आईएफटीएम विश्वविद्यालय, मुरादाबाद, उत्तर प्रदेश

IFTM University, Moradabad, Uttar Pradesh

NAAC ACCREDITED

Academic Ordinance
for
Master of Science (M. Sc.) in Mathematics Programme

(Amended with CBCS as per UGC Guidelines

&

Approved by the Academic Council in the meeting held on 25/09/2021)

Session 2021-22

IFTM UNIVERSITY

(Established under U.P. Govt. Act No.24 of 2010 and approved under section 22 of UGC Act 1956)
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REGULATIONS

1. Short Title and Commencement

These regulations shall be called as "The Regulations for the Master of Science (M. Sc.) Degree Program of the IFTM University, Moradabad under Choice Based Credit System (CBCS)", latest revised from the Academic Year 2021-22. The regulations framed are subject to modifications from time to time by IFTM University, Moradabad.

2. Minimum Qualification for Admission

Candidate must have a Bachelor's degree in any stream with 45% (40% for SC/ ST) marks or a valid GATE score for the admission in the M. Sc. programme. The admission will be based on Merit/ Entrance examination. Only primary mode of evaluation (CGPA or percentage) as mentioned in the qualifying degree certificate/ mark sheet will be considered while verifying eligibility. Conversion from CGPA to percentage or vice versa given by individual Institute/ University will not be allowed.

Foreign National candidates, who apply through Ministry of Human Resource Development (MHRD), Government of India (GoI), are eligible to apply provided that they possess the same minimum qualification.

3. Duration of the Program

The course of study for M. Sc. shall extend over a period of four semesters (two academic years). The curricula and syllabi for the program shall be prescribed from time to time by IFTM University, Moradabad.

4. Medium of Instruction and Examination

Medium of instruction and examination shall be in English.

5. Working Days in Each Semester

Each semester shall consist of not less than 90 working days. The odd semesters shall be conducted from the month of June/ July to November/ December and the even semesters shall be conducted from December/ January to May/ June in every calendar year.

6. Attendance and Progress

A candidate is required to maintain at least 75% attendance to appear in End-Semester/ Annual examination. However, the same can be condoned to 15% on medical grounds or for other genuine reasons beyond the control of the students.

7. Program/ Course Credit Structure

As per the philosophy of Choice Based Credit System (CBCS), certain quantum of academic work viz. theory classes, practical classes, project report, internship etc. will be measured in terms of credits. On satisfactory completion of the courses, a candidate will earn credits. The amountof credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/ extra-curricular activities is dependent upon the quantum of work expected to be putin for each of these activities per week.

7A. Credits and Grade System

(a) All programmes shall have credits associated with them as per their Lecture/ Tutorial/ Practical (L-T-P) structure and shall be determined as follows:

- One lecture hour per week per semester shall be assigned one credit.
- One practical hour per week shall be assigned half credit.

However, the credits associated with every programme will be a whole number, *i.e.*, wherever the sum comes out to be in half credit on calculation following the aforesaid process, the half shall be rounded to the next whole number.

(b) The letter grades based upon the overall marks obtained in a subject will be as follows:

Sl. No.	Marks	Letter Grade	Grade Point
1.	> = 90	A+	10
2.	80 - 89	A	9
3.	70 - 79	B+	8
4.	60 - 69	B	7
5.	50 - 59	C+	6
6.	40 - 49	C	5
7.	35 - 39	D	4
8.	30 - 34	E	2
9.	<30	F	0

'E' & 'F' Grade will be treated as Carry Over Paper.

In addition to the above grades, there shall be two more letter grades 'I' and 'AB' which shall stand for Incomplete and Absent Grades, respectively.

(c) Semester Grade Point Average (SGPA)

The Semester Grade Point Average (SGPA) is a weighted average of the grade points earned by a student in all the papers credited and it describes his/ her academic performance in a semester. If the grade points associated with the letter grades awarded to a student are g_1, g_2, g_3, ... g_k, etc. and the corresponding credits are c_1, c_2, c_3, ... c_k, the SGPA is given by :

$$\text{SGPA} = \frac{c_1 g_1 + c_2 g_2 + c_3 g_3 + \cdots + c_k g_k}{c_1 + c_2 + c_3 + \cdots + c_k}$$

where, k is the number of papers for which the candidate remains registered during the semester.

(d) Cumulative Grade Point Average (CGPA)

The Cumulative Grade Point Average (CGPA) indicates the overall academic performance of a student in all the papers registered in a particular academic year. It is computed in the same manner as the SGPA, considering all (say, n) the papers, and is given by:

$$CGPA = \frac{\sum_{i=1}^{n} c_i g_i}{\sum_{i=1}^{n} c_i}$$

(e) Final CGPA

It is the weighted average of the CGPA of all years of study.

(f) Percentage Equivalence of CGPA/ Final CGPA

The conversion of CGPA/ Final CGPA to exact percentage of marks does not have perfect rationale. However, its equivalent at best can be arrived at by multiplying by 10.00.

7B. Change of Grade Already Awarded

Letter Grade ‘E' will be changed into Letter Grade 'D' up to a maximum of 03 papers at the time of promotion of a student to the next academic year provided he/ she can be declared to have passed the academic year without any carry over paper, by changing the Grade.

8. Academic Work

A regular record of attendance both in Theory and Practical shall be maintained by the teaching staff of respective courses.

9. Course of Study

The course of study for M. Sc. shall include Semester-wise Theory & Sessional courses. The number of hours to be devoted to each theory, tutorial and practical course in any semester shall not be less than 40 sessions.

M.Sc. Mathematics I Semester

Theory Papers (Total 05)

YEAR-I, SEMESTER-I

S.N.	Semester -I 1. Section	Course code	Theory Course (Name Of The er)	Periods			EVALUATION SCHEME (Marks)				Course Total	Credits
							Mid Semester Exam			End Semester Exam		
				L	T	P	MS 1+2	AS +AT	Total			
THEORY												
1.	G-1	MATHCC-101	Abstract Algebra	3	1	0	10+10	5+5	30	70	100	4
2.		MATHCC-102	Real Analysis	3	1	0	10+10	5+5	30	70	100	4
3.		MATHCC-103	Number Theory	3	1	0	10+10	5+5	30	70	100	4
4.		MATHCC-104	Ordinary Differential Equations	3	1	0	10+10	5+5	30	70	100	4
5.		MATHCC-105	Computer Fundamentals and Programming in C	3	1	0	10+10	5+5	30	70	100	4
			TOTAL	15	5	0	X	X	X	X	500	20

M.Sc. Mathematics II Semester

Theory Papers (Total 05)

YEAR-I, SEMESTER-II

S.N.	Semester-II 2. Section	Course Code	Theory Course (Name Of The Paper)	Periods			EVALUATION SCHEME				Course Total	Credits
							Mid semester Exam			End semester Exam		
				L	T	P	MS 1+2	AS +AT	Total			
THEORY												
1.	G-1	MATHCC-201	Topology	3	1	0	10+10	5+5	30	70	100	4
2.		MATHCC-202	Classical Mechanics	3	1	0	10+10	5+5	30	70	100	4
2.		MATHCC-203	Discrete Mathematics	3	1	0	10+10	5+5	30	70	100	4
3.		MATHCC-204	Linear Algebra	3	1	0	10+10	5+5	30	70	100	4
4.		MATHCC-205	Complex Analysis	3	1	0	10+10	5+5	30	70	100	4
			TOTAL	15	5	0	X	X	X	X	500	20

M.Sc. Mathematics III Semester

Theory Papers (Total 05)

YEAR-II, SEMESTER-III

S.N.	Semester-III / Group	Course Code	Theory Course (Name Of The Paper)	Periods			EVALUATION SCHEME				Course Total	Credits
							Mid semester Exam			End semester Exam		
				L	T	P	MS 1+2	AS +AT	Total			
THEORY												
1.	G-1	MATHCC-301	Fluid Dynamics	4	1	0	10+10	5+5	30	70	100	5
2.		MATHCC-302	Numerical Analysis	4	1	0	10+10	5+5	30	70	100	5
3.		MATHCC-303	Partial Differential Equations	4	1	0	10+10	5+5	30	70	100	5
4.	G-2	MATHDE - 304(A)	Mathematical Methods	4	1	0	10+10	5+5	30	70	100	5
5.	G-3	MZOOE-305	Basic of Research Methodology	4	0	0	10+10	5+5	30	70	100	4
			TOTAL	20	4	0	X	X	X	X	500	24

M.Sc. Mathematics IV Semester

Theory Papers (Total 05)

YEAR-II, SEMESTER-IV

S.N.	Semester-IV / Group	Course Code	Theory Course (Name Of The Paper)	Periods			EVALUATION SCHEME				Course Total	Credits
							Mid semester Exam			End semester Exam		
				L	T	P	MS 1+2	AS +AT	Total			
THEORY												
1.	G-1	MATHCC-401	Operations Research	4	1	0	10+10	5+5	30	70	100	5
2.		MATHCC-402	Mathematical Statistics	4	1	0	10+10	5+5	30	70	100	5
3.	G-2	MATHDE - 403 (B)	Difference Equations	4	1	0	10+10	5+5	30	70	100	5
4.	G-3	MATHOE - 402	Oriented Programming With C++Object	4	0	0	10+10	5+5	30	70	100	4
5.		MATH-P – 405 (Project & Viva-Voce)	Project / Dissertation in any one of the above Subjects	4	1	0	-	-	30	70	100	5
			TOTAL	20	4	0	X	X	X	X	500	24

*Lecture load for one section (60 students) in theory and two sections (30 students each) in practical.

LIST OF ELECTIVES

Group -2 (Departmental Electives)	**Semester III**		
	DE-1	MATHDE-304(A)	Mathematical Methods
	DE-2	MATHDE-304(B)	Integral Equations and Integral Transforms
	DE-3	MATHDE-304(C)	Theory of Relativity
	DE-4	MATHDE-304(D)	Fuzzy Sets & Applications
	Semester IV		
	DE-5	MATHDE-403(A)	Ring Theory
	DE-6	MATHDE-403(B)	Difference Equations
	DE-7	MATHDE-403(C)	Theory of Relativity
	DE-8	MATHDE-403(D)	Theory of Probability
	DE-9	MATHDE-403(E)	Vector Calculus & Vector Analysis
	DE-10	MATHDE-403(F)	Coding Theory
	DE-11	MATHDE-403(G)	Mathematical Statistics

Group -3 (Open Electives)	**Semester III**		
	OE-5	MZOOE-305	Basic of Research Methodology
	OE-6	BP307T	Instrumental Methods of Analysis
	OE-7	MSB-304T	Bio Statistics
	OE-8	MSB-306T	Principles of Nano biotechnology
	OE-9	MSB-307T	IPR and Bio safety
	OE-10	MPHYCC-301	Nuclear and Particle Physics
	OE-11	MHSCFN-302	Product Development Safety and Quality Control
	Semester IV		
	OE-12	MATHOE-401	Research Methodology
	OE-13	MATHOE-402	Object Oriented Programming With C++
	OE-14	MPHYCC-403	Nanotechnology

10. Examinations/ Assessments

10A. Internal/ Sessional Examination

(a) The minimum Grade required to pass in each Theory & Practical paper is 'GRADE D'.

(b) A candidate, in order to pass must satisfy the requirement of Minimum CGPA of 4.50 in a particular academic year inclusive of both semesters of that academic year subject to conditions of clause 10D.

(c) In case of audit/ qualifying paper the minimum Grade required to pass is Grade D. However, the Grade obtained in audit paper shall not be included in SGPA.

10B. End-Semester Examination

There will be two End Semester Examinations in all theory and project subjects viz. Odd (I, III)

Semester Examination and Even (II, IV) Semester Examination in an academic year.

10C. Carry Forward of Marks

In case, if a student gets the back in a course/ paper, the sessional marks of the subject concerned will carried forward in the total of marks when he/ she re-appears for the examination of the course in which he/ she has got the back.

10D. Heads of Passing

(a) The minimum passing marks in each theory subject (including Internal/ Sessional marks) will be 35%.

(b) The minimum passing marks in each comprehensive viva/ project will be 50%.

(c) A student, in order to pass must satisfy the following:

Minimum 45% marks in aggregate of a particular academic year inclusive of both semesters of that academic year subject to the conditions of the clause 7B.

10E. Carry Over System

Maximum number of carry over papers (Theory/ viva/ project) permissible for promotion to next year will be 04.

10F. Promotion

(a) A candidate satisfying all the requirements under clause 10A shall be promoted to the next academic year of study.

(b) A candidate shall be eligible for provisional promotion with carryover paper (PCP) status to the next academic year of study provided he/ she fails to satisfy the requirements of clause 10A (a) in not more than permissible carry over paper as mentioned in clause 10D.

(c) If a candidate satisfies the requirement of clause 10A (a) but fails to satisfy the requirement of 10A (b) he/ she shall be eligible for provisional promotion with carryover paper [PCP-A (aggregate)] status. He/ she may choose up to a maximum of any 04 theory papers of that particular academic year as per his/ her choice to pass the examination of that.

10G. Ex-studentship

A candidate opting for ex-studentship shall be required to appear in all the theory/ practical/ viva papers in the end semester examinations of both semesters/ annual examination of the same academic year. However, the sessional marks of theory & practical both shall remain

the same as those secured earlier. The maximum duration of course completion is four years.

11. Evaluation of Performance

(a) Programmes: Evaluation of performance of the students in a programme shall be a continuous process based on their performance in the class test, quizzes, assignments and the end semester examinations.

Theory papers in semester system (Maximum Marks: 100)

The evaluation will be done through two class test and one end semester examination. This will be in addition to quizzes, assignments, attendance, etc. Each class test will carry a weightage of 10 marks, and the end semester examination will carry a weightage of 70 marks. The remaining 10 marks will be awarded on the basis of attendance and performance in quizzes and assignments.

(b) Summer Training, Project Report, Seminar etc.

Summer Training, Project Report, Seminar, and other learning oriented activities shall have associated maximum marks and credits, as stated in the syllabus.

Evaluation Scheme			
	Internal	***External***	***Total***
Theory	30	70	100
Practical Evaluation and Viva-Voce	30	70	100
Project Report Evaluation and Viva-Voce	30	70	100

Question paper pattern for End-semester Examinations

I. Long Answers (Answer 5 out of 10) = 5 x 14 = 70

Total Marks = 70

Question paper pattern for Internal/ Sessional Examinations

Long Answers (Answer 2 out of 4) = 2 x 5 = 10 (each mid-sem)

Total Marks = 20

12. Award of Division

(a) The division shall be awarded on the basis of final year result.

(b) If a student passes all examinations and secure minimum Final CGPA 4.50 to 5.99, he/ she shall be eligible for the award of SECOND DIVISION.

(c) If a student passes all examinations and secure minimum Final CGPA 6.00 to 7.49, he/ she shall be eligible for the award of FIRST DIVISION.

(d) If a student passes all examinations in first attempt without change of Grade and secure minimum Final CGPA 7.50 & above, he/ she shall be eligible for the award of FIRST DIVISION WITH HONOURS.

13. Scrutiny and Re-evaluation

(a) Scrutiny shall be allowed in only theory papers, in which Re-totaling of the marks awarded will be done and only unchecked answers (if any) will be evaluated.

(b) Re-evaluation of theory/ practical papers is not permitted.

14. Unfair Means

Cases of unfair means shall be dealt as per the rules of the University.

15. Result

(a) The result of a candidate shall be declared on the basis of the performance of both semesters of the same academic year.

(b) Result of the final year shall be declared on the basis of working out Final CGPA which is the weighted average of CGPA of all years of the study.

16. Improvement

There shall be no provision of Improvement examination in all the courses running in the University.

17. Grade Card

(a) A copy of the Grade Card shall be issued to each student at the end of each academic year. The duplicate copy, if required can be obtained on payment of prescribed fee.

(b) The Grade Report Card of a student may be withheld if he/ she have not paid his/ her dues or if there is a case of indiscipline pending against him/ her or for any other such reasons.

18. Re-Admission

A candidate may be allowed for re-admission provided he/ she satisfies one of the following conditions:

(a) A candidate is declared fail.

(b) A candidate promoted with carry over papers and opts for re-admission.