



SECOND-YEAR OF MASTER OF SCIENCE CHEMISTRY REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: SINGLE STEP PREPARATIONS AND PURIFICATION-
II
SEMESTER-III
W.E.F. 2024-2025

**RECOMMENDED BY THE BOARD OF STUDIES IN CHEMISTRY
AND
APPROVED BY THE ACADEMIC COUNCIL**

Devrukh Shikshan Prasarak Mandal's
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal. Sangameshwar, Dist. Ratnagiri-415804, Maharashtra,
India

Academic Council Item No:

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangameshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Master of Science
Name of the Department	:	Chemistry
Name of the Class	:	Second Year
Semester	:	Third
No. of Credits	:	02
Title of the Course	:	Single Step Preparations and Purification-II
Course Code	:	S608CHP
Name of the Vertical in adherence to NEP 2020	:	Elective
Eligibility for Admission	:	Chemistry Graduate learner seeking Admission to Post Graduate Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Summative at the end of semester
Level	:	PG
Pattern of Marks Distribution for SEE and CIA	:	100%
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2024-2025
Ordinances /Regulations (if any)		

Syllabus for Second Year of Master of Science in Chemistry

(With effect from the academic year 2024-2025)

SEMESTER-III

Paper No.- VI

Course Title: Single Step Preparations and Purification-II

No. of Credits: 02

Type of Vertical: Elective

COURSE CODE: S608CHP

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to...

Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Apply	write plane of preparation and reaction parameters of organic reactions.
CLO-02	Analyse	report mass and melting point of the purified product.
CLO-03	Evaluate	estimate the purity of organic compound by TLC.
CLO-04	Create	perform purification procedures for synthesized compounds.

Syllabus for Second Year of Master of Science in Chemistry

(With effect from the academic year 2024-2025)

SEMESTER-III

Paper No.- VI

Course Title: Single Step Preparations and Purification-II

No. of Credits: 02

Type of Vertical: Elective

COURSE CODE: S608CHP

COURSE CONTENT			
Module No.	Content	Credits	No. of Hours
1	<p>○ Single step organic preparation (1.0 g scale) involving purification by Steam distillation / Vacuum distillation or Column chromatography.</p> <ol style="list-style-type: none">1. Preparation of p-Nitro benzoic acid from p-Nitro toluene.2. Preparation of benzyhydrol from benzophenone.3. Preparation of Phthalic acid from phthalic Unhydride.4. Preparation of p- Chloro toluene from p- toludene.5. Preparation of p-Nitrotoluene from toluene.6. Preparation of Succinic anhydride from succinic acid.7. Preparation of p-Nitro acetanilide from Acetanilide.8. Preparation of N-Bromosuccinimide8. Preparation of Methyl orange from sulphonilic acid.9. Preparation of Diphenyl methane from benzyl chloride.10. Preparation of p- Amino benzoic acid.11. Preparation of p- Chloro nitrobenzene by Sandmeyer reaction.12. Preparation of Salicylaldehyde phenylhydrazone from Salicylaldehyde. <p>Note:</p>	02	60

	<p>1. Students are expected to know</p> <p>(i) The planning of synthesis, effect of reaction parameters including stoichiometry, and safety aspects including MSDS</p> <p>(ii) The possible mechanism, expected spectral data (IR and NMR) of the starting material and final product.</p> <p>2. Students are expected to purify the product by Steam distillation / Vacuum distillation or Column chromatography, measure its mass or volume, check the purity by TLC, determine physical constant and calculate percentage yield.</p>		
	Total	02	60

Access to the Course

The course is available for all the students admitted for Second Year of Master of Science.

Methods of Assessment

Vocational Skill Courses, Skill Enhancement Courses and the Courses having laboratory session shall be assessed at the end of each semester.

References:

1. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis- V.K. Ahluwalia and Renu Aggarwal, Universities Press India Ltd., 2000
2. Advanced Practical Organic Chemistry – N. K. Vishnoi, Third Addition, Vikas Publishing House PVT Ltd.
3. Systematic Laboratory Experiments in Organic Synthesis- A. Sethi, New Age International Publications.
4. Systematic Identification of Organic compounds, 6th edition, R. L. Shriner, R. C. Fuson and D.Y. Curtin Wiley, New York.
5. Vogel's Textbook of Quantitative Analysis, revised, J. Bassett, R. C. Denney, G. H. Jeffery and J. Mendham, ELBS
6. Experiments and Techniques in Organic Chemistry, D. Pasto, C. Johnson and M. Miller, Prentice Hall

Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce and Vid. Dadasaheb Pitre Science College, Devrukh (An Autonomous College Affiliated with University of Mumbai)

7. Macro-scale and Micro-scale Organic Experiments, K. L. Williamson, D. C. Heath.
8. Systematic Qualitative Organic Analysis, H. Middleton, Edward Arnold.
9. Handbook of Organic Analysis- Qualitative and Quantitative, H. Clark, Edward Arnold.
10. Vogel's Textbook of Practical Organic Chemistry, Fifth edition, 2008, B.S. Furniss, A. J. Hannaford, P. W. G. Smith, A. R. Tatchell, Pearson Education.
11. Laboratory Manual of Organic Chemistry, Fifth edition, R K Bansal, New Age Publishers.
12. Organic structures from spectra, L. D. Field, S. Sternhell, John R. Kalman, Wiley, 4th ed., 2011.