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

COURSE TITLE:SINGLE STEP PREPARATIONS AND PURIFICATION-I
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-I
Course Code	:	S607CHP
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-I **No. of Credits: 02**

Type of Vertical: Elective **COURSE CODE: S607CHP**

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-I **No. of Credits: 02**

Type of Vertical: Elective **COURSE CODE: S607CHP**

COURSE CONTENT			
Module No.	**Content**	**Credits**	**No. of Hours**
1	○ **Single step organic preparation (1.0 g scale) involving purification by Steam distillation / Vacuum distillation or Column chromatography.** 1. Preparation of acetanilide from aniline and acetic acid using Zn dust. (Purification by column chromatography) 2. Preparation of 1-nitronaphthalene from naphthalene. (Purification by steam distillation) 3. Preparation of acetyl ferrocene from ferrocene. (Purification by column chromatography) 4.Preparation of 3-nitroaniline from 1,3-dinitrobenzene. (Purification by column chromatography) 5.Preparation of benzyl alcohol from benzaldehyde. (Purification by vacuum distillation). 6. Preparation of methyl salicylate from salicylic acid. (Purification by vacuum distillation). 7.Preparation of 4-methylacetophenone from toluene. (Purification by vacuum distillation). 8.Preparation of phenyl acetate from phenol. (Purification by vacuum distillation). 9. Preparation of 2-chlorotoluene from o-toluidine. (Purification by steam distillation).	02	60

	10. Preparation of 4-nitrophenol from phenol. (Purification by steam distillation/ column chromatography). 11. Preparation of fluorenone from fluorene. (Purification by column chromatography). 12. Preparation of dimethylphthalate from phthalic anhydride. (Purification by vacuum distillation) **Note:** 1. Students are expected to know (i) The planning of synthesis, effect of reaction parameters including stoichiometry, and safety aspects including MSDS (ii) The possible mechanism, expected spectral data (IR and NMR) of the starting material and final product. 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.		
	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
7. Macro-scale and Micro-scale Organic Experiments, K. L. Williamson, D. C. Heath.
8. Systematic Qualitative Organic Analysis, H. Middleton, Adward Arnold.
9. Handbook of Organic Analysis- Qualitative and Quantitative, H. Clark, Adward 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.