AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Computational Methods For Nanostructures								
Course Code	EEE515		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	To give the fundamental aspects of nanostructures and nanostructured materials, which have been developed recently To design a nano material by using computational methods								
Course Content	The structure crystal of solid. Introduction to the Quatum Theory of Solids. density functional theory. The physical and chemical properties of nanostructures. Computational method.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Case Study, Project Based Study, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	30
Assignment	4	10
Project	1	30

Recommended or Required Reading	
1	Broz, P., Polymer-Based Nanostructures, Springer, 2009.
2	Guazhong Cao, Nanostructures , Nanomaterials Synthesis, Properties, Applications
3	Handbook of Nanotechnology, Brushan
4	http://www.ehu.eus/sgi/ARCHIVOS/espresso
5	https://www.sciencedirect.com/science/article/pii/S0927025603001046

Week	Weekly Detailed Course Contents	
1	Theoretical	Crystal Structure of Solid
2	Theoretical	Introduction to the Quatum Theory of Solids
3	Theoretical	Nanotechnology : Definition and examples
4	Theoretical	Density Functional Theory
5	Theoretical	Introduction to numeric calculations method: packed program
6	Theoretical	To introduction the use of packed program
7	Theoretical	Determination of project (computational calculations by using the package program)
8	Intermediate Exam	Midterm Exam
9	Theoretical	Two dimension structures, carbon nano tubes, nanowires, quantum dots
10	Theoretical	Two dimension structures, carbon nano tubes, nanowires, quantum dots
11	Theoretical	Characterization and Properties of Nanomaterials
12	Theoretical	Characterization and Properties of Nanomaterials
13	Theoretical	Computational calculations
14	Theoretical	Computational calculations
15	Theoretical	The presentation of project
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	3	98
Assignment	4	10	3	52
Project	1	11	3	14

Midterm Examination	1	15	3	18
Final Examination	1	15	3	18
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Discuss the context concepts of nanotechnology
2	Learn the historical advances in nanotechnology and discuss the future of it
3	Learn the computational method
4	To design a nonamaterial by using computational method
5	Ability to search and present the current nanotechnology literature

Programme Outcomes *(Electrical and Electronics Engineering Master)*	
1	Developing and intensifying knowledge that requires expertise in the area of Electrical-Electronics Engineering, and gaining the skills necessary to analyze and solve problems using this knowledge
2	Grasping the inter-disciplinary interaction related to Electrical-Electronics Engineering, interpreting and forming new types of knowledge by combining the knowledge from Electrical-Electronics Engineering and the knowledge from various other disciplines
3	Developing new approaches to solve the complex problems arising in Electrical-Electronics Engineering, coming up with solutions while taking responsibility and carrying out a specific study independently
4	Assessing the knowledge and skill gained in the area of Electrical-Electronics Engineering with a critical view
5	Transferring the current developments and one’s own work in Electrical-Electronics Engineering, to other groups in written, oral and visual forms
6	The ability to control the collecting, interpreting, practicing and announcing processes of the Electrical-Electronics Engineering related to data taking into consideration scientific, cultural and ethical values and the ability to teach these values to others
7	Developing application plans concerning the subjects related to Electrical-Electronics Engineering and the ability to evaluate the end results of these plans within the frame of quality processes

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	4	4	4	4	4
P2	4	4	4	4	4
P3	4	4	4	4	4
P4	4	4	4	4	4
P5	4	4	4	4	4
P6	4	4	4	4	4
P7	4	4	4	4	4