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

COURSE TITLE: ORGANIC & ANALYTICAL CHEMISTERY PRACTICAL
SEMESTER-II
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	:	Second
No. of Credits	:	02
Title of the Course	:	Organic & Analytical Chemistry Practical
Course Code	:	S513CHP
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-II

Course Title: Organic & Analytical Chemistry Practical **No. of Credits - 2**

Type of Vertical: Compulsory Major **COURSE CODE: S513CHP**

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	perform purification methods like recrystallisation and apply instrumental techniques such as potentiometry, colorimetry, conductometry and perform volumetric estimations.
CLO-02	Analyse	report mass and melting point of the purified product and analyse samples of washing soda, saline and water.
CLO-03	Create	perform separation of binary mixture using physical and chemical methods and prepare derivatives of organic compounds and prepare standard solutions of various concentrations for estimation of samples.

Syllabus for First Year of Master of Science in Chemistry

(With effect from the academic year 2023-2024)

SEMESTER-II

Course Title: Organic & Analytical Chemistry Practical **No. of Credits - 2**

Type of Vertical: Compulsory Major **COURSE CODE: S513CHP**

COURSE CONTENT			
Module No.	**Content**	**Credits**	**No. of Hours**
1	**Organic Chemistry Practicals** **Separation of Binary mixture using micro-scale technique** • Separation of binary mixture using physical and chemical methods. • Characterization of one of the components with the help of chemical analysis and confirmation of the structure with the help of derivative preparation and its physical constant. • Purification and determination of mass and physical constant of the second component. The following types are expected: • Water soluble/water insoluble solid and water insoluble solid, • Non-volatile liquid-non-volatile liquid (chemical separation) • Water-insoluble solid-non-volatile liquid. (Minimum three mixtures from each type and a total of ten mixtures are expected.)	**1**	**30**

2	**Analytical Chemistry Practicals** • To determine percentage purity of sodium carbonate in washing soda pH metrically. • To determine amount of Ti(III) and Fe(II) in a mixture by titration with Ce(IV) potentiometrically. • To determine the percentage purity of a sample (glycine/sodium benzoate/primary amine) by titration with perchloric acid in a non-aqueous medium using glass calomel system potentiometrically. • To determine the amount of nitrite present in the given water sample colorimetrically. • To determine the amount of Fe(II) and Fe(III) in a mixture using 1,10-phenanthroline spectrophotometrically. • Simultaneous determination of Cr(VI) and Mn(VII) in a mixture spectrophotometrically. • To determine the percentage composition of HCl and H_2SO_4 on weight basis in a mixture of two by conductometric titration with NaOH and $BaCl_2$. • To determine amount of potassium in the given sample of fertilizers using flame photometer by standard addition method.	**1**	**30**
	Total	**2**	**60**

Access to the Course

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

Forms 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. Systematic Qualitative organic analysis, H. Middleton (Orient Longman)
2. A Handbook of Organic Analysis, H.T. Clark (Orient Longman)
3. Systematic Identification of organic compounds, R.L. Shriner (John Wiley, New York)
4. Practical Organic Chemistry by Mann and Saunders.
5. Advance Practical Organic Chemistry, N. K. Vishnoi, Vikas Publication.
6. Quantitative Inorganic Analysis including Elementary Instrumental Analysis by A. I. Vogels, 3rd Ed. ELBS (1964)
7. Vogel's textbook of quantitative chemical analysis, Sixth Ed. Mendham, Denny, Barnes, Thomas, Pearson education.
8. Standard methods of chemical analysis, F. J. Welcher.
9. Standard Instrumental methods of Chemical Analysis, F. J. Welcher.
10. W. W. Scott, "Standard methods of Chemical Analysis",Vol.I, Van Nostrand Company, Inc.,1939.
11. E. B. Sandell and H. Onishi,"Spectrophotometric Determination of Traces of Metals", Part II, 4th Ed., A Wiley Interscience Publication, New York, 1978.