

**ENGINEERING CHEMISTRY LABORATORY**  
**[As per Choice Based Credit System (CBCS) scheme]**  
**(Effective from the academic year 2015 -2016)**

**SEMESTER - I/II**

Laboratory Code	15CHEL17/15CHEL27	IA Marks	20
Number of Lecture Hours/Week	01 + 03	Exam Marks	80
Total Number of Lecture Hours	50	Exam Hours	03

**CREDITS - 02**

**Course objectives:**

- To provide students with practical knowledge of quantitative analysis of materials by classical and instrumental methods for developing experimental skills in building technical competence.

**Instrumental Experiments**

1. Estimation of FAS potentiometrically using standard  $K_2Cr_2O_7$  solution.
2. Estimation of Copper colorimetrically.
3. Estimation of Acids in acid mixture conductometrically.
4. Determination of pKa of weak acid using pH meter.
5. Determination of Viscosity co-efficient of the given liquid using Ostwald's viscometer.
6. Estimation of Sodium and Potassium in the given sample of water using Flame Photometer.

**Volumetric Experiments**

1. Estimation of Total hardness of water by EDTA complexometric method.
2. Estimation of CaO in cement solution by rapid EDTA method.
3. Determination of percentage of Copper in brass using standard sodium thiosulphate solution.
4. Estimation of Iron in haematite ore solution using standard  $K_2Cr_2O_7$  solution by External Indicator method.
5. Estimation of Alkalinity ( $OH^-$ ,  $CO_3^{2-}$  &  $HCO_3^-$ ) of water using standard HCl solution.
6. Determination of COD of waste water.

**Course outcomes:**

On completion of this course, students will have the knowledge in,

- Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results, and
- Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results

**Conduction of Practical Examination:**

1. All experiments are to be included for practical examination.
2. One instrumental and another volumetric experiments shall be set.
3. Different experiments shall be set under instrumental and a common experiment under volumetric.
4. **Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.**

**Reference Books:**

1. G.H.Jeffery, J.Bassett, J.Mendham and R.C.Denney, **“Vogel’s Text Book of Quantitative Chemical Analysis”**
2. O.P.Vermani & Narula, **“Theory and Practice in Applied Chemistry”**, New Age International Publisers.
3. Gary D. Christian, **“Analytical chemistry”**, 6<sup>th</sup> Edition, Wiley India.