Course Specifications

General Information

Course name	Selected Topics (2)
Course number	PHYS4334
Faculty	
Department	
Course type	College Needs
Course level	4
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - Define and describe nanotechnology

2 - Recognize and understand the unique features of nanostructures and nanotechnology

3 - Understand the processes and techniques involved in creating and assembling nanostructures

4 - Appreciate present and future developments in nanotechnology

5 - Have a familiarization of various applications of nanotechnology

6 - Develop an awareness of the global and local socio-economic impacts of nanotechnology

Intended Learning Outcomes

Knowledge and Understanding

* Demonstrate a working knowledge of nanotechnology principles and industry applications
* Explain the nanoscale paradigm in terms of properties at the nanoscale dimension
* Apply key concepts in materials science, chemistry, physics, biology and engineering to the field of nanotechnology
* Identify current nanotechnology solutions in design, engineering and manufacturing

Course Contents

1 - This course will provide a highly interdisciplinary introduction to the science of nanoscale materials (nanoscience). The course will survey the new field of nanoscience/nanotechnology, aiming to motivate interest in and heighten awareness of this field. Its many potential applications in medicine, biology, electronics and optoelectronics, engineering, materials science and chemistry, open a broad new horizon to an exciting technology to serve societal needs. Topics will include historical background, characterization techniques, physics and chemistry of nanoscale materials, fabrication techniques, characterization methods, nanoscale applications (nanotechnology), and ethical/societal considerations.