

Karmaveer Bhaurao Patil University, Satara Faculty of Science and Technology

M.Sc. (Mathematics)

Programme and Credit Structure as per NEP2020

Title: The degree shall be titled as '**Master of Science (Mathematics)** under the Faculty of Science and Technology.

M.Sc. Sem. I & II: To be implemented from Academic Year 2024-25 M.Sc. Sem. III & IV: To be implemented from Academic Year 2025-26

PO. NO	Programme Outcomes							
	After completing M.Sc. programme the students will be able to							
PO-1	Understand the fundamentals and advancements of subject							
PO-2	Study, plan, and conduct experiments in the labs to validate the ideas principles, and theories acquired in the classrooms							
PO-3	Enhance scientific knowledge of the subject							
PO-4	Define their area of focus in academia, research, and development.							
PO-5	Pursue careers in various fields such as science, engineering, education, banking, business, public services, etc. or become an entrepreneur with precision, analytical thinking, innovative ideas, clarity thought, expression, and systematic approach.							

Programme Outcomes for M. Sc.

PSO. NO	Programme Specific Outcomes for M.Sc. (Mathematics)						
PSO-1	Apply advanced calculus concepts to analyze functions, sequences, and series, and						
	demonstrate proficiency in the techniques of real and complex analysis.						
PSO-2	Apply algebraic structures to solve mathematical problems and understand the						
	algebraic properties of numbers, groups, rings, and fields.						
PSO-3	Solve ordinary and partial differential equations, analyze dynamical systems, and						
	apply differential equations in classical mechanics.						
PSO-4	Understand topological spaces, continuity, compactness, and convergence, and						
	apply geometric concepts to solve problems in topology and differential geometry.						
PSO-5	Analyze complex functions, residues, and integrals, and apply complex analysis						
	techniques in physics, engineering, and other fields.						
PSO-6	Apply numerical methods to solve mathematical problems, simulate real-world						
	phenomena, and analyze computational accuracy.						

PSO-7	Explore properties of algebraic numbers, study number fields, and understand the					
	connections between algebraic number theory and field theory.					
PSO-8	Solve and analyze partial differential equations and fractional differential equations,					
	and apply them to model physical and natural phenomena.					
PSO-9	Demonstrate proficiency in research methodologies, literature review, and research					
	paper presentation suitable for academic and professional settings.					
PSO-10	Understand and apply fuzzy logic and mathematics in modeling uncertainty, and					
	apply mathematical techniques to real-world problems.					
PSO-11	Analyze normed vector spaces, linear operators, and functionals, and understand the					
	applications of functional analysis in various mathematical contexts.					
PSO-12	Apply advanced combinatorial techniques, graph theory, and discrete structures to					
	solve complex combinatorial problems.					

Semester, Credit Framework NSQF Level and Exit Points

Sr. No	Semester	Year	Year	Credits	Level	Exit Points &Award
1	Sem. I & II	2024-25	1 Year	44	6	PG Diploma (Mathematics)
2	Sem. III & IV	2025-26	2 Year	44	6.5	PG Degree (Mathematics)
			Total	88		Master of Science (Mathematics)

Sr. No	Components	1 Year Master Degree Programme			2YearMaster Degree		
					Р	rogramm	e
		Courses	Credits	%	Courses	Credits	%
	Mandatory Courses	06	24	54.55	12	48	54.55
	Elective Courses	02	04	9.09	04	08	9.09
	Mandatory Practical	02	04	9.09	04	08	9.09
	Elective Practical	02	04	9.09	03	06	6.82
	Research Methodology	01	04	9.09	01	04	4.55
	Research Project	01	04	9.09	02	10	11.36
	OJT				01	04	4.55
	Total (Mandatory)-(A)	09	32	72.73	19	70	79.55
	Elective	04	08	18.18	07	14	15.91
	RM	01	04	9.09	01	04	4.55
	Total - (B)	05	12	27.27	01	04	4.55
	Grand Total (A+B)	14	44	100	27	88	100

Duration:

- The program shall be a full-time program.
- The duration of program shall be One Year / Two years.
- Students will have to exit option with: First Year (44 Credits) PG Diploma

Second Year (88 Credits) - Master Degree

Number of Students: A batch shall consist of not more than 50 students. An

additional 20% of seats will be allotted as per Karmaveer Bhaurao Patil University, Satara Norms.

Eligibility of the Students:

- Bachelor of Science with specialization in Mathematics.
- Any other eligibility prescribed by UGC, Government of Maharashtra, Karmaveer Bhaurao Patil University, Satara.

Medium of Instruction: The medium of instruction shall be in English.

Eligibility of the Core Faculty:

- Assistant Professor: Master of Science with specialization in Mathematics and NET/ SET/ Ph.D.
- Associate Professor: Master of Science in Mathematics with NET/ SET/Ph.D.
- Professor: Master of Science in Mathematics with NET/ SET/Ph.D.

Eligibility for Professor of Practice or Professional Trainer:

Any other eligibility as per the Guidelines and Regulations Passed by the Board of Concerned Studies, Academic Council of the College / University and Rules and Regulations of Karmaveer Bhaurao Patil University, Satara, Government of Maharashtra, and UGC norms.

Eligibility for Adjunct Professor:

Any other eligibility as per the Guidelines and Regulations Passed by the Board of Concerned Studies, Academic Council of the College / University and Rules and Regulations of Karmaveer Bhaurao Patil University, Satara, Government of Maharashtra, and UGC norms.

Scheme of Examination & Standard of Passing:(SEE and CCE)

End Semester Exam (ESE): 60 Marks (Min 24 Marks for Passing)
Continuous Comprehensive Evaluation (CCE): 40 Marks (Min 16 Marks for Passing)
Total Marks: 100 Marks for DSC mandatory courses.
End Semester Exam (ESE): 30 Marks (Min 12 Marks for Passing)
Continuous Comprehensive Evaluation (CCE): 20 Marks (Min 08 Marks for Passing)
Total Marks: 50 Marks for DSE elective courses.
Minimum 40% Marks Required for Passing and there is a separate head of passing as per the decision of the concerned Board of Studies or Competent Authority.

Evaluation of OJT and RP:

i. OJT: Total 100 marks for 4 credits

(Rubrics: Certificate = max 60 marks, Report = 20 marks, Viva = 20 marks)

ii. RP: Total 100 marks for 4 credits

(Rubrics: Decertation = 60 marks, Presentation & Viva = 40 marks)

	M.Sc. (Mathematics) Part -I						
Semester –I							
Sr.	Components	Course Code	Course (Subject)	Credits			
1	Mandatory	MMT 411	Linear Algebra	4			
2	Mandatory	MMT 412	Advanced Calculus	4			
3	Mandatory	MMT 413	Real Analysis	4			
1	Flootives	MMT 414	Classical Mechanics - E1	2			
4	Liectives		or Graph Theory - E2				
5	RM	MMT 415	Research Methodology	4			
6	Mandatory Lab	MMP 416	Mathematics Practical Lab – I	2			
7	Electives Lab	MMP 417	Mathematics Practical Lab – II	2			
			Total	22			
Sem	ester –II						
Sr.	Components	Course Code	Course (Subject)	Credits			
1	Mandatory	MMT 421	Algebra	4			
2	Mandatory	MMT 422	Topology	4			
3	Mandatory	MMT 423	Complex Analysis	4			
1	Electives	Electives MMT 424 Differen	Differential Geometry - E1	2			
4			or Lattice Theory- E2	2			
5	RP	MMP 425	Research Project	4			
6	Mandatory Lab	MMP 426	Mathematics Practical Lab – III	2			
7	Electives Lab	MMP 427	Mathematics Practical Lab – IV	2			
			Total	22			

EXIT OPTION: PG Diploma with **44 Credits** after Three Year UG Degree.

M.Sc. (Mathematics) Part -II						
Semester –III						
Sr. Components Course C		Course Code	Course (Subject)	Credits		
1	Mandatory	MMT 531	Field Theory	4		
2	Mandatory	MMT 532	Integral Equations	4		
3	Mandatory	MMT 533	Number Theory	4		
4	Electives	MMT 534	Fuzzy Mathematics - E1	2		
4	Electives		or Operations Research - E2	2		
5	Mandatory Lab	MMP 535	Mathematics Practical Lab – V	2		
7	RP	MMP 536	Research Project	6		
			Total	22		
Sem	ester –IV					
Sr.	Components	Course Code	Course (Subject)	Credits		
1	Mandatory	MMT 541	Functional Analysis	4		
2	Mandatory	MMT 542	Advanced Discrete Mathematics	4		
3	Mandatory	MMT 543	Algebraic Number Theory	4		
4	Electives	MMT 544	Fractional Differential Equations - E1	2		
4			or Fuzzy Relations - E2	Σ		
5	Mandatory Lab	MMP 545	Mathematics Practical Lab – VI	2		
6	Electives Lab	MMP 546	Mathematics Practical Lab – VII	2		
7	OJT	MMP 547	On Job Training	4		
			Tetal	22		

**** PG Degree with 88 credits after Three Year UG Degree.

Chairman BoS in Mathematics

Secretary Academic Council

Chairman Academic Council