Course Syllabus

Second Semester – 2013/2014

General Information

Course name	Course code	Credits	Contact hours
Molecular Sensors and Nano-devices	BMTS486	2 lecture+1 lab	2 lecture+2 lab

Instructors/ Coordinators

	Instructor	Coordinator
Name	Dr. Bakheet Alrashidi	Dr. Bakheet Alrashidi
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Ext	1147	1147

Text Book

Title	Molecular Sensors and Nano-devices: Principles, Designs and Applications in biomedical Engineering
Author/Year	John X J Zhang, Kazunori Hoshino / 2014

Supplemental materials

Recommended Textbooks and Reference Material	
Title	Biomedical Nano-sensors (Pan Stanford Series on Biomedical Nanotechnology)
Author/Year	Joseph M. Irudayaraj / 2012
Electronic Materials (e.g. Web Sites, Social Media, Blackboard, etc.)	
Web sites	

Specific Course Information

a. Brief description of the content of the course (Catalog Description)

The students will study the fundamental principles behind the operation of molecular sensors, nano-devices and biomedical microsystems elements; and major classes of molecular sensors, (or Micro-Electro-Mechanical Systems, MEMS). An application of molecular sensors, nano-devices and biomedical Microsystems is also covered.

b. Prerequisites (P) or Co-requisites (C)

None

c. Course type (Mandatory or Elective)

Elective

Specific Goals

a. Specific outcomes of instruction
By the end of this course, the student should be able to: - Explain principles of molecular sensors and nano-devices. (a) - Classify major issues of molecular sensor and nano-devices application. (b) - Develop small application based on molecular sensor and nano-devices using CAD. (d) - Distinguish between molecular sensor and nano-devices in treatment methods. (f) - Recognize the ethical responsibilities related to applications of molecular sensor and nano-devices. (i)

b. Student outcomes addressed by the course

a	b	c	d	e	f	g	h	i	j	k
✓	✓		✓		✓			✓		

Brief list of topics to be covered

Topics	No. of Weeks	Contact hours
Fundamental principles of molecular sensors	2	8
Fundamental principles of Nano-devices	2	8
Biomedical microsystems elements;	2	8
Major classes of molecular sensors, (MEMS)	2	8
Application of molecular sensors,	2	8
Application of Nano-devices	2	8
Application of Molecular sensor in biomedical Engineering	3	12