

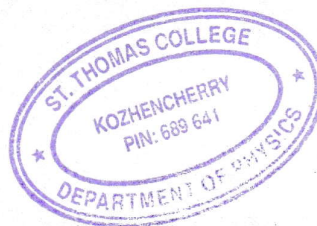
St Thomas College, Kozhicherry

Certificate Course in Nanoscience

Name of the Department: Department of Physics

Course Coordinator: Dr.Jijoy. P Mathew, Ms.Sreekala P Nair

Duration of the Course: 30 Hours



Course Objectives:

- 1. To give students fundamental knowledge of Nanoscience**
- 2. To facilitate students to acquire knowledge about various methods used for the synthesis of nanomaterials**
- 3. To develop knowledge about the applications of nanoscience in the field of medicine, energy conservation and environment**

Course Outcome

1. Learn about the basics of Nanoscience
2. Understand the synthesis methods for nanomaterials
3. Understand the theory and functioning of characterization methods used in Nanoscience
4. Know the applications of Nanoscience in various fields including medicine, energy conservation and environment

Course Outline

Module 1: (8 Hours)

Nanoscience Introduction and Synthesis Methods

Definition and concept of nano technology-Synthesis route of Nano particles-bottom up and top down methods

Module 2: (12 hours)

Characterization of nanomaterials

X-Ray Diffractometer (XRD)- Scanning Electron Microscopy(SEM)- Transmission Electron Microscopy (TEM)- Scanning Tunneling Microscopy (STM)-Atomic Force Microscopy (AFM)-UV-Vis Spectroscopy-Fourier Transform Infrared Spectroscopy (FTIR)

Module 3: (10 hours)

Applications of nanomaterials

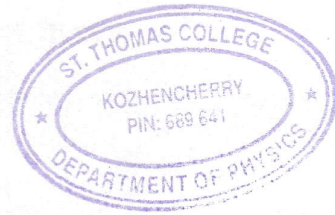
Fullerenes- Carbon Nanotubes- Nano Medicine- Environment and Energy-MEMS-NEMS- Molecular and Supramolecular Switches-Common Nano devices

Mode of Evaluation: (2 hours)

Attendance, Tests

Recommended Readings:

1. Nano The Essentials-T Pradeep McGraw Hill Education
2. Introduction to Nanotechnology-Charles P Poole, Frank J Owens Willey India Pvt Ltd
3. Nanotechnology: S.Shanmugam, MJP Publishers
4. Nanotechnology: Richard Beoker, Earl Boyson, Wiley India Pvt Ltd
5. Nanotechnology an Introduction: Jeremy J Ramsden, Elsevier



Joy P. Mathew
Dr. Joy P. Mathew