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| 1. | Title of the course | Introduction to Nanoscience and Technology |
| 2. | Course number | CH509L |
| 3. | Structure of credits | 3-0-0-3 |
| 4. | Offered to | PG |
| 5. | New course/modification to | Modification To CH5027/17 |
| 6. | To be offered by | Department of Chemical Engineering |
| 7. | To take effect from | July 2022 |
| 8. | Prerequisite | CoT |
| 9. | Course Objective(s): To introduce the fundamentals of nanoscience, synthesis and characterization of nanomaterials and their applications. | |
| 10. | Course Content: Introduction; Fundamental material properties as a function of reduced size; Nanomaterials and their properties- metal and metal oxides, carbon nanotubes; Emerging nanomaterials - graphene, quantum dots; Synthesis routes - physical, chemical, thermolysis, self-assembly, lithography, advanced methods; Material characterization techniques; Applications of nanoscience and technology: catalysis, drug delivery, tissue engineering, biosensors, etc. | |
| 11. | Textbook(s): 1. Poole Jr C P and Owens F J, <i>Introduction to Nanotechnology</i> , 1st Edition, Wiley-Interscience (2003). 2. Pradeep T, <i>NANO: The Essentials - Understanding Nanoscience and Nanotechnology</i> , 1st Edition, Tata McGraw Hill (2007). | |
| 12. | Reference(s): 1. Cao G, <i>Nanostructures and Nanomaterials, Synthesis Properties and Applications</i> , 1st Edition, Imperial College Press (2004). 2. Rao C N R, Muller A and Cheetham A K, <i>Chemistry of Nanomaterials: Synthesis, Properties and Applications</i> , 1st Edition, Wiley-VCH (2004). 3. Tantra R, <i>Nanomaterial Characterization: An Introduction</i> , 1st Edition, Wiley (2016). | |