

**JSS Mahavidyapeetha**



**JSS COLLEGE OF ARTS, COMMERCE AND SCIENCE**  
OOTY ROAD, MYSURU – 570 025

**POSTGRADUATE DEPARTMENT OF CHEMISTRY**



**SYLLABUS**  
**A VALUE-ADDED COURSE**

**2018-19**

# VALUE ADDED COURSE IN CHEMISTRY

## FOURTH SEMESTER

**COURSE: SUSTAINABLE DEVELOPMENT [30 HOURS]**

### Course Objectives

- To impart job-oriented skills through hands-on experiment on chemical sensing of pollutant, Modern energy storage and conversion systems for sustainable development.

### Course Outcome

After the completion of the course, the students should be able to

1. Design chemical sensor.
2. Make sensor kit.
3. Explain the fundamental concepts of batteries and super capacitors.
4. Design the optimized hybrid device based on the targeted application.
5. Write scientific documents using the type setting platform LATEX.

### Pedagogy

- Teaching students about Environmental Pollutant.
- Teaching students about Energy Storage.
- Familiarize the students with LATEX and Jab Ref.

### UNIT-I

[15 HOURS]

#### Chemical Sensing of Environmental Pollutant

Basic principle and designing of Chemical sensors. Synthesis and characterization methods. Development and making of in-house economical sensor kit for real time naked eye detection of various environmental pollutants.

#### Electrochemical Energy Storage and Conversion for Sustainable Developments

Classification of energy storage devices-batteries and super capacitors; Energy storage mechanisms; Materials design for energy storage; Cyclic voltammetry and electrochemical impedance spectroscopic characterizations for energy materials.

### UNIT-II

[15 HOURS]

**LATEX:** Introduction of LATEX, downloading and installing TeXstudio or TeXmaker, writing equations, making tables, inserting figures and references.

**Jab Ref:** Managing and citing references in LATEX typesetting system

### References:

1. Electrochemical Supercapacitors: Scientific Fundamentals and Technological Applications- B. E. Conway
2. Lithium-Ion Batteries: Science and Technologies- M. Yoshio, R.J. Brodd and A. Kozawa
3. Lead-Acid Batteries: Science and Technology- D. Pavlov
4. Environmental Chemistry, (9<sup>th</sup> ed.), - Anil K De.