



## IP323 January 3:0

### Topics in Basic and Applied Electrochemistry

#### Instructor

S Sampath

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#### Teaching Assistant

Email:

**Department: Inorganic and Physical Chemistry**

Course Time: M,W,F 9.00-10.00

Lecture venue: IPC old office room

Detailed Course Page: <http://ipc.iisc.ac.in/courses.php>

### Announcements

#### Brief description of the course

The course is designed to give fundamentals and advanced aspects of electrochemistry- For researchers in the area of electrochemistry. Good to have chemistry background in order to appreciate the concepts.

#### Prerequisites

Chemistry at the graduate level

#### Syllabus

Fundamentals of electrochemistry - mass transport, diffusion; relationship between  $D$  and current. Kinetics and Butler-Vomer equation,  $i$ - $v$  relationship; Techniques - DC, step techniques and AC measurements - Polarography, voltammetry, chrono- techniques, impedance, ac polarography. Convective diffusive systems- RDE and RRDE; Metal-solution; Semiconductor-solution interfaces; Basics of photoelectrochemistry, electrochemical sensors, corrosion and other applications.

#### Course outcomes

The students will be able to analyze the electrochemical data (for example, with respect to mechanisms of redox reactions), design catalysts for electrochemical reactions. Appreciate and know fundamentals of

electrochemical phenomena.

## **Grading policy**

Assignments - 20%

Mid term - 30%

Final Examination: 50%

## **Assignments**

## **Resources**

Polarography, D C Crow

Electrochemistry for Chemists and Chemical Engineers, E. Gileadi

Electrochemical Methods - Bard and Faulkner

Modern Electrochemistry - Bockris and Reddy