

Kavayitri Bahinabai Chaudhari North Maharashtra University Jalgaon
M. Sc. Part-II Organic Chemistry (Sem-III and IV)
Choice Based Credit System (Outcome Based Curriculum)

Semester-III

| Course Code | Course Type | Title of the Course | Contact hours/week | | | Distribution of Marks for Examination | | | | | | Credits |
|------------------------------|--------------|--|--------------------|----|-------|---------------------------------------|----|----------|----|-------|----|---------|
| | | | | | | Internal | | External | | Total | | |
| | | | Th | Pr | Total | Th | Pr | Th | Pr | Th | Pr | |
| CH-350 | Core | Organic Reaction Mechanism | 04 | -- | 04 | 40 | -- | 60 | -- | 100 | -- | 04 |
| CH-351 | Core | Spectroscopic Methods in Structure Determination | 04 | -- | 04 | 40 | -- | 60 | -- | 100 | -- | 04 |
| CH-352 | Core | Organic Stereo Chemistry | 04 | -- | 04 | 40 | -- | 60 | -- | 100 | -- | 04 |
| CH-353 | Elective | Choose one out of two CH-353 A/B (A) Heterocyclic Chemistry (B) Green Chemistry | 04 | -- | 04 | 40 | -- | 60 | -- | 100 | -- | 04 |
| AC-301 (A) (B)/(C)/(D) | Audit Course | Choose one out of four (AC-301 A/B/C/D) (Technology + Value Added Course) | 02 | -- | 02 | 100 | -- | -- | -- | 100 | -- | 02 |

List of Audit courses to be offered in Semester-III:

AC-301 (A): Computer Skills

AC-301 (C): Molecular Docking

AC-301 (B): Cyber Security

AC-301 (D): Technical Report Writing

Semester-IV

| Course Code | Course Type | Title of the Course | Contact hours/week | | | Distribution of Marks for Examination | | | | | | Credits |
|-------------|-----------------|--|--------------------|----|-------|---------------------------------------|----|----------|----|-------|-----|---------|
| | | | | | | Internal | | External | | Total | | |
| | | | Th | Pr | Total | Th | Pr | Th | Pr | Th | Pr | |
| CH-450 | Core | Chemistry of Natural Products | 04 | -- | 04 | 40 | -- | 60 | -- | 100 | -- | 04 |
| CH-451 | Core | Synthetic Methods in Organic Chemistry | 04 | -- | 04 | 40 | -- | 60 | -- | 100 | -- | 04 |
| CH-452 | Elective | Choose one out of two CH-452 A/B (A) Drug Chemistry (B) Applied Organic Chemistry | 04 | -- | 04 | 40 | -- | 60 | -- | 100 | -- | 04 |
| *CH-O-2 | Core Skill base | Organic Chemistry Practical Course-II | -- | 12 | 12 | -- | 40 | -- | 60 | -- | 100 | 06 |
| *CH-O-3 | Core Skill base | Organic Chemistry Practical Course-III | -- | 12 | 12 | -- | 40 | -- | 60 | -- | 100 | 06 |
| *CH-O-4 | Core Skill base | A Short Research Project | -- | 12 | 12 | -- | 40 | -- | 60 | -- | 100 | 06 |

CH-O-4: A Short Research Project
(180Hrs, 100 Marks and 6 Credits)

Course Objectives:

CO-1. To make students familiarize themselves with the techniques such as synthesis, isolation, purification and characterization/analysis etc.

CO-2. To introduce students on how to generate new ideas based on literature survey and their Execution.

CO-3. To foster the self-confidence amongst the students to think and execute ideas Independently.

The project is allotted during the third semester. The students will get an opportunity to become a part of ongoing research activities in the respective supervisor's laboratory. This should make them familiar with the literature survey and the fundamental understanding of how to devise research methodology. It is expected that the student should learn the synthesis, isolation, purification and characterization techniques whatever applicable for their projects. Students whose projects are dependent on the instruments are expected to know SOP and their working principles. Full flexibility is given to the student in identifying the project depending on the resources and infrastructure available in the host organization. It is recommended to work on multidisciplinary projects but not mandatory. In any case, not more than 2-3 students should involve in the same project.

The systematic approach towards the execution of the project should be as follows:

1. Selection of topic relevant to priority areas of chemistry and allied sciences
2. Literature survey and devising research methodology based on the gaps in the literature
3. Good laboratory practices: Safety, MSDS, disposal of chemical waste etc.
4. Execution of the project by designing and performing suitable experiments
5. Interpretation of results and drawing important conclusions
6. To prepare a PowerPoint presentation using modern ICT tools
7. Students should present their research work in Avishkar/Webinars/Conferences
8. Maintaining lab notebooks and writing monthly progress report
9. Writing a dissertation with following components in a given order: Title of the Project, Certificates, Acknowledgement, Abstract and Keywords, Contents, Introduction, Literature, Aim of the Project, Materials and Methods, Results and Discussion, Conclusions and Future Perspectives, Contributions, Bibliography and References. Total three bound copies of the dissertation should be prepared (library, guide and student: each one copy). Student should note that plagiarism is strictly prohibited. Beside writing dissertation, students should write a manuscript/patent if the results obtained are worthy of publication.

10. Presentation during the university examination
11. The complete tenure of research project should be of one year. It should start at the third semester and will be end by the semester fourth.
12. Student should submit two progress report within the span of the project.
13. Student should be encouraged for applied and contemporary research work.
14. Weekly two days should be allotted to research project in a regular time table.
15. Each research group should not have more than four students.
16. Each research group should have different research topic

It highly recommended that the students should apply for the Summer Research Fellowship Programmes initiated by Science Academies of India - IAS, INSA, NASI. Similarly, there exist several other summer internship opportunities in the national institutes, reputed universities and industries. Students should explore these possibilities immediately after the completion of the second semester (M. Sc., Part - 1) meaning that applications should be sent much earlier. The exposure gained during the summer internship should build enough confidence amongst students to identify the right research project and its execution.

Examination Assessment (100 Marks):

Internal Examination (Internal Assessment) - 40 marks:

| Activity | Marks |
|---|-------|
| Submission of progress reports signed by supervisor (at least 2 reports, 05 marks per report) | 10 |
| Outline of research work: - literature collected, experiment planning and design | 08 |
| Experimental work performed | 08 |
| Subject/topic related one workshop/course/instrumentation training (online/offline), | 10 |
| Regular attendance maintained by Research Supervisor | 04 |

External Examination (External Assessment) - 60 marks:

| Activity | Marks |
|---|-------|
| Selection of topic of project work | 05 |
| Literature review | 05 |
| Characterization of intermediates / products | 10 |
| Overall quality of dissertation | 10 |
| Power point presentation | 15 |
| Oral discussion | 10 |
| Conference / Industrial Visit /Avishkar Participation | 05 |

Suggested readings: Reference Books/Reviews/Journal Papers as suggested by the supervisor.

| Course Outcomes (COs): | | |
|--|---|------------------------|
| Upon the completion of course, the student should be able: | | |
| CO No. | CO | Cognitive level |
| 1 | To generate new research ideas based on the comprehensive literature survey | 3 |
| 2 | To acquire skill to execute the research project independently | 2 |
| 3 | To expertise in synthesis techniques and execution of research ideas would make the student quickly employable; either in industries or in academia for pursuing higher studies | 4 |

A
Project Work
Entitled
“Green Approach towards Synthesis of Schiff Bases”
Submitted To



**Kavayitri Bahinabai Chaudhari North Maharashtra
University, Jalgaon**

For the Degree

Master of Science (Organic Chemistry)

Submitted By

**Miss. Kanchan A. Lahase
Miss. Rupali G. Mahale
Miss. Arshin Bi S. Kureshi
Miss. Devyani G. Rajput**

Under the Guidance of

Mr. Yogesh N. Khairnar
Assistant Professor & Head
Department of Chemistry
Dr. Annasaheb .G. D. Bendale Mahila Mahavidyalaya, Jalgaon.

2023-2024

Certificate



Department of Chemistry
Dr. Annasaheb .G. D. Bendale Mahila Mahavidyalaya, Jalgaon.

This is to certify that Miss.Kanchan A. Lahase. Miss. Rupali G. Mahale. Miss. Arshin Bi S. kureshi. Miss.Devyani G. Rajput has completed their project work entitled "Green approach towards synthesis of Schiff bases" for partial fulfilment of Degree of Master of Science in Organic Chemistry under our guidance and supervision at Department of Chemistry, Dr. Annasaheb. G. D. Bendale Mahila Mahavidyalaya, Jalgaon. For the year 2023 - 24.

The present work is not submitted for the award of any other degree to other Institution or University.

Y. N. Khairnar
Mr. Y. N. Khairnar
Guide

Y. N. Khairnar
Mr. Y. N. Khairnar
Head,
Department of Chemistry,
Dr. A. G. D Bendale Mahila
Mahavidyalaya, Jalgaon.

Rupali
17.05.24
Internal Examiner

Sanjay
External Examiner

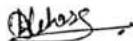
Acknowledgement

We would like to express our sincere thanks to Respected Principal and vice-principal, also we are grateful to Prof. Y. N. Khairnar, Head Dept. of Chemistry, Dr. Annasaheb G. D. Bendale Mahila Mahavidyalaya, Jalgaon for his valuable suggestions and guidance.

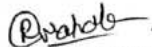
We are thankful to other faculty members Ms. Quamrin Shaikh, Dr. Bharti Koli, Mr. Sagar Patil, Mr. Chetan Patil, Dr. Ganesh Jethave, Mrs. Shubhangi Jadhav.

We also acknowledge all non-teaching staff of our department for their immense help during the course of project.


We have deep gratitude towards all the people behind this work.



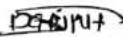
Miss. Kanchan A. Lahase.



Miss. Rupali G. Mahale



Miss. Arshin Bi S. Kureshi



Miss. Devyani G. Rajput

Conclusion

Herein, we have described a significant protocol to synthesize a series of Schiff bases under UV irradiation, Sonication and Mortar-and-pestle methods without catalyst. It was observed that, the use of ultrasound improved the yield and the rate of the reaction. The structures of all the synthesized compounds have been confirmed by IR, TLC. Schiff base is considered as one of the most versatile compounds. They're used as reactants in an array of synthetic organic processes, as significant frameworks in organo-metallic chemistry, as the backbones of valuable catalysts, and as pharmacological presidium for a range of diseases and pathological conditions.

There are various ways of synthesizing the compound including the water suspension method, microwave assisted synthesis, ultrasound irradiation and solid state synthesis; these are more efficient and ecofriendly than conventional method. The methods discussed above can be applied for synthesis of novel Schiff bases via green chemistry approach.