

## المحتوى العلمي للمقرر:

- *Electromagnetic Radiation and its interactions with matter*
  - *Properties of electromagnetic radiation, The interaction of radiation with matter*
  - *Absorption and Emission of radiation*
- *Components of instruments for optical spectroscopy.*
  - *Components and configurations of instruments, Radiation sources for UV, VIS, and IR radiation, Wavelength selection, monochromators, entrance and exit slits, absorption and interference filters, Prisms, Gratings, Solvents and sample containers.*
  - *Radiation Detection for UV, VIS, and IR Radiation, Signal Processors and Readout devices*
  - *Some typical instrument, Single and double beam instruments and their application*
- *UV - VISIBLE Absorption Measurements*
  - *Absorbing species, Absorption Theories, Qualitative measurements, identification and determination of Ka, Kf, Quantitative measurements of single and multicomponents samples, Photometric titration*
- *Molecular Fluorescence spectroscopy*
  - *Theory of Fluorescence, Instruments for Fluorescence Analysis and comparison with absorption instruments, Application of Fluorometry, Nephelometry and Turbidimetry.*
- *Atomic spectroscopy*
  - *Theory of flame spectroscopy, Type of Flames, burners and their characteristics.*
  - *Atomizers, Flame and non-flame, heated graphite furnaces.*
- *Atomic Absorption and Emission spectroscopy*
  - *Theory of AA and AE, Sources for AA and AE; Hollow cathode lamps, Gaseous Discharge lamps and continuous radiation sources, Excitation sources, Flame, Arc and spark, laser, and Argon plasma (ICP), Back - ground correction methods, two - line correction method, Zeeman effect correction method, Interferences, spectral and chemical interferences*
  - *Calibration methods and Analytical Application*

## الكتب الأساسية:

**Principles of Instrumental analysis, D. S. Skoog, F. J. Holler and T. A. Nieman, 5<sup>th</sup> ed., 1998.**

## المرجع المساند:

**Ewing`s Analytical Instrumentation Hand book, J. Cazes, 3ed., 2004.**