



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

COURSE TITLE: ORGANIC & ANALYTICAL CHEMISTRY PRACTICAL
SEMESTER-I
W.E.F. 2023-2024

**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: 03 dated 08 July 2023

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	:	First Year
Semester	:	First
No. of Credits	:	02
Title of the Course	:	Organic & Analytical Chemistry Practical
Course Code	:	S504CHP
Name of the Vertical in adherence to NEP 2020	:	Compulsory Major
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	:	100 %
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2023-2024
Ordinances /Regulations (if any)		

Syllabus for First Year of Master of Science in Chemistry

(With effect from the academic year 2023-2024)

SEMESTER-I

Course Title: Organic & Analytical Chemistry Practical

No. of Credits - 2

Type of Vertical: Compulsory Major

COURSE CODE: S504CHP

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	Understand	plan preparation and reaction parameters of organic reactions.
CLO-02	Apply	report mass and melting point of the purified product and demonstrate use of resins for various analytical procedures.
CLO-03	Analyse	analyse samples of alloys and water and carry out volumetric estimations.
CLO-04	Evaluate	estimate the purity of organic compounds by TLC.
CLO-05	Create	perform purification procedures for synthesized compounds and prepare standard solutions of various concentrations for volumetric estimations.

Syllabus for First Year of Master of Science in Chemistry

(With effect from the academic year 2023-2024)

SEMESTER-I

Course Title: Organic & Analytical Chemistry Practical

No. of Credits - 2

Type of Vertical: Compulsory Major

COURSE CODE: S504CHP

COURSE CONTENT			
Module No.	Content	Credits	No. of Hours
1	<p>Organic Chemistry Practicals</p> <p>One step Preparations (1.0 g scale)</p> <ul style="list-style-type: none"> • Bromobenzene to p-nitrobromobenzene • Anthracene to anthraquinone • Benzoin to benzil • Anthracene to Anthracene maleic anhydride adduct • 2-Naphthol to BINOL • Benzoquinone to 1,2,4-triacetoxybenzene • Ethyl acetoacetate to 3-methyl-1-phenylpyrazol-5-one • o-Phenylenediamine to 2-methylbenzimidazole • o-Phenylenediamine to 2,3-diphenylquinoxaline • Urea and benzil to 5,5-diphenylhydantoin 	1	30
2	<p>Analytical Chemistry Practicals</p> <ul style="list-style-type: none"> • To carry out assay of the sodium chloride injection by Volhard's method. Statistical method. • To determine (a) the ion exchange capacity (b) exchange efficiency of the given cation exchange resin. • To determine amount of Cr(III) and Fe(II) individually in a mixture of the two by titration with EDTA. • To determine the breakthrough capacity of a cation exchange resin. 	1	30

	<ul style="list-style-type: none">• To determine the lead and tin content of a solder alloy by titration with EDTA.• To determine amount of Cu(II) present in the given solution containing a mixture of Cu(II) and Fe(II).• To determine number of nitro groups in the given compound using $TiCl_3$.		
	Total	2	60

Access to the Course

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

Methods of Assessment

Vocational Skill Courses, Skill Enhancement Courses and the courses having laboratory sessions 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. Quantitative Inorganic Analysis including Elementary Instrumental Analysis by A. I. Vogels, 3rd Ed. ELBS (1964)

10. Vogel's textbook of quantitative chemical analysis, Sixth Ed. Mendham, Denny, Barnes, Thomas, Pearson education
11. Standard methods of chemical analysis, F. J. Welcher
12. Standard Instrumental methods of Chemical Analysis, F. J. Welcher
13. W. W. Scott "Standard methods of Chemical Analysis", Vol. I, Van Nostrand Company, Inc.,1939.
14. E. B. Sandell and H. Onishi, "Spectrophotometric Determination of Traces of Metals", Part II, 4th Ed., A Wiley Interscience Publication, New York, 1978.