5.3	General value of logarithm of x+iy	2	Chalk & Talk	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

EVALUATION PATTERN

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

				Nos		
C1	-	Test (CIA 1)		1	-	10 Mks
C2	-	Test (CIA 2)		1	-	10 Mks
C3	-	Assignment		1	-	5 Mks
C4	-	Open Book Test/PPT		2 *	-	5 Mks
C5	-	Quiz		2 *	-	5 Mks
C6	-	Attendance			-	5 Mks

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED	PSOs ADDRESSED

		BLOOM'S TAXONOMY)	
CO 1	Recall some expansions of Trigonometric functions in sinnx, cosnx, tannx.	K1	PSO1& PSO2
CO 2	Recall some expansions of Trigonometric functions in $\sin^n x$, $\cos^n x$, $\sin^m x \cos^n x$	K2 & K3	PSO3
CO 3	Recall some expansions of Trigonometric functions in $\cos\theta$, $\sin\theta$ and $\tan\theta$ in a series of ascending powers of θ	K1 & K2	PSO4
CO 4	Do the problems in hyperbolic functions	K1 & K4	PSO5
CO 5	Explain Logarithms of Complex quantities.	K2 & K4	PSO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	2	2
CO2	2	3	2	2	2
CO3	2	3	3	2	2
CO4	2	2	2	3	3
CO5	2	2	2	3	2

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO 1	3	2	2	2

CO 2	**2**	**2**	**2**	**3**
CO 3	**3**	**2**	**2**	**2**
CO 4	**2**	**3**	**2**	**2**
CO 5	**2**	**2**	**2**	**3**

Note: Strongly Correlated – **3** Moderately Correlated – **2**

 Weakly Correlated -**1**

COURSE DESIGNER:

1. Mrs. Nigila Ragavan

Forwarded By

(Dr.A.Paulin Mary)

HOD's

Signature & Name

For II UG

For those who joined in 2022 onwards

ENTREPRENEURSHIP-100%

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UAMA	22UGMA4SL	FINANCIAL MATHEMATICS	Lecture	-	2

COURSE DESCRIPTION

The course provides the mathematical and commerce concepts needed by the students for advanced study.

COURSE OBJECTIVE

To enable the students to understand the concepts like structure of interest rates, basic models for asset prices, elementary statistical analysis and estimation of the distribution.

UNIT –I FINANCIAL CALCULUS

Introduction – Examples, Cashflows, interest rates, prices and returns, Bonds and the term structure of interest rates, Asset returns, Some basic models for asset prices.

UNIT –II FINANCIAL CALCULUS (CONTINUED)

Elementary statistical analysis of returns, Measuring location, Measuring dispersion and risk, Value-at-risk, Expected shortfall, lower partial moments and coherent risk measures, Measuring skewness and kurtosis, Estimation of the distribution, Testing for normality, Financial instruments, Contingent claims, Spot contracts and forwards, Futures contracts, Options, Barrier options, Financial engineering.

UNIT III INTRODUCTION TO ACCOUNTANCY

Introduction- meaning and definition of accounting- rules of double entry book keeping- debit and credit- accounting concepts- journal, ledger, trial balance, final accounts.

UNIT IV APPLICATION OF ACCOUNTING

Accounting ratios, Investment accounts- cum interest and ex interest calculation

UNIT V MODERN ACCOUNTING CONCEPTS

Inflation accounting- introduction – purpose- CPP- CAA methods-

TEXT BOOK:

1. Ansgar Steland *Financial statistics and Mathematical Finance – Methods, Models and Applications,* First Edition 2012 - John Wiley & Sons, Ltd

2. Hanif and Mukerjee, *Advanced Accountancy*, Tata Mc Graw Hill Co., New Delhi

REFERENCE BOOK:

1. Amber Habib, *The Calculus of Finance*, Universities Press, January 2011

2. S. Chandra, S. Dharmaraja, Aparna Mehra, R. Chemchandani, *Financial Mathematics: An introduction*, Narosa Publishing House, Reprint 2014

3. R.L.Gupta , M.Radhaswamy, *Advanced Accounting,* S.Chand and Sons,

COURSE OUTCOME

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Classify various concepts in structure of interest rate and basic models for asset prices.	K2 & K4	PSO4
CO 2	Explain elementary statistical analysis of returns and estimation of the distribution.	K3	PSO5
CO 3	Gain thorough Knowledge in preparing journal, ledger, Trial Balance	K2 & K4	PSO3

CO 4	Extensively apply knowledge on Accounting Ratios and Investment Accounts	K1, K2 & K3	PSO3
CO 5	Have an understanding on inflation Accounting .	K2 & K4	PSO5

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	2	3	2
CO2	2	2	2	2	3
CO3	2	2	3	2	2
CO4	2	2	3	2	2
CO5	2	2	2	2	3

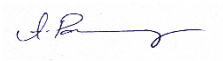
Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	2
CO2	2	3	2	2	2
CO3	2	2	3	2	2
CO4	2	2	2	3	2
CO5	2	3	2	2	2

Note: Strongly Correlated – **3** Moderately Correlated – **2**
 Weakly Correlated -**1**

COURSE DESIGNER:

B.Vethamary Jacquline
Forwarded By



(Dr.A.Paulin Mary)

HOD's
Signature & Name