Chem-206 & 206L **GENERAL CHEMISTRY** **Credit Hours: 3 (2 + 1)**

Introduction of the course:

The course is organized to provide an adequate knowledge about basic concepts in General chemistry including spectroscopy, chemistry of biomolecules etc.

Course Objectives:

The course is designed:

1. To introduce students about the key concepts of general chemistry
2. To introduce students about chemistry of biomolecules and their use in industries.

Contents:

1. **Spectroscopy**
   Electromagnetic radiation and its interaction with matter, Development of spectroscopic analytical techniques employing various transitions, Basic introduction to atomic and molecular spectroscopic techniques include flame emission, spectrophotometry, UV/VIS and IR spectroscopies.
2. **Chemical industries and Metallurgies**
   Raw materials, manufacturing process and flow sheet diagrams of; Glass, Sugar, Urea
   Metallurgies of; copper and iron.
3. **Chemistry of Biomolecules**
   Basic introduction to Carbohydrates, lipids, proteins and nucleic acids, their classification, importance and different reactions.

Practicals:

1. Preparation of buffer solutions.
2. Determine the lambda max of the given compounds spectrophotometrically. (i.e $KMNO_4$, $K_2Cr_2O_7$)
3. Determine the concentration of unknown sample solution spectrophotometrically (i.e $KMNO_4$, $K_2Cr_2O_7$)
4. Calibration of measuring apparatus e.g pipette, burette, measuring cylinder and measuring flask.
5. Purification of the compounds using common ion effect.
6. Separate the Given mixture of ink by paper chromatography.
7. Qualitative and quantitative analysis of carbohydrates, lipids and proteins.

Teaching-learning Strategies

1. Lectures
2. Group Discussion

3. Laboratory work
4. Seminar/ Workshop
5. Problems practice to clear genetics concepts

Learning Outcomes:

1. Students are expected to get familiarized with the concepts of general chemistry.
2. This will enable them qualify for basic to moderate level jobs involving general knowledge of Chemistry.
3. The obtained knowledge shall also enable the students to enter into various entrepreneurial activities involving general introduction to chemistry.

Assessment Strategies:

1. Lecture Based Examination (Objective and Subjective)
2. Assignments
3. Class discussion
4. Quiz
5. Tests

Recommended Readings:

1. Adamson A. W. "Understanding Physical Chemistry" 3rd Ed. Benjamin Cummings publishing company Inc.
2. Akhtar M.N. & Ghulam Nabi, "Textbook of Physical Chemistry" ilmi kutab khana, Lahore. 3. Bhatti H.N. and K. Hussain, "Principles of Physical Chemistry"; Carwan Book House, Lahore.
3. Shriver, D.F., P.W. Atkins and C.H. Langford, "Inorganic Chemistry"; Oxford, 2nd Ed. (1996).
4. Snarp, A.G. "Inorganic Chemistry", Longman, 3rd Edition (1992).
5. Rayner Canham, Gelof, "Descriptive Inorganic Chemistry" & Co. (1995).
6. Daniel R. Pallers, "Experimental Organic Chemistry, John Willey & Sons" Inc., 2009.
7. James A. Moore, "Experimental methods in Organic Chemistry" Holt-Saunders Int. 1983. 9. R.L. Shriner, R.C. Fuson, D.lV. Curtin and T.C. Morrill "The systematic Identification of organic compounds, 6th ed. John Willey & sons, 1979.

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