Molecules in Motion
Chemistry and Biochemistry

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Department: Chemistry and Biochemistry

Course Intro: : The motion of molecules plays a fundamental role in understanding the behavior of atoms and molecules in different phases of matter and hence is an essential part of any graduate / postgraduate level Chemistry syllabus in Colleges and Universities.

Pre Requisites: : None
Core/Elective: : Core
UG/PG: : UG
Industry Support : None

Reference : 1.Peter Atkins and Julio de Paula, Atkins Physical Chemistry, Oxford University Press (ISBN 9780198700722) 2.Gilbert W. Castellan, Physical Chemistry, Addison-Wesley Publishing Company (ISBN 0-201-10386-9) 3.Ira N. Levine, Physical Chemistry, McGraw-Hill (ISBN 978â€"0â€"07â€" 253862â€"5)

About Instructor: Dr. Amita (Pathak) Mahanty is an Associate Professor in the Department of Chemistry at IIT Kharagpur. She is also an adjunction faculty with the School of Nano Science and Technology at the same Institute. She has obtained her Integrated M.Sc. and Ph.D. degrees in Chemistry from IIT Kharagpur. She carried out her post-doctoral research at the Department of Chemistry, IIT Kharagpur as a CSIR Research Associate (Material Science Division). Her professional career in teaching and research is spread over 17 years. Her s research activities encompass the areas of Solid State Chemistry, Material Science and Nanoscience, and has pioneering contribution is in the development of water-based chemical synthesis methodologies for the preparation of various functionalized nanostructured materials and their nanocomposites. She has guided 5 Doctoral and more than 22 dissertations at the Masterâ€™s level.

COURSE PLAN

SL.NO	Week	Module Name
1	1	Molecular Motion in Gases: Kinetic Model of Gases I. Pressure; Molecular Speeds and Maxwell Distribution of Speeds; Most Probable Speed, Mean Speed, Mean Square Speed
2	2	Molecular Motion in Gases: I.Collision Frequency; Mean Free Path; Collisions with Walls and Surfaces; Effusion and Rate of Effusion
3	3	Molecular Motion in Gases: Transport properties of a perfect gas I.Phenomenological Equations; Transport properties of a perfect gas; Transport Parameters