PHYSICAL CHEMISTRY (BS-ADP 7th Semester)

Module Code:	**Chem-405**
Module title:	**Molecular Spectroscopy**
Name of Scheme:	**BS-ADP 7th Semester**
Department:	**School of Chemistry**
Faculty:	**Science**
Module Type:	**Compulsory**
Module Rating:	**2 credits**

OBJECTIVES

Students will be able to learn fundamentals and applications of both vibrational and rotational spectroscopy. They will be able to analyze IR spectra of various organic molecules.

SYLLABUS OUTLINES

Special regions and classification of spectroscopy; Rotational energies of diatomic molecules, population of Rotational energy level. Rotational spectra of rigid linear molecules and determination of bond lengths. The Zeeman Effect and Stark effect in atom.

Vibrational spectroscopy: energy of an atomic molecule, harmonic and harmonic oscillator molecules, relative population of energy levels and intensities of transition, types of vibrational modes.

Vibrational of polyatomic molecules, interpretation of IR spectra of simple molecules, Fermi resonance, applications and sampling techniques.

RECOMMENDED BOOKS

1. Physical Chemistry by Kundu, N and Jain, S.K.S. Chand and Company Ltd. 1984.
2. Fundamentals of chemical kinetics by Logan, S.R, Longman Group Ltd. 1996.
3. Elementry reaction kinetics by Latham.J.L. And Burgess, A.E.3rd Ed., Butterworths, London, 1977.
4. Physical chemistry by Atkins, P.W. 5th Ed., W.H.Freeman and Company, New York, 1994.
5. Physical Chemistry by Alberty, R.A. and Silbey. R.J., John Wiley, New York, 1995.
6. Physical chemistry by Engel, T. and Ried, P., 1st Ed., Pearson Education, Inc. 2006.
7. Hand book of surface and Colloid Chemistry by Birdi, K.S., CRC Press, 1997.
8. Heterogeneous Catalysis: Principles and applications by Bond, G.C., 2nd Ed., Oxford, Clarendon press, 1987.
9. Surfactants and interfacial Phenomena by Rosen, Milton J., John Wiley, New York, 1978.