

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Analytical Chemistry)
Semester: III
Syllabus with Effect from: June - 2013

Paper Code: PS03CANC02	Total Credit: 4
Title Of Paper: Elements of Analytical Chemistry	

Unit	Description in detail	Weightage (%)
I	Introduction to Chemical Instrumental Analysis: Classification of analytical techniques, types of instrumental methods, instruments for analysis, performance characteristics of instruments, calibration of instrumental methods, sampling and its importance, designing of sampling plan and its implementation.	25%
II	An Overview Of Electrical Components, Simple DC And AC Circuits, Digital Electronics Computers And Micro Computers: DC and AC current, voltage, resistance and impedance measurements, semiconductors and semi-conducting devices, definition of basic terms transducers, transistors, transformers, capacitor, power supplies, regulators and operational amplifiers. Digital electronics-- analog and digital signals, binary numbers and its conversion to decimal numbers, digital circuit components, digital to analog convertor (DAC) and analog to digital convertor (ADC) Computer terminology, components, operational modes of computerized instruments (Inline and On-line), computer software and programming, application of computer in analytical instruments (passive and active applications), computer networking.	25%
III	Automated Analysis: Introduction, automated laboratory analyses, automated laboratory analyzers.	25%
IV	Data Treatment: Evaluating analytical data-- classification of errors, accuracy and precision, distribution of random errors, normal distribution curve, mean and standard deviation, confidence limits (CL), comparison of results (students-t-test, f-test) paired t-test, linear regression and correlation coefficient. Verifying and Validating the Method Single operator characteristic, blind analysis of standard sample, ruggedness and equivalency testing, standards analysis and components of good manufacturing process (GMP), documentation and case study.	25%

Basic Text & Reference Books:-

- Modern Analytical Chemistry, By David Harvey, Mc Graw-Hill (USA).
- Vogel's Textbook of Quantitative Chemical Analysis, By G. H. Jeffery, J. Bassett, J. Mendham and C. Denney, Longman Singapore Publisher Pte Ltd. (Singapore).
- Principles of Instrumental Analysis, by Skoog, Holler and Neiman, Sanders College Publishers (USA)
- Introduction to Instrumental Analysis, by Robert D. Braun, Pharmed Press Hyderabad- India.
- Instrumental Methods of Analysis, 7TH Edition Willard, Merit, Dean, Settle, CBS, Publishers & Distribution.
- Analytical Chemistry by Gary D Christian 6th Edition Wiley Indorsion
- A Textbook of Analytical Chemistry, Y. Anjaneyulu Pharmed Publisher 81-88449-19-9

