*Syllabus and Revrences*

**551 chem.**

**Objectives**

-Mastering the main theoretical and experimental aspects of modern instrumental techniques of separation: high performance liquid chromatography and gas chromatography.

-Acquisition of basic knowledge about the field of applications of both chromatographic methods and the main experimental parameters which control the analysis and its efficiency

**References:**

1. MODERN HPLC FOR PRACTICING SCIENTISTS Michael W. Dong Chapters 1-5

2. MODERN PRACTICE OF GAS CHROMATOGRAPHY Fourth Edition Edited by: Robert L. Grob, Eugene F. Barry Chapters 1, 2, 3 & 6

**Topics to be Covered:**

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| List of Topics | No of  Weeks | Contact hours |
| Classification of chromatographic techniques, main interactions phenomena, fundamental equations, retention parameters, column efficiency, optimization of the separation | **2** | **4** |
| High performance liquid chromatography: normal and reversed phase modes, importance of polarity, isocratic and gradient elution modes, mobile phase specifications, description of the instrument, main detectors | **2** | **4** |
| Gas chromatography: field of application, isothermal and temperature programmed modes, packed and capillary columns, main detectors | **2** | **4** |
| Qualitative applications: use of retention indices for identification of unknown components  Quantitative applications: external and internal standard methods | **1** | **2** |
| Hyphenated techniques: use of mass spectrometry hyphenated to GC and LC instruments | **1** | **2** |
| Solving theoretical and practical problems | **1** | **2** |
| Hyphenated techniques: use of mass spectrometry hyphenated to GC and LC instruments | **1** | **2** |
| Experimental applications: optimisation of separation based on main chromatographic parameters, identification and quantitation of unknown constituents in a real sample | **1** | **1** |