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Department of Mathematics
National Institute of Technology Srinagar

SENATE
ITEM NO. 31/12
DATED

Dean Academic Affairs
NIT Srinagar

No: NIT/MATH/22/75
Dated: 10/03/2022

Subject: Revised scheme of M. Sc Mathematics.

Kindly find enclosed herewith the revised scheme of M. Sc Mathematics programme as approved in 10th SPGC meeting held on 16/02/2022 for further necessary action at your end please.

Head
Department of mathematics
10/3/22

17/3/2022
For Sunder

DEAN ACAD AFFAIRS
14 MAR 2022
Rec'd No. 341
Encl:

(40)

An

ACADEMIC PROPOSAL

On

Two Years PG Programme in Mathematics Entitled "M.Sc. Mathematics"

Department of Mathematics
National Institute of Technology Srinagar (J & K)

(Effective from: Autumn 2022)

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1. About the Department:

With the very establishment of REC Srinagar in the year 1960, Mathematics was recognized as an important discipline. The Department of Mathematics, National Institute of Technology, Srinagar (formerly known as REC Srinagar) started its functioning in the year 1960. During past 60 years many Mathematicians of International repute like Prof. Q. I. Rehman, Prof. M. A. Ansari (Bretllee – Ansari's test), Prof. S. I. Hussain (Ex Head of the Department), Prof. A. H. Siddiqui (Ex Pro-Chancellor Aligarh Muslim University) and many worked in the Department. The faculty members of this department are actively engaged in research and have published around 160 research papers in last five years in National and International Journals. The Department is teaching around 40 courses to B.Tech Students besides, offering lot more courses as electives. The Department is offering 8 courses to M. Tech students and M. Phil/Ph.D students. At present, many students are pursuing their Ph.D programme and 10 students have completed their Ph.D during last four years in the Department. Many research projects have been successfully completed. One major and one minor research project sponsored by UGC has been completed by Prof. Abdul Liman and one major research project sponsored by DST was recently completed by Prof.Neyaz Ahmad.

The Department of Mathematics has recently established a Departmental Library for Students/Research Scholars. In addition to this the Department is having a Computational laboratory with several Mathematical softwares to tackle computational problems.

2. Vision of the Department:

To excel in teaching and research through creativity and to conduct collaborative academic and research programs.

3. Mission of the Department:

M1. To inculcate in students the ability to apply Mathematical and Computational skills to formulate and solve their real life problems

M2. To create an atmosphere conducive for research and to produce researchers with clear thinking and determination, who are capable of discharging professional, social and economic responsibilities ethically

4. Name and Address of Institute/University:

National Institute of Technology Srinagar,
Hazratbal,
Srinagar-190006 (J & K)

5. Title of the Program (s):

M. Sc. - Mathematics

6. Duration of the Course:

The course is a full time two year program comprising of a perfect combination in various fields of Mathematics.

1st Year: Semester I & II

2nd Year: Semester III & IV

7. Objectives of the Programme:

PG program in Mathematics is designed to deliver a solid foundation in Mathematics with adaptability to a wide range of career objectives.

- The course will not only give the scientific training and skills, but will also help to develop the ability to diversify into broad science opportunities.
- The Mathematics Department can provide excellent opportunities for interdisciplinary study and research in collaboration with the other Departments ofthe Institute and nearby Universities/Institutes.

8. Eligibility:

A candidate must be Graduate (10+2+3 pattern) in Science with Mathematics as Major Subject/Honors and must have secured at least 60% mark or CGPA 6.5/10 or equivalent for OC/OBC/EWS/SF and for SC/ST/PWD candidates, minimum marks are 50% or CGPA 5.5/10 at UG level from a recognized University/Institution with valid JAM score/Institute Level Entrance Examination Score.

9. Admission Procedure:

The admission will be made purely on the basis of JAM scores conducted by GoI. The remaining vacant seats after the completion of centralized counselling will be filled up on the basis of merit in the entrance examination conducted by the Institute.

10. Intake Capacity:

The total number of seats will be 30(Thirty) per academic session. Out of 30 seats, 25 seats will be filled on the basis of JAM score. The remaining vacant seats out of 25 and 5 seats will be filled through Institute Level Entrance Examination. Reservations will be applicable as per Institute rules (GoI Rules).

The seat matrix for 30 seats is given in the Table-1.

Table-1: Seat Matrix

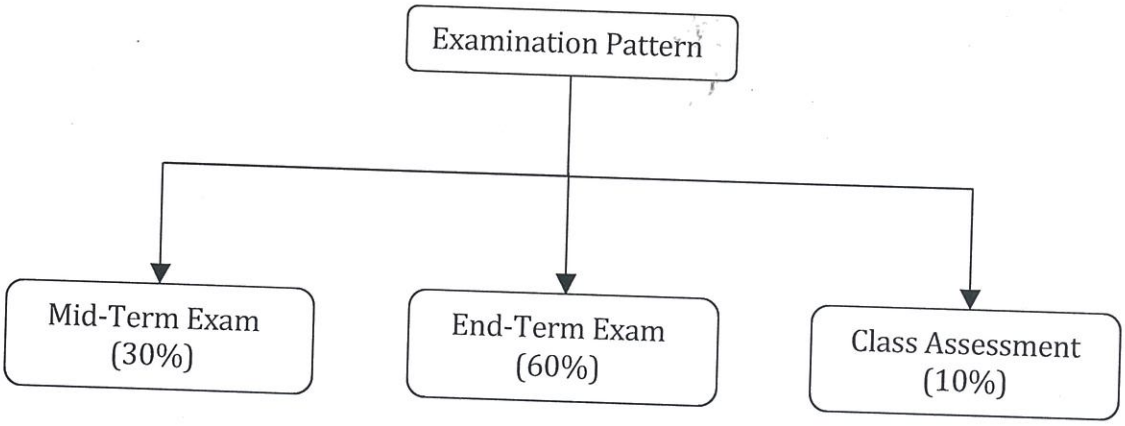
Program Name	Eligible Degree with subject	Eligible JAM Paper	Number of Seats										Total No. of Seats
			OP	OP (EWS)	OB	SC	ST	OBC-PWD	EWS-PWD	OB-PWD	SC-PWD	ST-PWD	
M. Sc Mathematics	B. Sc	CY	11	2	5	4	2	1	-	-	-	-	25
	Reserved Seats for J&K (UT)		5										5
Total No. of Seats													30

11. Pattern of Institute Entrance Examination:

The question paper will consist of 60 MCQ type questions of maximum marks 60. Each correct answer will carry one mark and for wrong answer, 0.25 mark will be deducted. Questions not attempted will result in zero mark. The duration of exam will be of 90 minutes. Question paper will be set as per Institute policy in vogue.

12. Scheme of Examination:

The scheme of examination will be as per Institute rules. The examination will be conducted semester wise with one mid-term examination designated as "Mid-Term Examination" and one end term examination designated as "End-Term Examination". On the basis of these two examinations as well as on class assessment, the students will be awarded grades on the scale of 10 as per Institute rules in vogue. The project will be evaluated in terms of a dissertation and viva voce/seminar.



The conversion of CGPA into % will be as per Institute rules which is % = CGPA×10.

13. Fee Structure:

The fee will be same as in vogue for other post graduate (M.Sc) programmes of the institute.

14. Scope of Employment:

a) Teaching Position(Universities/Institutes/Colleges/Schools)
b) In Research &Development Organizations
c) Scientific Content Writer/Technical Officers
d) Analytical & Technical Executives for MNCs

15. Availability of required infrastructure and human resources for commencing the programme

(i) Human resources

The Department of Mathematics has well qualified and experienced staff members. All the faculty members are doctorates (PhD) and are engaged in research activities in the various fields suchas Wavelet Analysis, Functional Analysis, Complex Function Theory, Operation Research, Mathematical Physics, Fourier Analysis, Differential Geometry, Discrete Mathematics, Algebra, Numerical Analysis, Summability theory, Time-Frequency Analysis, Computational Fluid dynamics.

The existing faculty members as mentioned in Para 17(S. No. 1-9) are ample and highly competent to commence the PG programme in the Department of Mathematics successfully and ***therefore, there will be no requirement of additional faculty in the Department to commence the programme.***

(ii) Laboratories:

The Department of Mathematics has following graduate and research laboratories;

a) Computer Lab.

(iii)Space:

Lecture halls are available in the Institute for classes.

16. The major areas of teaching and research:

Real Analysis, Abstract Algebra, Functional Analysis, Number theory, Computational Fluid Dynamics, Discrete Mathematics, Numerical Analysis, Differential Geometry, Wavelet Analysis, Topology, Measure Theory, Fourier Analysis, Graph Theory, Operation Research, Statistics and Probability, Complex Analysis, Linear Algebra.

17. Name, designation, field of specialization of the faculty members:

S. No.	Name of the faculty	Designation	Field of Specialization
1.	Prof. Tanweer Jalal	Professor and Head	Functional Analysis Measures of Non compactness Summability Theory
2.	Prof. Abdul Liman	Professor	Complex Function Theory, Polynomial Approximation Theory
3.	Prof. Neyaz Ahmad Sheikh	Professor	Wavelet Analysis, Frame Theory
4.	Dr. Zamrooda Jabeen	Associate Professor	Operations Research
5.	Dr. Mushtaq Ahmad Bhat	Assistant Professor	Discrete Mathematics
6.	Dr. Mehraj Ahmad Lone	Assistant Professor	Differential Geometry
7.	Dr. Ujwal Warbhe	Assistant Professor	Numerical Analysis
8.	Dr. Rameez Raja	Assistant Professor	Algebra
9.	Dr. Idrees Qasim	Assistant Professor	Complex Function Theory, Complex Analysis
10.	Dr. Owais Ahmad	Assistant Professor	Wavelet Analysis, Mathematical Physics, Harmonic Analysis, Time –Frequency Analysis
11.	Dr. Atendra Kumar	Assistant Professor	Computational Fluid Dynamics

19. Major research grants received in the Department from the agencies:

SERB-DST, CSIR, NBHM etc.

20. Nearby Institutions engaged in M.Sc. Mathematics Programme:

(a) University of Kashmir, Srinagar

(b) Central University of Kashmir

(c) University of Jammu

(d) Central University of Jammu, Jammu Tawi

(e) BGBSU Rajouri, Jammu

(f) NIT, Hamirpur

Name and full address of the Director

Prof. (Dr.) Rakesh Sehgal
Director,
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Name and full address of the Head of the Department

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Name and full address of the Course Coordinator

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(SD)

DEPARTMENT OF MATHEMATICS

NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR

J & K-190006

M.Sc. Mathematics

Curriculum and Syllabi
(w.e.f. Autumn-2022)

CURRICULUM FOR POST-GRADUATE PROGRAM LEADING TO MASTER OF SCIENCE (M.Sc.) DEGREE IN MATHEMATICS

(I). Program Details:

Name of the degree	Name of Specialization	Intake (Full Time)	Year of Starting (Proposed)	Duration	Eligibility for Admission
M.Sc.	Mathematics	25+*5 = 30	2022	2 years	A candidate must be Graduate (10+2+3 pattern) in Science with Mathematics as Major Subject/Honors and must have secured at least 60% mark or CGPA 6.5/10 or equivalent for OC/OBC/EWS/SF and for SC/ST/PWD candidates, minimum marks are 50% or CGPA 5.5/10 at UG level from a recognized University/Institution with valid JAM score/Institute Entrance Examination Score.

**Five (05) seats will be reserved for candidates of J&K (UT).*

Programme Structures

M.Sc. Mathematics (Two Year Full Time Programme)

FIRST YEAR													
I Semester							II Semester						
S. No.	Course Code	Course Name	L	T	P	C	S. No.	Course Code	Course Name	L	T	P	C
1.	MM- 101	REAL ANALYSIS	3	1		4	1.	MM - 201	TOPOLOGY	3	1		4
2.	MM - 102	ALGEBRA	3	1		4	2.	MM - 202	NUMBER THEORY	3	1		4
3.	MM-103	COMPLEX ANALYSIS	3	1		4	3.	MM - 203	PROBABILITY AND STATISTICS	3	1		4
4.	MM-104	DIFFERENTIAL EQUATIONS	3	1		4	4.	MM - 204	DISCRETE MATHEMATICS	3	1		4
5.	MM105	PROGRAMMING IN C++	3		2	4	5.	MM -205	PYTHON LANGUAGE	3		2	4
	Total Credits					**20**		**Total Credits**					**20**

SECOND YEAR													
III Semester							IV Semester						
S. No.	Course Code	Course Name	L	T	P	C	S. No.	Course Code	Course Name	L	T	P	C
1.	MM - 301	MEASURE THEORY AND INTEGRATION	3	1		4	1.	MM - 401	Project Work/Dissertation				8
2.	MM - 302	OPERATION RESEARCH	3	1		4	2.		ELECTIVE -I	3	1		4
3.	MM - 303	DIFFERENTIAL GEOMETRY	3	1		4	3.		ELECTIVE -II	3	1		4
4.	MM - 304	FUNCTIONAL ANALYSIS	3	1		4			Seminar				4
5.	MM -305	COMPUTAIONAL FLUID DYNAMICS	3	1		4							
	Total Credits					20		Total Credits					20

Note: Elective–I and Elective-II is to be selected from the following available course

S. No.	Course Code	Course Name	L	T	P	C
1.	MM - 401	Wavelet Analysis	3	1		4
2.	MM - 402	Polynomial Theory	3	1		4
3.	MM - 403	Summability Theory	3	1		4
4.	MM - 404	Optimization Theory	3	1		4
5.	MM -405	Advanced Graph Theory	3	1		4
6.	MM -406	Riemannian Geometry	3	1		4
7.	MM -407	Algebraic Combinatorics	3	1		4
8.	MM -408	Variational Calculus	3	1		4
9.	MM -409	Numerical Methods for Partial Differential Equations	3	1		4
10.	MM-410	Advanced Complex Analysis	3	1		4

SUMMARY					
Semesters	Sem-I	Sem-II	Sem-III	Sem-IV	Overall
Credits	20	20	20	20	80

It is proposed that there will be 800 credits spread over the entire course. Thus, the total minimum credits required for completing the M.Sc. in Mathematics is 80.