

FACULTY OF SCIENCE
Mohanlal Sukhadia University, Udaipur
M.Sc. Chemistry (CBCS) Programme
(Valid from session 2020-21 onwards)

1. Duration of the Course

The Master of Science Chemistry programme will be of four semesters duration under Choice based Credit system which will be conducted in two years. Each semester will be of approximately 5 months (minimum 90 working days in a semester) duration.

2. Eligibility:

Candidates seeking admission to the first semester of M.Sc. (CBCS) Chemistry must have a B.Sc. with Chemistry as one of the optional subjects or as a honor's subject (10+2+3 scheme) with minimum 48% marks from a UGC recognized University

3. Admissions:

Admissions to the first semester of M.Sc. (Chemistry) will be made as per admission rules for M.Sc. (CBCS)

4. Medium of Instruction

The medium of instruction and examination shall be English.

5. No. of Seats

Total number of normal fee seats: As per information bulletin

6. Curriculum

M.Sc. (Chemistry) programme has a two year, four semester prescribed course structure which in general terms is known as curriculum. It prescribes courses to be studied in each semester as given below

M.Sc. (Chemistry) programme shall have a curriculum and course contents (syllabi) for the courses recommended by the committee courses in Chemistry and approved by the academic council of the university.

The programme shall follow Choice Based Credit System(CBCS) and will be governed by the Common Rules and Regulations of Masters programme under CBCS approved by the Academic Council of the University.

M3CHE03-ET01E	Specialty Polymer
M3CHE04-ET02E	Industrial Aspects of Chemistry
M4CHE03-ET03E	Agro Based Chemicals
M4CHE04-ET04E	Textile Chemistry
Practical	
M3CHE06- EP01E	Industrial Chemistry Practical-I
M4CHE06- EP02E	Industrial Chemistry Practical-II

Skill Based Courses	
CHE-SP01	Green methods in chemistry
CHE-SP02	Basic analytical chemistry
CHE-SP03	Basics in pharmaceutical chemistry

Skill Based Course- 1

Title of the course - Green methods in chemistry

Tools of Green chemistry, twelve principles of Green chemistry, with examples.

The following Real world Cases in Green Chemistry should be discussed:

1. A green synthesis of ibuprofen which creates less waste and fewer byproducts (Atom economy)
2. Surfactants for Carbon Dioxide – replacing smog producing and ozone depleting solvents with CO₂ for precision cleaning and dry cleaning of garments.
3. Environmentally safe antifoulant
4. CO₂ as an environmentally friendly blowing agent for the polystyrene foam sheet packaging market.
5. Using a catalyst to improve the delignifying (bleaching) activity of hydrogen peroxide.
6. A new generation of environmentally advanced preservative: getting the chromium and arsenic out of pressure treated wood.
7. Rightfit pigment: synthetic azopigments to replace toxic organic and inorganic pigments.
8. Development of a fully recyclable carpet: cradle to cradle carpeting.

List of experiments (minimum 10)

1. Preparation of acetanilide
2. Synthesis of dibenzalpropanone
3. Bromination of *trans*-stilbene
4. Diels-Alder reaction between furan and maleic acid
5. Benzil-Benzilic acid rearrangement
6. Thiamine hydrochloride catalyzed synthesis of benzoin
7. Clay catalyzed solid state synthesis of 7-hydroxy-4-methylcoumarin
8. Nitration of phenol

9. Bromination of acetanilide
10. Photoreduction of benzophenone to benzopinacol
11. Preparation of benzopinacolone
12. Rearrangement of diazoaminobenzene to *p*-aminoazobenzene
13. Preparation of 1, 1-bis-2-naphthol
14. Synthesis of adipic acid
15. Synthesis of dihydropyrimidinone
16. Microwave-assisted ammonium formate-mediated Knoevenagel reaction
17. Preparation of Manganese (III) acetylacetonate, $\text{Mn}(\text{acac})_3$ or $\text{Mn}(\text{C}_5\text{H}_7\text{O}_2)_3$
18. Preparation of Iron (III) acetylacetonate, $\text{Fe}(\text{acac})_3$ or $\text{Fe}(\text{C}_5\text{H}_7\text{O}_2)_3$
19. Synthesis of tetrabutylammonium tribromide (TBATB)
20. Preparation of ionic liquid, [pmlm]Br
21. Preparation of 2- phenylbenzothiazoles catalyzed by ionic liquid, [pmlm]Br

Reference Books:

1. Green Chemistry Experiments A Monograph, R. K. Sharma, Indu Tucker and Mihir K. Chaudhuri, Tucker Prakashan, New Delhi.
2. Manahan S.E. (2005) Environmental Chemistry, CRC Press
3. Miller, G.T. (2006) Environmental Science 11th edition. Brooks/cole
4. Mishra A. (2005) Environmental Studies. Selective and Scientific Books, New
5. Green chemistry: Fundamentals and Applications, Suresh C. Ameta and Rakshit Ameta, Apple Academic Press