

CURRICULUM & SYLLABUS



CHOICE BASED CREDIT SYSTEM (CBCS)

FOR

MASTER OF SCIENCE (M.Sc.)

(2 Year Postgraduate Degree Programme)

IN

MATHEMATICS

[w. e. f. 2023-24]

FACULTY OF SCIENCE & HUMANITIES
SRM UNIVERSITY DELHI-NCR, SONEPAT
39, Rajiv Gandhi Education City, Delhi-NCR
Sonepat, Haryana-131029

SRM UNIVERSITY DELHI-NCR, SONEPAT (HARYANA)

VISION

SRM University Delhi – NCR, Sonapat, Haryana aims to emerge as a leading world - class university that creates and disseminates knowledge upholding the highest standards of instruction in Medicines & Health Sciences, Engineering & Technology, Management, Law, Science and Humanities. Along with academic excellence and skills, our curriculum imparts integrity and social sensitivity to mould our graduates who may be best suited to serve the nation and the world.

MISSION

- To create a diverse community campus that inspires freedom and innovation.
- Promote excellence in educational & skill development processes.
- Continue to build productive international alliances.
- Explore optimal development opportunities available to students and faculty.
- Cultivate an exciting and rigorous research environment.

DEPARTMENT OF MATHEMATICS

VISION

The broad vision of the Department is to carry out high quality research in the different areas of Mathematics, Statistics and Computing so that we can produce proficient graduates, engineers and scientists to contribute significantly in the development of the society. Excellence, integrity, innovation, entrepreneurship and leadership are priorities of the Department. The vision is to become a leading department of global excellence in research and education in all discipline of Mathematics.

MISSION

The Department supports the University's mission by empowering students to:

- Provide excellent knowledge of Mathematical Sciences as well as Statistics for suitable career and groom them for institutional, state, national and international recognition.
- Discover, mentor, and nurture mathematically inclined students, and provide them a supportive environment that fosters intellectual growth.
- Train the students for interdisciplinary applications and research.
- Train the students with Mathematical and Statistical tools for industries as well as research organizations.
- Provide professional services based on our diverse mathematical and statistical expertise.
- The scientific, technical, and educational community.
- Achieve excellence in the subject as well as overall development of the student to strive in a competitive society.

M.Sc. MATHEMATICS GRADUATE EMPLOYABILITY ATTRIBUTES

- Sound knowledge and understanding of the domain area.
- Analytical & critical thinking and problem solving skills.
- Scientific Temperament towards Research & Innovation for the Betterment of Society.
- Efficient Communication & Presentation Skills.
- Dependability, reliability, responsibility, and independent leadership abilities.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The objectives of the M.Sc. Mathematics program are to develop students with the following capabilities:

- To provide knowledge of a wide range of mathematical techniques and application of mathematical methods/tools in other scientific and engineering domains.
- To provide students with advanced mathematical and computational skills that prepares them to pursue higher studies and conduct research.
- To motivate the students for research studies in mathematics and related fields.
- To provide students with a knowledge, abilities and insight in Mathematics and computational techniques so that they are able to work as mathematical professional.
- To provide students with knowledge and capability in formulating and analysis of mathematical models of real-life applications.

PROGRAM LEARNING OUTCOMES (PLOs)

After successful completion of this program, the students will be able to:

1. Apply knowledge of Mathematics, in all the fields of learning, including higher research and its extensions.
2. Carry out development work as well as take up challenges in the emerging areas of the industry.
3. Demonstrate competence in using mathematical and computational skills to model, formulate and solve real life applications.
4. Crack lectureship and fellowship exams approved by UGC like CSIR – NET and SET/ ISRO/DRDO.
5. Enhance the ability to establish advanced independent critical enquiry and analysis.

Mapping matrix of PEO's and PLO's

<div> <div>PEO</div> <div>PLO</div> </div>	1	2	3	4	5
1	✓	✓			
2		✓			
3		✓	✓		
4				✓	✓
5					✓

SEMESTER-I

Code	Category	Course	L	T	P	C
Theory						
22MAMS101	CC	Abstract Algebra	3	1	0	4
21MAMS102	CC	Mathematical Analysis	3	1	0	4
21MAMS103	CC	Complex Analysis	3	1	0	4
21MAMS104	CC	Advanced Ordinary Differential Equations	3	1	0	4
	DSE	Department Specific Elective –I	3	1/0	0/2	4
Total			15	5/4	0/2	20
Total Contact Hours			20/21			

SEMESTER-II

Code	Category	Course	L	T	P	C
Theory						
21MAMS201	CC	Linear Algebra	3	1	0	4
21MAMS202	CC	Numerical Analysis	3	1	0	4
21MAMS203	CC	Discrete Mathematics	3	1	0	4
21MAMS204	CC	Integral Equations and Calculus of Variations	3	1	0	4
	DSE	Department Specific Elective –II	3	1/0	0/2	4
Total			15	5/4	0/2	20
Total Contact Hours			20/21			

SEMESTER-III

Code	Category	Course	L	T	P	C
Theory						
21MAMS301	CC	Topology	3	1	0	4
21MAMS302	CC	Partial Differential Equations	3	1	0	4
21MAMS303	CC	Mathematical programming in optimization	3	1	0	4
	DSE	Department Specific Elective –III	3	1/0	0/2	4
	DSE	Department Specific Elective –IV	3	1/0	0/2	4
Total			15	5/3	0/4	20
			20/22			

SEMESTER-IV

Code	Category	Course	L	T	P	C
Theory						
21MAMS401	CC	Functional Analysis	3	1	0	4
21MAMS402	CC	Measure Theory and Integration	3	1	0	4
21MAMS471	CC	Project	6	0	0	6
	DSE	Department Specific Elective – V	3	1	0	4
	DSE	Department Specific Elective – VI	3	1	0	4
Total			20	4	0	24
Total Contact Hours			24			

SUMMARY OF CREDITS

Category	I Sem	II Sem	III Sem	IV Sem	Total	%
Core Course	16	16	12	8	52	63.41
Department Specific Elective	4	4	8	8	24	29.26
Project	-	-	-	6	6	7.31
Total	20	20	20	24	82	100

LIST OF MODULE ELECTIVES

Code	Category	Course	L	T	P	C
Departmental Specific Elective-I (Any one of the following)						
21MAMS105	DSE	Transform techniques with applications	3	1	0	4
21MAMS106/ 21MAMS106L	DSE	Computer Programming using MATLAB	3	0	2	4
21MAMS107	DSE	Financial Mathematics	3	1	0	4
Departmental Specific Elective -II (Any one of the following)						
21MAMS205	DSE	Probability and Statistics	3	1	0	4
22MAMS208/ 22MAMS208L	DSE	Python Programming	3	0	2	4
21MAMS207	DSE	Number Theory and Cryptography	3	1	0	4
Departmental Specific Elective -III (Any one of the following)						
21MAMS304	DSE	Fluid Dynamics	3	1	0	4
21MAMS305/ 21MAMS305L	DSE	Computing with C++	3	0	2	4
21MAMS306	DSE	Statistical Inference	3	1	0	4
Departmental Specific Elective -IV (Any one of the following)						
21MAMS307	DSE	Mechanics	3	1	0	4
21MAMS308	DSE	Mathematical Programming	3	1	0	4
22MAMS310/ 22MAMS310L	DSE	Data Structures Using C	3	0	2	4
Departmental Specific Elective -V(Any one of the following)						
21MAMS403	DSE	Modelling and Simulation	3	1	0	4
21MAMS404	DSE	Algebraic Topology	3	1	0	4
21MAMS405	DSE	Theory of Elasticity	3	1	0	4
Departmental Specific Elective -VI (Any one of the following)						
21MAMS406	DSE	Differential Geometry	3	1	0	4
21MAMS407	DSE	Stochastic Process	3	1	0	4
21MAMS408	DSE	Computing with R	3	1	0	4