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 (B): Cyber Security**

AC-301 (C): Molecular Docking **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. Weakly 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 2reports, 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 (COts):		
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

"Trichloroacetic Acid Catalyzed Synthesis of [1, 3] Oxazine Derivatives under Solvent Free Conditions"

Submitted to

Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

For the degree

Master of Science (Organic Chemistry)

Submitted by,

Miss. Dhanshri A. Thosare

Miss. Komal R. Ratnaparakhe

Miss. Poonam S. Gunjal

Miss. Nikita S. Rajput

Under the Supervision of

Ms. Quamrin N. Shaikh
Assistant Professor
Department of Chemistry
Dr. Annasaheb G. D. Bendale Mahila Mahavidyalaya, Jalgaon

2023-2024

CH-O-4 Short Research Project

CERTIFICATE

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

This is to certify that **Ms. Dhanshri A. Thosare, Ms. Komal R. Ratnaparakhe, Ms. Punam S. Gunjal and Ms. Nikita S. Rajput** has completed their project work entitled ***"Trichloroacetic acid catalyzed synthesis of [1, 3] Oxazine derivatives under solvent free conditions"*** for partial fulfillment of Degree of **Master Of Science Organic Chemistry.** Under our guidance and supervision at Department of Chemistry, Dr. Annasaheb G. D. Bendale Mahila Mahavidyalaya, Jalgaon for the year 2023-2024.

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

Guide
Ms. Quamrin N. Shaikh

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

17/05/2024

External Examiner

17.05.24

Internal Examiner

ACKNOWLEDGEMENT

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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.

Ms. Dhanshri A. Thosare

Ms. Komal R. Ratnaparakhe

Ms. Punam S. Gunjal

Ms. Nikita S. Rajput

Conclusion

In summary, this work describes general and efficient procedure for the one pot synthesis of [1, 3] Oxazine derivatives from Anilines, Formaldehyde and β- Naphthol in presence of trichloroacetic acid as catalyst under solvent free conditions.

The method offers several advantages including high yield of products, an easy experimental workup procedure, simplicity of performance, solvent free condition, and it follows along the line of green chemistry. 1,3-oxazine derivatives are an important class of heterocyclic compounds which occupy an unique place in material and medicinal chemistry due to their diverse physical and biological properties such as monomer for polymer formation, photochromic agents, antibacterial, non-steroidal progesterone receptor modulators, antifungal, antimalarial, anti tuberculor, antitumor and anti-HIV agents. Oxazines play important roles as antihyperglycemic, antileishmanial, antitubercular, antiulcer, anticancer and antibacterial agents.