نموذج (هـ)

Summarized Course Description

Course number: ECE 448	Course name: **Nanotechnology**
لغة تدريس المقرر: English	Pre-requisites: ECE 344
Credit hours: 4 (**3-2-0**)	Course level: Level – **8 or 9**

Course Description وصف المقرر :

Techniques and applications of nanofabrication and miniaturization of devices to the smallest scale. The technology of miniaturization, its fundamentals and present trends towards building devices and structures on the nanometer scale. Examples of applications of nanotechnology in the electronics, communications, data storage and sensing world will be described, and the underlying physics as well as limitations of the present technology will be discussed.

Course objectives أهداف المقرر :

1. Learn some of the basics of nanofabrication and nanocharacterization techniques as well as specific applications of nanotechnology in commercial products.
2. Understand fundamental physical scaling laws applied to understanding the properties of materials at the nanometer scale.
3. Introduce self assembly, surfaces and interfaces in nanotechnology.

Course Outcomes مخرجات التعليم:

On successful completion this course, the student should be able to:

1. Describe the basic science behind the properties of materials at the nanometer scale.
2. Familiar with the principles behind advanced experimental and computational techniques for studying nanomaterials.
3. Communicate clearly, precisely and effectively using nanotechnology scientific language and mathematical notation.
4. Systematically solve scientific problems related specifically to Nano technological materials using conventional scientific and mathematical notation.
5. Identify computational characterization of nanomaterials.

Textbook and references الكتاب المقرر والمراجع المساندة:

Text Book: John C. Morrison, Modern Physics for Scientists and Engineers, Elsevier, 2nd Edition, 2015, ISBN 978-0-12-800734-1.

References:

- Solid State Electronic Devices; B. G. Streetman, S. Banerjee; Prentice-Hall, 5th ed.
- Physics of Semiconductor Devices; Jean-Pierre Colinge, Springer 2002.