

Savitribai Phule Pune University [SPPU]

B.Sc. (Chemistry)
(Three Years Integrated Degree Program)

Choice Based Credit System [CBCS]
2019 Pattern

Third Year Bachelors of Science
(T. Y. B. Sc. CHEMISTRY)

From
Academic Year 2021-22

Board of Studies in Chemistry
Savitribai Phule Pune University [SPPU]
Pune-411007

Equivalence with Previous Syllabus (2013 Pattern)

| 2013 Pattern | 2019 Pattern |
|---|---|
| Sem-III (T.Y.B.Sc.) | Sem-V (T.Y.B.Sc.) |
| Core courses | Discipline Specific Elective Courses (DSEC) |
| CH-331: Physical Chemistry | CH: 501: Physical Chemistry-I |
| CH-332: Inorganic Chemistry | CH: 504: Inorganic Chemistry-I |
| CH-333: Organic Chemistry | CH: 507: Organic Chemistry-I |
| CH-334: Analytical Chemistry | CH: 502: Analytical Chemistry-I |
| CH-335: Industrial Chemistry | CH: 505: Industrial Chemistry |
| CH-336: Optional course (Any one) A- Nuclear Chemistry, B- Polymer Chemistry C- Intro. To Biochemistry, D- Env. And Green Chemistry, E- Agriculture Chemistry | CH:508: Chemistry of Biomolecules |
| ---- | Skill Enhancement Courses (SEC) CH:510 (A): Introduction of Medicinal Chemistry OR CH:510 (B): Polymer Chemistry |
| ---- | CH:511(A): Environmental Chemistry OR CH:511(B): Cheminformatics |
| Sem-IV (T.Y.B.Sc.) | Sem-VI (T.Y.B.Sc.) |
| Core courses | Discipline Specific Elective Courses (DSEC) |
| CH-341: Physical Chemistry | CH: 601: Physical Chemistry-II |
| CH-342: Inorganic Chemistry | CH: 604: Inorganic Chemistry-II |
| CH-343: Organic Chemistry | CH: 607: Organic Chemistry-II |
| CH-344: Analytical Chemistry | CH-602: Physical Chemistry -III |
| CH-345: Industrial Chemistry | CH: 605: Inorganic Chemistry-III |
| CH-346: Optional course (Any one) A- Nuclear Chemistry, B- Polymer Chemistry C- Intro. To Biochemistry, D- Env. And Green Chemistry, E- Dairy Chemistry | CH: 608: Organic Chemistry-III |
| | Skill Enhancement Courses (SEC) CH-610 (A): Chemistry of Soils and Agrochemicals OR CH-610 (B): Introduction of Forensic Chemistry |
| | CH-611 (A): Analytical Chemistry-II OR CH-611 (B): Chemistry of Cosmetics and Perfumes |
| CH-347: Physical Chemistry Practical | CH 503 and 603: Physical Chemistry Practical-I and II |
| CH-348: Inorganic Chemistry Practical | CH 506 and 606: Inorganic Chemistry Practical I and II |
| CH-349: Organic Chemistry Practical | CH 509 and 609: Organic Chemistry Practical-I and II |

SEC-II: CH-511: Skills Enhancing Course-II**[Credit -2, 36 L]****Choose one out of the two options, A and B.****CH-511 (A) : Environmental Chemistry**

| Chapter No. | Title of Topic/Chapter | No. of lecture |
|--------------|---|----------------|
| 1 | Concepts and Scope of Environmental Chemistry | 06 |
| 2 | Hydrosphere and Water Pollution | 10 |
| 3 | Analytical Techniques in water Analysis | 10 |
| 4 | Water pollution and treatment methods | 10 |
| Total | | 36 |

1: Concepts and Scope of Environmental Chemistry (06L)

Introduction, Environmental Pollution and Classification, Units of concentration, Segments of Environment, Biogeochemical cycles of C, N, P, S and O system

Reference: 1, 2, 3

Aims and objectives: -Students should know:

- i. Importance and conservation of environment.
- ii. Importance of biogeochemical cycles

2: Hydrosphere and Water Pollution (10L)

Water resources, Hydrological Cycle: stages of hydrological cycle and chemical composition of water bodies, Microbially mediated aquatic reactions, Classification of water pollutants

Organic and Inorganic pollutants, Sewage and Domestic waste, Sediments, Detergents, Pesticides, Eutrophication, Sampling and monitoring water quality parameters: pH, D.O. (Winkler Method), COD, TOC, Total hardness, free chlorine.

Reference: 1 Page no -47-62,

Aims and Objectives:- Students should know:

- i. Water resources
- ii. Hydrological Cycle
- iii. Organic and inorganic pollutants
- iv. Water quality parameters

3. Analytical Techniques in water Analysis (10 L)

Water quality parameters and standards, domestic water quality parameters, surface water, sampling, preservation, Monitoring techniques and methodology (pH, conductance, DO, ammonia, nitrate and nitrite, Cl, F, CN, Sulfide, sulphate, phosphate, total hardness, boron, metals and metalloids- As, Cd,