**CERTIFICATE COURSE IN INTRODUCTION TO ANALYTICAL TECHNIQUES (2017)**

**Total Hours: 30**

**The objectives of the course are :**

1.To equip students about handling the important instruments and interpret the results.

2.To train students for using computer softwares essential for their profession.

**MODULE I: LABORATORY OPERATIONS (6Hrs)**

* Single pan analytical balance: (operation and theory of the balance, construction details, errors in weighing, care of an analytical balance).
* Description and use of common laboratory apparatus: Volumetric flasks, burettes, pipettes, meniscus readers, weighing bottles, different types of funnels chromatographic columns, chromatographic jars, desiccators, drying ovens, filter crucibles, rubber policeman. Calibration and use of volumetric glass ware.

**MODULE II: PRINCIPLE, INSTRUMENTATION AND ANALYTICAL APPLICATIONS OF FOLLOWING TECHNIQUES (6Hrs)**

* pH meter, Conductometre, Potentiometre, Refractometre

**MODULE III: SEPARATION METHODS (6Hrs)**

* Chromatography : paper chromatography, thin layer chromatography, column chromatography
* Solvent extraction: Soxhlet extraction

**MODULE IV: SPECTROSCOPIC TECHNIQUES (6Hrs)**

* Introduction, instrumentation and applications of UV, IR & Colorimeter

**MODULE V: SOFTWARES (6Hrs)**

* CHEMDRAW , Microsoft excel, Microsoft office power point

**The Expected outcomes of the course are:**

* The student got practical skills in managing and interpreting conductivity bridge, potentiometry, refractometry, etc.
* They also were aquainted with practical knowledge of various spectroscopic different spectroscopic techniques such as Uv-Visible and IR.which enhanced their awareness modern scientific technology.
* The students got practice in applying softwares like CHEMDRAW,MS EXCEL and MS POWERPOINT which may help them in preparing their project reports.