



Karmaveer Bhaurao Patil University Satara

Faculty of Science & Technology

M. Sc. Chemistry

Programme and Credit Structure as per NEP 2020

Title: The degree shall be titled as '**Master of Science (Chemistry)**' 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

Programme Outcomes for M. Sc. (Chemistry)

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

PSO. NO	Programme Specific Outcomes After completing M.Sc. (Chemistry) programme the students will be able to...
PSO-1	Master in techniques including spectroscopy, chromatography, and electrochemical methods, enabling accurate analysis of complex chemical compounds and materials.
PSO-2	Develop proficiency in laboratory techniques, including synthesis, purification, and characterization of chemical compounds, and design and conduct experiments safely and effectively.
PSO-3	Demonstrate a comprehensive understanding of fundamental chemical principles and apply these concepts to explain and predict chemical phenomena.

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	6.0	PG Diploma (Chemistry)
2	Sem. III & IV	2025-26	2 Year	44	6.5	PG Degree (Inorganic Chemistry/ Organic Chemistry/ Physical Chemistry/ Analytical Chemistry)
			Total	88		Master of Science (Chemistry)

Credit Distribution

Sr. No	Components	1 Year Master Degree Programme			2 Year Master Degree Programme		
		Courses	Credits	%	Courses	Credits	%
1	Mandatory Courses	06	24	54.55	12	48	54.55
2	Elective Courses	02	04	9.09	04	08	9.09
3	Mandatory Practical	02	04	9.09	04	08	9.09
4	Elective Practical	02	04	9.09	03	06	6.82
5	Research Methodology	01	04	9.09	01	04	4.55
6	Research Project	01	04	9.09	02	10	11.36
7	OJT	--	--	--	01	04	4.55
8	Total (Mandatory)-(A)	09	32	72.73	19	70	79.55
9	Elective	04	08	18.18	07	14	15.91
10	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 exist 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 20 students. Additional 20 % seats will be allotted as per Karmaveer Bhaurao Patil University, Satara Norms.

Eligibility of the Students:

- Bachelor of Science with specialization in Chemistry.
- 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 Chemistry and NET/ SET/Ph.D.

Associate Professor: Master of Science in Chemistry with NET/ SET/Ph.D.

Professor: Master of Science in Chemistry with NET/ SET/Ph.D.

Eligibility for Professor of Practice or Professional Trainer:

Any other eligibility as per the Guidelines and Regulations Passed by 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 of Practice or Professional Trainer:

As per eligibility prescribed by UGC.

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. (Chemistry) Part -I				
Semester -I				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MICT/MOCT/MPCT/MACT 411	Inorganic Chemistry I	4
2	Mandatory	MICT/MOCT/MPCT/MACT 412	Organic Chemistry I	4
3	Mandatory	MICT/MOCT/MPCT/MACT 413	Physical Chemistry I	4
4	Electives	MICT/MOCT/MPCT/MACT 414	Analytical Chemistry I-E1 Applied Chemistry I-E2	2
5	RM	MICT/MOCT/MPCT/MACT 415	Research Methodology	4
6	Mandatory Lab	MICP/MOCP/MPCP/MACP 416	Lab - I	2

7	Electives Lab	MICP/MOCP/MPCP/MACP 417	Lab - II	2
			Total	22
Semester -II				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MICT/MOCT/MPCT/MACT 421	Inorganic Chemistry II	4
2	Mandatory	MICT/MOCT/MPCT/MACT 422	Organic Chemistry II	4
3	Mandatory	MICT/MOCT/MPCT/MACT 423	Physical Chemistry II	4
4	Electives	MICT/MOCT/MPCT/MACT 424	Analytical Chemistry II-E1 Applied Chemistry II-E2	2
5	RP	MICP/MOCP/MPCP/MACP 425	Research Project	4
6	Mandatory Lab	MICP/MOCP/MPCP/MACP 426	Lab - III	2
7	Electives Lab	MICP/MOCP/MPCP/MACP 427	Lab - IV	2
			Total	22

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

M.Sc. (Organic Chemistry) Part -II				
Semester -III				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MOCT 531	Organic Reaction Mechanism	4
2	Mandatory	MOCT 532	Advanced Spectroscopic Methods	4
3	Mandatory	MOCT 533	Advanced Organic Synthesis	4
4	Electives	MOCT 534	Drugs And Heterocycles I-E1 Drugs And Heterocycles II-E2	2
5	Mandatory Lab	MOCP 535	Lab - V	2
6	RP	MOCP 536	Research Project	6
			Total	22
Semester -IV				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MOCT 541	Theoretical Organic Chemistry	4
2	Mandatory	MOCT 542	Stereochemistry	4
3	Mandatory	MOCT 543	Chemistry of Natural Products	4
4	Electives	MOCT 544	Applied Organic Chemistry-E1 Environmental Chemistry-E2	2
5	Mandatory Lab	MOCP 545	Lab - VI	2
6	Electives Lab	MOCP 546	Lab - VII	2
7	OJT	MOCP 547	On Job Training	4
			Total	22

M.Sc. (Analytical Chemistry) Part -II				
Semester -III				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MACT 531	Fundamentals of Analytical Chemistry	4
2	Mandatory	MACT 532	Advanced Analytical Techniques	4
3	Mandatory	MACT 533	Organo- Analytical Chemistry	4
4	Electives	MACP 534	Electro Analytical Techniques in Chemical Analysis I-E1 Electro Analytical Techniques in Chemical Analysis II-E2	2
5	Mandatory Lab	MACT 535	Lab - V	2
6	RP	MACP 536	Research Project	6
			Total	22
Semester -IV				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MACT 541	Techniques in forensic science and microbiological analysis	4
2	Mandatory	MACT 542	Environmental chemical analysis and control	4
3	Mandatory	MACT 543	Applied industrial analysis	4
4	Electives	MACT 544	Quality Assurances and quality control- E1 Industrial Analytical Chemistry-E2	2
5	Mandatory Lab	MACP 545	Lab - VI	2
6	Electives Lab	MACP 546	Lab - VII	2
7	OJT	MACP 547	On Job Training	4
			Total	22

M.Sc. (Inorganic Chemistry) Part -II				
Semester -III				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MICT 531	Coordination chemistry – I	4
2	Mandatory	MICT 532	Nuclear chemistry	4
3	Mandatory	MICT 533	Organometallic chemistry	4
4	Electives	MICT 534	Inorganic Chemical Spectroscopy-E1 Selected topics in Inorganic Chemistry- E2	2
5	Mandatory Lab	MICP 535	Lab - V	2
6	RP	MICP 536	Research Project	6
			Total	22
Semester -IV				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MICT 541	Instrumental techniques	4
2	Mandatory	MICT 542	Coordination chemistry-II	4
3	Mandatory	MICT 543	Chemistry of Inorganic Materials	4
4	Electives	MICT 544	Energy and Environmental chemistry- E1 Radiation Chemistry-E2	2
5	Mandatory Lab	MICP 545	Lab - VI	2
6	Electives Lab	MICP 546	Lab - VII	2
7	OJT	MICP 547	On Job Training	4
			Total	22

M.Sc. (Physical Chemistry) Part -II				
Semester -III				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MPCT 531	Advanced Quantum Chemistry	4
2	Mandatory	MPCT 532	Electrochemistry	4
3	Mandatory	MPCT 533	Molecular Structure-I	4
4	Electives	MPCT 534	Applied Physical Chemistry-E1 Radiation and Photochemistry-E2	2
5	Mandatory Lab	MPCP 535	Lab - V	2
6	RP	MPCP 536	Research Project	6
			Total	22
Semester -IV				
Sr.	Components	Course Code	Course (Subject)	Credits
1	Mandatory	MPCT 541	Thermodynamics and molecular modelling	4
2	Mandatory	MPCT 542	Chemical Kinetics	4
3	Mandatory	MPCT 543	Molecular Structure-II	4
4	Electives	MPCT 544	Physicochemical Techniques-E1 Surface Chemistry-E2	2
5	Mandatory Lab	MPCP 545	Lab - VI	2
6	Electives Lab	MPCP 546	Lab - VII	2
7	OJT	MPCP 547	On Job Training	4
			Total	22

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

Chairman
BoS in Chemistry

Secretary
Academic Council

Chairman
Academic Council