

PHYSICAL CHEMISTRY (BS-ADP 5th Semester)

Module Code:	Chem-301
Module title:	Electrochemistry
Name of Scheme:	BS-ADP 5th Semester
Department:	School of Chemistry
Faculty:	Science
Module Type:	Compulsory
Module Rating:	2 credits

OBJECTIVES

This course will help in understanding basic principles of electrochemistry. Students will be able to use fundamental principles of electrochemistry in development of electrochemical devices like batteries and fuel cells.

SYLLABUS OUTLINES

Basics of electrochemistry, Idea of conductance of electrolytes and its determination, Debye-Huckle equation for all types of solution and limiting law, ionic strength, weak electrolyte and Debye-Huckle theory, Activity and activity coefficients of electrolytic solution, determination of activities, concentration cells, Types of concentration cells, derivation of E.M.F of electrode and electrolyte concentration cells with and without transference, basics of Fuel cells, classification of fuel cells: Alkaline fuel cells, molten carbonate fuel cells, phosphoric acid fuel cells, solid oxide fuel cells, Proton exchange membrane fuel cells and hydrocarbon fuel cells.

RECOMMENDED BOOKS

1. Electrochemical Methods and applications by bard, A. and Faulkner, L.R., John Wiley, New York, 1980.
2. Arun Bahl, B S Bahl & G D Tuli, Essential of Physical Chemistry, S. Chand Publishing New Dehli, 2000.
3. Bhatti, H. N. and Farooqi, Z. H., Modern Physical Chemistry, Revised ed., Caravan Book House Lahore, (2014).
4. Physical Chemistry, Samuel Glasstone, 1995. Macmillan and Co. Ltd. St. marlins Street, London.
5. Principles of Physical chemistry, Maron and Prutton, 1965 the Macmillan Company, Collier Macmillan Ltd. London.
6. Physical Chemistry, Barrow, 1973, McGraw Hill, Tokyo.
7. Physical Chemistry, Moore, 1972, Rentice Hall, Englewood cliffs, Jersey.
8. Physical Chemistry, Alberty and Daniels, 1962, McGraw Hill Book Company Ltd London.
9. Physical chemistry, Atkins, 1989, Oxford University Press, Walton Street, Oxford.
10. Physical Chemistry, Castellan, 1972, Addison Westey Publishing Company, Menla Park, California, London.