DEPARTMENT OF CHEMISTRY			*Certificate Course*				
Course Type	**Course Code**	**Course Code Course Title**	**Credits**	**Total Contact Hours**	**CIA**	**Ext**	**Total**
Certificate		Certificate course in purification and characterization of compounds	2	30	25	75	100

***Course Objectives**:*

The objective of this certificate course is to make the student

1. To understand the concept behind the various process of purification and characterization techniques.
2. To understand the various extraction techniques.
3. To interpret the analytical data to the synthesized or new compounds using UV, IR and NMR

UNIT-I: Introduction to Separation & Purification techniques

Purification techniques of organic compounds - Distillation – fractional distillation – distillation under reduced pressure – crystallization.

UNIT-II: Chromatographic separations

Chromatography: Definition, principles-Adsorption and partition- applications of chromatography. Principle and applications of: TLC, Column and HPLC.

UNIT-III: Extraction techniques

Various process of extraction techniques – solvent extraction – extraction using soxhlet apparatus (curcumin from turmeric and piperine from black pepper).

UNIT-IV: Characterization of compounds using UV & IR

Principles and applications of UV & IR – Interpretation with pre-identified compounds using UV and IR.

UNIT-V: Characterization of compounds using NMR

Principles and applications of NMR – Interpretation of some reference molecules with 1D and 2D NMR techniques such as ^{1}H, ^{13}C, DEPT - 45, 90, 135 and COSY techniques.

Books for Study

1. R. T. Morrison, R. N. Boyd and S. K. Bhattacharjee, Organic chemistry, 7th edn, Pearson Education Asia, 2010.
2. P. S. Kalsi, Spectroscopy of Organic Compounds, 6thedn, New Age International, 2007.

Books for Reference

1. R. M. Silverstein, F. X. Webster, Spectrometric identification of Organic compounds, 6thedn, Wiley India edition, 2006.
2. Y. R. Sharma, Elementary Organic Spectroscopy, 5thedn, S. Chand & Co Pvt. Ltd., 2013.

Course outcome:

After complete successful of this course, the student will be able

(i) To apply the purification techniques for the synthesized compounds.
(ii) To interpret the analytical data for the given compounds.
(iii) To predict the structure from the given data.