

TOROS ÜNİVERSİTESİ

Faculty Of Engineering
Electrical And Electronics Engineering (English)

Course Information

NANOTECHNOLOGY					
Code	Semester	Theoretical	Practice	National Credit	ECTS Credit
		Hour / Week			
EEE412	Spring	3	0	3	6

Prerequisites and co-requisites	
Language of instruction	English
Type	Elective
Level of Course	Bachelor's
Lecturer	Assoc. Prof. Selma ERAT
Mode of Delivery	Face to Face
Suggested Subject	
Professional practise (internship)	None
Objectives of the Course	To enable students to understand "nano" science in the fields of physics, engineering, chemistry and biology. To give a basic understanding of the current state of nanotechnology development, To give information about the types of nanostructures, preparation methods and characterizations, To give an insight to the applications of nanostructures in the fields of science and technology, To give an understanding of innovation in nanostructural sector, Problems caused by nanoparticles and safety risk assessment To give information about issues related to.
Contents of the Course	The level of development of nanoscience, experimental techniques and theoretical studies will be given. In the ongoing courses, the diversity of nanostructures, technological applications of nanoscience will be reviewed, and the course will end with a section on nanochemistry, nanobiology and finally nano-medicine. The broad application areas of nanoscience will be addressed in more than one department.

Learning Outcomes of Course

#	Learning Outcomes
1	Basic knowledge of physical principles, mathematical methods and appropriate techniques
2	Basic information about the types of nanostructures.
3	Synthesis and characterization techniques.
4	Analysis of the most common applications of the nanoscale phenomenon
5	Advantages and applications of Nanoscience in engineering, chemistry and biology

Course Syllabus

#	Subjects	Teaching Methods and Technics
1	Introduction and Some Physical Principles	Lecture, Presentation, Discussion
2	Nanomaterial synthesis	Lecture, Presentation, Discussion
3	Microscopy - Nanoscopy	Lecture, Presentation, Discussion
4	Other Characterization Techniques	Lecture, Presentation, Discussion
5	Nanocrystalline, Nanowires, Nanoplates (layers)	Lecture, Presentation, Discussion
6	Nanotechnology Applications	Lecture, Presentation, Discussion
7		

8	Nanotechnology Applications	Lecture, Presentation, Discussion
9	Nanotechnology Applications	Lecture, Presentation, Discussion
10	Nanochemistry- Nano-level Chemistry, Catalysis, Renewable Energy, cells and Environmental Conservation	Lecture, Presentation, Discussion
11	Nanochemistry- Nano-level Chemistry, Catalysis, Renewable Energy, Pillars and Environmental Conservation	Lecture, Presentation, Discussion
12		
13		
14		
15		
16	Final Exam	

Course Syllabus

#	Material / Resources	Information About Resources	Reference / Recommended Resources
1	H.-E.Schaefer, Nanoscience, Springer-Verlag Berlin Heidelberg 2010		

Method of Assessment

#	Weight	Work Type	Work Title
1	40%	Mid-Term Exam	Mid-Term Exam
2	60%	Final Exam	Final Exam

Relationship between Learning Outcomes of Course and Program Outcomes

#	Learning Outcomes	Program Outcomes	Method of Assessment
1	Basic knowledge of physical principles, mathematical methods and appropriate techniques	1	1,2
2	Basic information about the types of nanostructures.	1	1,2
3	Synthesis and characterization techniques.	1	1,2
4	Analysis of the most common applications of the nanoscale phenomenon	1	1,2
5	Advantages and applications of Nanoscience in engineering, chemistry and biology	1	1,2

PS. The numbers, which are shown in the column Method of Assessment, presents the methods shown in the previous table, titled as Method of Assessment.

Work Load Details

#	Type of Work	Quantity	Time (Hour)	Work Load
1	Course Duration	14	3	42
2	Course Duration Except Class (Preliminary Study, Enhancement)	14	7	98
3	Presentation and Seminar Preparation	0	0	0
4	Web Research, Library and Archival Work	0	0	0
5	Document/Information Listing	0	0	0
6	Workshop	0	0	0
7	Preparation for Midterm Exam	1	2	2
8	Midterm Exam	1	1	1
9	Quiz	0	0	0

10	Homework	0	0	0
11	Midterm Project	0	0	0
12	Midterm Exercise	0	0	0
13	Final Project	0	0	0
14	Final Exercise	0	0	0
15	Preparation for Final Exam	1	6	6
16	Final Exam	1	1	1
				150