**Department of Industrial Chemistry** **Faculty of Science**

**IC (209)402** **Catalysis and Industrial Catalysts** **3(3/3-0/0)**

**Abbreviation** CATALYSIS IND CATALYST

**Prerequisite** **CHEM 321**

**This course is opened for** MAJOR ELECTIVE COURSE

**Course Description**

Physical and chemical adsorption, application of catalysis to reactor design, diffusion, catalyst deactivation, and catalyst production in industries and catalyst studies.

**Objective**

Students will be able to understand catalysis and industrial catalysts.

| **Course Content** | **Lecture Hours** |
|---|---|
| 1. Introduction | 1 |
| 2. Physical and chemical adsorption | 10 |
| 2.1 Adsorption isotherm | |
| 2.2 Surface reaction and its rate | |
| 2.3 Desorption of adsorbate | |
| 2.4 Rate equation and rate determining step | |
| 3. Application of catalysis to reactor design | 6 |
| 4. Diffusion | 10 |
| 4.1 External diffusion effects on heterogeneous reaction | |
| 4.2 Diffusion and reaction in porous catalysts | |
| 5. Catalyst deactivation | 8 |
| 6. Catalyst production in industries and catalyst studies | 10 |
| 6.1 Impregnation method | |
| 6.2 Co-precipitation method | |
| 6.3 Surface area measurement | |
| Total | 45 |