

SINGHANIA UNIVERSITY

(UGC- recognized university per section 2(f) of the UGC Act 1956)

COURSE OUTLINE MSc CHEMISTRY

COURSE TITLE	CHEMISTRY (Inorganic chemistry)
Course Code	MSCCH 101
Credits	4 (L: 3 ,P:2 ,5)
Faculty Name	Dr. Sarita Tripathi
Program	MSc in Chemical Sciences
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

Chemistry (Inorganic chemistry) is important Programme in Chemical Sciences .

The objective of this subject is to develop analytical thinking and problem-solving skills needed for various entrance and competitive examinations and Post Graduate Studies. Although to enable the students to prepare solution of chemistry for the with the connection in real life .

2. Student Learning Outcomes :

At the end of this course, students should be able to:

- 1.To impart knowledge of Chemistry covering all the aspects viz. physical, inorganic, organic and general Chemistry
2. To provide laboratory experience to the students by performing experiments based on topics taught in theory
3. Create awareness and sense of responsibilities towards environment and apply knowledge to solve the issues related to Environmental pollution.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.

Attendance & Classroom participation	10%	Students should have at least 75% attendance
Mid- Sem Exam	20%	Mid term exam must be cleared by students for appearing in final examination.
End- Sem Exam	50%	The end term exam must be cleared for appearing in next semester with a minimum passing criteria .

6. Academic Integrity:

- Please note that students involved in academic dishonesty will receive a **ZERO** grade on the particular component in which the infraction occurred.
- Academic dishonesty consists of misrepresentation by deception or by other fraudulent means. In an academic setting this may take the form of copying or use of unauthorized aids in tests, assignments, examinations, term papers, or cases; plagiarism; talking during in-class examinations; submission of work that is not your own without citation; submission of work generated by another person; aiding and abetting another student's dishonesty; and giving false information for the purpose of gaining credits.

7. No Network Policy

Students cannot operate any network enabled devices such as cell phones, e- tabs, I -pads or any other electronic network enabled devices inside the classroom during the sessions unless specifically instructed by the faculty. In case you are compelled to carry it in person, you may keep it in the switched off mode. Anyone found to operate such devices during the session timings will be penalized as per the rules. No discussion or negotiation will be entertained at all with respect to this.

COURSE TITLE	CHEMISTRY (Organic Chemisrty)
Course Code	MSCCH 102
Credits	4 (L: 3 ,P:2 ,5)
Faculty Name	Dr Sarita Tripathi
Program	MSc in Chemical Sciences
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

Organic Chemistry is an valuable part programme in Chemical Science . To develop scientific temperament with strong fundamental knowledge of the subject . To develop analytical thinking and problem-solving skills .Also make the students able to to prepare solution for the Chemistry problems with the connection in real life.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

1. They will understand the criteria for aromaticity in nonbenzenoid molecules and other advanced polycyclic aromatics
2. Understand the chemistry of monocyclic heterocycles, nomenclature and reactions
3. Learn the concept stereochemistry and its importance; their rules and the concept of chirality
4. Understand the role of various reaction intermediates like carbocation, carbanion, carbenes, radicals, and nitrenes in organic reactions; concept of NGP
5. Able to describe mechanism of different rearrangement reactions. Appreciates the various steps involved in the molecular rearrangements.
6. Use synthetic reagent of oxidation and reduction for solving the problems

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

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5. Evaluation:

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Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
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COURSE TITLE	Physical Chemistry
Course Code	MSCCH 103
Credits	2 (L: 1 ,P: 1,2)
Faculty Name	Dr Sarita Tripathi
Program	MSc in Chemical Sciences
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

Physical Chemistry is an Important Branch of Chemical Sciences . The objective of this subject To inculcate scientific attitude enriched with a multidisciplinary perspective in the students

2. Student Learning Outcomes :

At the end of this course, students should be able to:

- 1.The student should know fundamental aspects and the potential uses of Analytical Chemistry from industrial point of view.
2. Apply appropriate analytical techniques for the qualitative and quantitative analysis of chemicals in laboratories and industries as well.
3. Ability to handle/use appropriate tools/techniques/equipment with an understanding of the standard operating procedures, safety aspects and limitations.

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

COMPONENT	WEIGHTAGE	DETAILS
Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.

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COURSE TITLE	General Spectroscopy
Course Code	MSCCH 104
Credits	4 (L:3 ,T:1, 4)
Faculty Name	Dr Sarita Tripathi
Program	MSc Chemical Sciences
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

Chemistry General Spectroscopy is an essential program in MSc chemistry programme. This makes students be in a position to apply their knowledge in their professional, social and personal life. Be competent to pursue research or a career in the chemistry.

2. Student Learning Outcomes :

At the end of this course, students should be able to:

1. To interpret the data obtained from techniques like TGA/DTA, XRD, SEM, TEM and the Spectroscopic techniques.
2. Should learn about the uses of analytical instruments in industrial chemistry, medicinal chemistry, and green chemistry.
3. Should develop accuracy and precision in performing experiments.
4. Should understand the different types of errors and methods for minimizing errors.
3. Student should know basic instrumentation and selection rules and relaxation in rules.
4. Understand the concept of Spectro chemical series and Nephelauxetic series.
5. Should be able to solve numerical based on crystal field parameters.

. Required Textbook and Reference Material:

Material will be provided by faculty.

4. Session Plan :

- Session plan will be provided by faculty members according to the syllabus.

5. Evaluation:

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Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
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COURSE TITLE	Computer for Chemists
Course Code	MSCCH 105
Credits	2 (L:1 ,T:1, 2)
Faculty Name	Dr. Sarita Tripathi
Program	MSc in Chemical Sciences
Academic Year and Semester	w.e.f. 2024-25, 1 st Semester

1. Course Description

Computer for chemists is the valuable aspect in MSc chemistry Programme.. The objective of this is to enable the students to mold a generation of youth which can apply the subject knowledge in their life and careers parallel to inculcate scientific attitude enriched with a multidisciplinary perspective in the students

2. Student Learning Outcomes :

At the end of this course, students should be able to:

1. Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry independently and in group as well as draw logical conclusions through Project and Seminar Presentation.
2. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Chemistry experiments
3. Observe, analyze and interpret chemical phenomena and process
4. design and develop new molecules/processes with industrial and societal applications
5. formulate new ideas/concepts in chemical sciences and test them
6. communicate effectively the principles and practice of chemical sciences
7. address issues of environment, health and development from a chemical perspective
8. follow professional ethics in all spheres of activity
7. engage in independent learning in the broadest context of scientific advancement

3. Required Textbook and Reference Material:

- Material will be provided by faculty.

4. Session Plan :

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5. Evaluation:

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Assignment	10%	Sheet Work(A-4 Size sheet in a well mannered way)
Tests	10%	Test would be taken to assess the knowledge about topics related to daily basis classes.
Attendance & Classroom participation	10%	Students should have at least 75% attendance
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