



# MATS UNIVERSITY



## **School of Sciences**

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## **Master of Science (CHEMISTRY)**

**(2 YEARS FULL TIME POST GRADUATE PROGRAMME)**

### **SEMESTER PATTERN (2025- 2027)**

**OBJECTIVES OF THE PROGRAM:**

1. To impart basic knowledge and skills of various aspects of Chemistry.
2. To train the students for industrial need and to pursue further education
3. To inculcate entrepreneurship among the students so as to start their own ventures in the field of Chemistry.
4. To develop human resource and entrepreneurs in Chemistry with the ability to independently start their own ventures or small chemical units in the field of Chemistry and Biochemistry.
5. To understand modern Chemistry - practices and approaches with an emphasis in technology application in pharmaceutical, medical, industrial, environmental and agricultural areas.
6. To become familiar with public policy, biosafety, and intellectual property rights issues related to Chemistry applications nationally and global
7. To Gain experience with standard Chemistry tools and approaches.
8. To develop skills in international teamwork and research collaboration.

**ELIGIBILITY FOR ADMISSION:**

Interested aspirants for M.Sc. Chemistry degree need to fulfill the below mentioned minimum eligibility criteria.

- Completion of UG (10+2+3) level of education.
- Chemistry as one of the subjects at UG level

Instead of Chemistry, one may even have had any subject related to Chemical sciences as one of the main subject of study.

**PROGRAM OUTCOME:**

1. Post graduates will be able to apply knowledge, concepts to solve issues related to their course.
2. Post graduates will have ability to identify problems related to their subjects.
3. Post graduates will have ability to analyze and derive valid conclusions with fundamental knowledge in their respective subjects.
4. Post graduates upon the needs of environment and society, will be able to fulfill the same in the form of solutions within the safety limit of prevalent rules and guidelines.
5. Post graduates will have ability to design, conduct experiments, analyze and interpret data for investigating problems in their respective fields.
6. Post graduates will have ability to select and apply appropriate tools and techniques.
7. Post graduates will have knowledge for assessing societal, health, safety and legal aspects and the duties as responsible citizen of country.
8. Post graduates will have the knowledge for the need of sustainable development.
9. Post graduates will have the knowledge of ethics and regulatory norms of their respective course.
10. Post graduates will have oral, written communications skill along with team spirit.

**PROGRAM SPECIFIC OUTCOMES:**



- PSO 1:** Acquire advanced knowledge in Organic, Inorganic, Physical and Analytical Chemistry, including emerging areas.  
**PSO 2:** Develop practical skills in laboratory techniques and operation of modern instruments.  
**PSO 3:** Apply theoretical and experimental knowledge to solve chemical problems and carry out independent research.  
**PSO 4:** Understand industrial, pharmaceutical, environmental and interdisciplinary applications of chemistry.  
**PSO 5:** Communicate scientific information effectively and pursue lifelong learning with ethical responsibility **CAREER PROSPECTS:**

The Chemical Industry is constantly growing and in the past 10 years, human resources in the field have grown drastically. Today, Indian Chemical sector comprises of lot many companies and Chemical suppliers, generating ample amounts of revenues. Indian Chemical industry comprises of Research, New drug discovery, Chemoinformatics, R&D, Pharmaceuticals etc. Chemical industry has rapid growth rate per annum. As there is increasing popularity and explosive growth, there are plenty of opportunities available in Chemistry field. One can be a Research Scientist, Teacher, Marketing manager, Science Writer, Chemoinformatician, Quality Control Officer or Production in-charge in the Food, Chemical and Pharmaceutical industry, Analyst, Environmental/Safety Specialist.

#### THE MAIN JOB SECTORS ARE AS FOLLOWS:

Chemical companies, Health service organizations, Pharmaceutical companies, Universities and research institutes, Horticultural industries, Conservation organizations, Food and drink manufacturers, Water industry, Agricultural industry, Law Enforcement.

#### ATTENDANCE:

A candidate shall be deemed to have undergone a regular course of study in the University, if he/she has attended at least 60% of the lectures in each subject will be at least 75% in the aggregate of lectures, tutorials and practical in order to be eligible to appear at the Final Examination.

#### SCHEME OF EXAMINATION, EVALUATION AND DISTRIBUTION OF MARKS:

- 1 The overall weightage of a course in the Syllabi and Scheme of Teaching & Examination shall be determined in terms of Marks assigned to the course.
- 2 The evaluation of students in a course shall have two components unless specifically stated otherwise in the Scheme of Teaching & Examination and Syllabi:
  - (i) Evaluation through a semester-end examination (University Examination Marks)
  - (ii) Continuous evaluation by the teacher(s) of the course.
- 3 Continuous Evaluation (Internal Marks)

#### i) Theory courses

The division of internal marks will of 50% marks for mid semester examination and 50% of marks for the internal class tests. There shall be three class tests held during each semester. The three class tests shall ordinarily be held after 4 weeks, 8 weeks and 12 weeks of teaching in accordance with the University Academic Calendar.

#### ii) Practical/Laboratory courses

The total internal marks in practical /Laboratory courses shall be based on performance in the laboratory, regularity, practical exercises /assignments, quizzes, etc. The assessment shall be given at three nearly equi-spaced intervals. Evaluation through a semester-end examination

The distribution of weightage for various components of evaluation shall be as given below:



		Bachelor's degree/ Under-graduate diploma	Master's degree/ Post-graduate diploma
A.	THEORY COURSES		
	(i) Semester-end examination	70%	70%
	(ii) Continuous evaluation by the teachers	30%	30%
B.	PRACTICAL/LABORATORY COURSES		
	(i) Semester-end examination	70%	70%
	(ii) Continuous evaluation by the teachers	30%	30%

  

C.	DISSERTATION/THESIS		
	(i) Assessment by External Examiner	70%	70%
	(ii) Assessment by Internal Examiner	30%	30%

**PASSING MARKS:**

For undergraduate students, obtaining a minimum of 40% marks in aggregate in each course shall be essential for passing the course and earning its assigned credits. A candidate, who secures less than 40% of marks in a course, shall be deemed to have failed in that course.

**GRADING SYSTEM:****For UG:**

80% and above – “10 Grade Point” and Letter Grade “O” (Outstanding)

40% and above but below 45% - “Grade Point 4” and Letter Grade “P” (Pass)

**For PG:**

80% and above – “10 Grade Point” and Letter Grade “O” (Outstanding)

45% and above but below 50% - “Grade Point 4” and Letter Grade “P” (Pass)

**PROGRAM DURATION:**

The maximum permissible period for completing a program for which the prescribed program duration is **n semesters**, shall be **(n+4)** semesters. All the program requirements shall have to be completed in (n+4) semesters.

**ATKT criteria:**

1. ATKT Candidate means a candidate who failed in not more than forty percent of the total number of Core and Core bracket papers, excluding the Practical Examination / Project Work / Viva Voce Examination in the Semester Examination and is appearing in the Examination of same semester again which is organized with the next Semester Examination. Forty percent (of the total number of Core and Core bracket papers) will be rounded off to higher side in case it is not a whole number. In case a Students fails or was absent in Practical Examination / Project Work / Viva Voce Examination, he/she may be allowed to have ATKT exam on his/her own expenses.
2. For postgraduate students, obtaining a minimum of 45% marks in aggregate in each course shall be essential for passing the course and earning its assigned credits. A candidate, who secures less than 45% of marks in a course shall be deemed to have failed in that course. For Diploma Courses the obtaining a minimum of



# MATS UNIVERSITY



23% marks in aggregate in each course shall be essential for passing course and earning its assigned credits. A candidate, who secures less than 23% of marks in a course shall be deemed to have failed in that course. For PG Diploma courses the minimum pass marks for each paper will be 25% and in aggregate it should be 33%, remaining conditions being the same.

President

V. Venkatesh

G. S. S.



## Curriculum Matrix M.Sc. Chemistry

Semester I					Marks Distribution		
	Code	Subject	Hours/week	Credit (L+T+P)	External	Internal	Total
Core Course	0902CH1101	Inorganic chemistry I	4	4 (4+0+0)	70	30	100
	0902CH1102	Organic chemistry I	4	4 (4+0+0)	70	30	100
	0902CH1103	Physical chemistry I	4	4 (4+0+0)	70	30	100
	0902CH1104	Spectroscopy I	4	4 (4+0+0)	70	30	100
Laboratory	0902CH1205	Lab Course I	4	2 (0+0+2)	35	15	50
	0902CH1206	Lab Course II	4	2 (0+0+2)	35	15	50
Open Elective	0902OE1307 OR 0902OE1308	Environmental and Analytical Chemistry (0902OE1307) OR Management in Practice(0902OE1308)	4	4 (4+0+0)	70	30	100
Total			28	24 (20+0+4)	420	180	600
Semester II							
Core Course	0902CH2101	Inorganic chemistry II	4	4 (4+0+0)	70	30	100
	0902CH2102	Organic chemistry II	4	4 (4+0+0)	70	30	100
	0902CH2103	Physical chemistry II	4	4 (4+0+0)	70	30	100
	0902CH2104	Spectroscopy II	4	4 (4+0+0)	70	30	100
Laboratory	0902CH2205	Lab Course III	4	2 (0+0+2)	35	15	50
	0902CH2206	Lab Course IV	4	2 (0+0+2)	35	15	50
Open Elective	0902OE2307 OR 0902OE2308	Material Chemistry (0902OE2307) OR Computer Application and Statistics (0902OE2308)	4	4 (4+0+0)	70	30	100
Total			28	24 (20+0+4)	420	180	600
Semester III							
Core Course	0902CH3101	Organotransition Metal Chemistry	4	4 (4+0+0)	70	30	100
	0902CH3102	Biochemistry and Natural Products	4	4 (4+0+0)	70	30	100

President

V. Venkatesh

Chairman



<b>Core/ Discipline Based Elective</b>	0902CH3103 OR 0902CH3104	Industrial Chemistry (0902CH3103) <b>OR</b> Polymer Chemistry (0902CH3104)	4	4 (4+0+0)	70	30	100
	0902CH3105 OR 0902CH3106	Medicinal and Pharmaceutical Chemistry (0902CH3105) <b>OR</b> Nanoscience and GreenChemistry (0902CH3106)	4	4 (4+0+0)	70	30	100
<b>Laboratory</b>	0902CH3207	Lab Course V	4	2 (0+0+2)	35	15	50
	0902CH3208	Lab course VI	4	2 (0+0+2)	35	15	50
<b>Open Elective</b>	0902OE3309 OR 0902OE3310	Instrumental Methods of Analysis (0902OE3309) <b>OR</b> IPR and Research Methodology (0902OE3310)	4	4 (4+0+0)	70	30	100
		<b>Total</b>	<b>28</b>	<b>24 (20+0+4)</b>	<b>420</b>	<b>180</b>	<b>600</b>
<b>Semester IV</b>							
<b>Core Course</b>	0902CH4101	Nuclear and Solid State Chemistry	5	4 (3+1+0)	70	30	100
	0902CH4102	Photochemistry	5	4 (3+1+0)	70	30	100
	0902CH4103	Project		8	140	60	200
	0902CH4104	Project Seminar		2	35	15	50
	0902CH4105	Viva-Voce		2	35	15	50
		<b>Total</b>		<b>20</b>	<b>350</b>	<b>150</b>	<b>500</b>
	<b>L = Lecture</b>	<b>T = Tutorial P = Practical</b>	<b>Grand Total</b>	<b>92</b>	<b>1610</b>	<b>690</b>	<b>2300</b>
<b>1 credit = 1 hour of teaching/week or 2 hours of Lab/week</b>							
<b>SGPA and CGPA will be calculated by the Examination Cell</b>							
<b>Coding Pattern : 1st digit denote semester; 2nd digit for type of paper [1-Core/Discipline based Elective, 2-Lab/Practical, 3-For others such as Open Elective]; 3rd &amp; 4th digit for Paper Number</b>							