



मौ शाकुम्भरी विश्वविद्यालय, सहारनपुर
Maa Shakumbhari University, Saharanpur

**Post-Graduation in Mathematics
& Pre. Ph.D. Course- Work PROGRAMME
CURRICULUM & SYLLABUS**

For

**School of Mathematics
Maa Shakumbhari University, Saharanpur**

And

**Department of Mathematics, Affiliated Colleges
Maa Shakumbhari University, Saharanpur**




(Effective from Session 2024-25)

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Curriculum & Syllabus Post Graduation and Fourth, Fifth- & Sixth-year course Under NEP2020- Mathematics

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Members, Board of Studies (Mathematics)

S.No.	Name	Designation	College/University	Signature
1.	Prof. Sanjay Kumar	Convener	M.S. College, Saharanpur	
2.	Dr. Kamal Kishore	Member	K.K. Jain PG College, Khatuli, Muzaffarnagar	
3.	Prof. K.P. Singh	Member	C.C.R.D. College Muzaffarnagar	
4.	Prof. Praveen Kumar	Member	J. V. Jain College, Saharanpur	
5.	Prof. Naveen Sharma	Member	D.A.V. College Muzaffarnagar	
6.	Prof. Mridul Gupta	Member(External)	C.C.S. University, Meerut	
7.	Prof. Shivrati Singh Pundir	Member(External)	C.C.S. University, Meerut	

SCHOOL OF MATHEMATICS

MAA SHAKUMBHARI UNIVERSITY, SAHARANPUR

VISION OF THE SCHOOL

To produce such academicians with morality, global competence, vision and skilled as are necessary to meet the challenges of emerging global knowledge, economy by the power of innovation, creativity and efficient learning ability.

MISSION OF THE SCHOOL

To emerge among the top institution in India within next ten years through applicability, humanity, implementing and operating dynamic-academic, administrative and functional process, for optimal use of available resources.

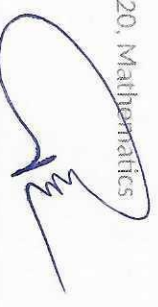
ABOUT THE SCHOOL OF SCIENCE - MATHEMATICS

The School of Mathematics is going to establish with the objective of promoting post-graduate studies and research in Mathematics. Mathematics is the base of all sciences therefore the importance of mathematics in any curriculum is self-evident. This is the single science subject that is being used by all other disciplines, that is why its growth over the years has been phenomenal. In view of this, Mathematics at Post-Graduate level, is one of the subjects, which is going to introduce in the University since inception. M.Sc./M.A. were also started. From the academic session 2021-22 under graduation program (B.Sc./ B.A.) under NEP2020 has already been started.

VISION

- Vision of the School of Science (Mathematics) University Campus and affiliated Colleges is to create a community of mathematical learning by promoting outstanding teaching, Indian knowledge system (IKS), deep understanding and creating global centre of excellence in research for the growth of the Nation and Humanity.
- To achieve high standards of excellence in generating and propagating knowledge in Mathematics.
- To provide sustainable environment to the students and researchers who can learn, teach, become innovator and use of

Curriculum & Syllabus Post Graduation and Fourth, Fifth- & Sixth-year course Under NEP2020, Mathematics



mathematics for humanity.

MISSION

- To provide an effective teaching-learning process.
- To impart world-class education in an environment of fundamental and applied research in Mathematics.
- To emerge as a global centre of digital learning, academic excellence and innovative research.
- To include innovative skills, teamwork and ethical practices among students so as to meet societal expectations.
- To provide quality education for higher studies and competitive like CSIR-UGC JRF/NET, GATE, SLET, Civil Services, Scientist, and research programme.

M.Sc. Mathematics Programme prerequisites

To study this programme a student must have/ had the subject Mathematics at UG level.

Programme Outcomes (PO's)

- PO1:** Provide opportunities in higher education and development on the professional front. It also gives the opportunity for career advancement in teaching, research, and industries.
- PO2:** Integration of Interdisciplinary thinking and practice.
- PO3:** Analyse a problem, identify and define the computing requirements with respect to organizational factors appropriate to its solution, and plan strategies for their solution.
- PO4:** Design, implement and evaluate information systems, processes, components, or programs and source cost-benefit efficient alternatives to meet desired needs, goals, and constraints.
- PO5:** Deploy and use effective skills, tools, and techniques necessary for information systems practice.
- PO6:** Most importantly, the program inculcates among the students the higher values which enable them to withstand the challenges of life.
- PO7:** Deploy and use effective skills, tools, and techniques necessary for information systems practice.
- PO8:** Effectively communicate about their field of expertise on their activities, with their peer and society at large, such as, being able to comprehend and write effective reports and design documentation.



Syllabus M.Sc. (Mathematics)

(B.A./B.Sc. in Research - Mathematics) as per NEP2020

Year	Course Code	Core/Elective/Value Added	Paper Title	Theory/ Practical/ Project	Credits	Internal Marks	External Marks (Min Marks)	Total Marks	Minimum Marks (INT+EXT)	Teaching Hours
Year-4 as per NEP/Year -I	Semester-VII as per NEP2020/Semester-I									
	0720301	Core Compulsory	Abstract Algebra	Theory	4	25	75(25)	100	40	4x15=60
	0720302	Core Compulsory	Real Analysis	Theory	4	25	75(25)	100	40	4x15=60
	0720303	Core Compulsory	Advance Differential Equation	Theory	4	25	75(25)	100	40	4x15=60
	0720304	Core Compulsory	Metric Space	Theory	4	25	75(25)	100	40	4x15=60
			Choose Any One							
	0720305	Elective	Mathematical Statistics	Theory	4	25	75(25)	100	40	4x15=60
	0720306	Elective	Advance Numerical Analysis	Theory	4	25	75(25)	100	40	4x15=60
	0720365	Elective	Project-I	Project	4		40	100	40	
	Semester VIII as per NEP2020/Semester -II									
	0820301	Core Compulsory	Topology	Theory	4	25	75(25)	100	40	4x15=60
	0820302	Core Compulsory	Advance Complex Analysis	Theory	4	25	75(25)	100	40	4x15=60
	0820303	Core Compulsory	Number Theory	Theory	4	25	75(25)	100	40	4x15=60
		Core Elective G-1	Any One of the following							
	0820304		1. Mechanics	Theory	4	25	75(25)	100	40	4x15=60
	0820305		2. Financial Mathematics	Theory	4	25	75(25)	100	40	4x15=60
	0820306		3. Fluid Dynamics	Theory	4	25	75(25)	100	40	4x15=60
		Core Elective G-2	Any One of the following							

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0820307		1. Linear Algebra	Theory	4	25	75(25)	100	40	4x15=60
0820308		2. Data Structure with C	Theory	4	25	75(25)	100	40	4x15=60
0820309		3. Dynamical systems	Theory	4	25	75(25)	100	40	4x15=60
0820365		4. Project-II	Project	4			100	40	

M.A./M. Sc. in Mathematics as per NEP 2020

Semester IX as per NEP2020/Semester -III

	Core Elective G-1	Any Two of the following							
0920301		1. Research Methodology and Computer Fundamentals	Theory	4	25	75(25)	100	40	4x15=60
0920302		2. Linear Integral Equation	Theory	4	25	75(25)	100	40	4x15=60
0920303		3. Information Theory	Theory	4	25	75(25)	100	40	4x15=60
0920304		4. Mathematical Programming	Theory	4	25	75(25)	100	40	4x15=60
0920305		5. Difference Equations	Theory	4	25	75(25)	100	40	4x15=60
0920306	Core Elective G-2	Any Two of the following							
0920307		1. Measure and Integration Theory	Theory	4	25	75(25)	100	40	4x15=60
0920308		2. Advance Operations Research	Theory	4	25	75(25)	100	40	4x15=60
0920309		3. Theory of Vibrations	Theory	4	25	75(25)	100	40	4x15=60
0920310		4. Applied Statistics	Theory	4	25	75(25)	100	40	4x15=60
0920365		5. Theory of Relativity	Theory	4	25	75(25)	100	40	4x15=60
	Core Compulsory	Project-III	Project	4			100	40	

Semester X as per NEP2020/Semester -IV

	Core Elective G-1	Any Two of the following							
1020301		1. Fuzzy Set and Its Application	Theory	4	25	75(25)	100	40	4x15=60
1020302		2. Functional Analysis	Theory	4	25	75(25)	100	40	4x15=60
1020303		3. An Introduction to R-Software	Theory	4	25	75(25)	100	40	4x15=60

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Year -5 as per NEP2020/Year - 2

1020304		4. Differential Geometry	Theory	4	25	75(25)	100	40	4x15=60
1020305		5. Algebraic Topology	Theory	4	25	75(25)	100	40	4x15=60
1020306		6. Mathematical Modeling	Theory	4	25	75(25)	100	40	4x15=60
	Core Elective G-2	Any Two of the following							
1020307		1. Partial Differential Equation	Theory	4	25	75(25)	100	40	4x15=60
1020308		2. Cryptography and Network Security	Theory	4	25	75(25)	100	40	4x15=60
1020309		3. Mathematical Biology	Theory	4	25	75(25)	100	40	4x15=60
1020310		4. File Structure and Data Base Management	Theory	4	25	75(25)	100	40	4x15=60
1020311		5. Introduction to Fuzzy Logic 5. Linear Optimization and Genetic Algorithm	Theory	4	25	75(25)	100	40	4x15=60
1020312		6. Applied Discrete Mathematics	Theory	4	25	75(25)	100	40	4x15=60
1020365	Core Compulsory	Project-IV	Project	4			100	40	

Pre Phd Course Work

Semester XI as per NEP2020/Semester -I

Paper Code	Title Paper	Credits	Internal Marks	External Marks	Total Max. Marks/ Passing Marks	Lecture Hours
1120301	Core Compulsory					
1120302	Research Methodology	Theory	4	25	75	100/50
1120303	Vedic Mathematics	Theory	2	25	75	100/50
1120304	Applied Mathematics-I	Theory	2	25	75	100/50
1120305	Applied Mathematics-II	Theory	2	25	75	100/50
1120365	Core Compulsory					
	Optimization	Theory	2	25	75	100/50
	Survey/Project/Research Proposal	Project	4		100	30
						60

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Examination Pattern

External Examination: Written Exam of 75 marks 3Hrs Duration.

External Exam Pattern(PG):

Unit-I : Attempt all five question . Each question carry 3 marks.

Unit- II : Attempt Any Two out of three. Each Question carry 7.5 marks each.

Unit-III : Attempt Any Three out of Five. Each Question carry 15 marks each.

External Exam Pattern (PCDR)

Unit-I : Attempt any five question out of 15 . Each question carry 4 marks

Unit- II : Attempt Any Two out of Six. Each Question carry 7.5 marks each.

Unit-III : Attempt Any Four out of Twelve. Each Question carry 10 marks each.

Equivalent Percentage = CGPA x 9.5

Proceeding Board of Studies(Mathematics)

Today on date 07/10/2024 Board of Studies meeting has been conducted in hybrid mode in the Academic Block Man Shikumbhari University, Purnwarka Saharanpur. Following members have attended the meeting.

1. Prof. Sanjay Kumar
2. Prof. Praveen Kumar
3. Prof. Naveen Sharma
4. Prof. M K Gupta
5. Prof. Shivraj Singh

All the members have discussed in detail to form the syllabus as per NEP2020 modified direction by the UP Higher Education Council. Some key points are-

1. M.Sc. Mathematics syllabus has been formed as per NEP2020.
2. PGDOR in Mathematics syllabus has been formed as per NEP2020.
3. In B.Sc. Fifth semester syllabus Paper Code 0520302/B030502T

(3.1) **Part-A Number Theory:** "Euler's phi Function" removed from unit-I and "Möbius Function and Euler's phi Function" added in Unit-II. Also "Five Squares" removed from Unit-III.


(3.2) **Part -B Game Theory:** "Linear Programming Solution of $m \times n$ games" removed from Unit-V/III.


(Prof. M K Gupta)

Convener

Prof. M K Gupta
External Expert

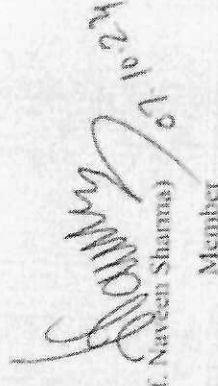
(Attended on line mode)


(Prof. Praveen Kumar)

Member

Prof. Shivraj Singh
External Expert

(Attended on line mode)


(Prof. Naveen Sharma)

Member