



Çanakkale Onsekiz Mart University

Education Information System

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Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Optoelectronics	FZ5018		3 + 0	3.0	7.5

Prerequisites	None
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Language of Instruction	Turkish
Course Level	Second Cycle
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assoc. Prof. Dr. Vildan B[LG]N
Instructors	Prof. Dr. Serhat ÖZDER Assist. Prof. Dr. Mustafa KURT
Assistants	
Course Objectives	Informations about optics, electro-optics, optoelectronics, optics band of the electromagnetic spectrum, the parameters and the components of the optoelectronic system and the scanning systems with their applications.
Course Content	Light and its nature, Concepts in quantum mechanics, Basic concepts in solid state physics, Modulation of light, Nonlinear optics, Display devices, Luminescence phenomena, Light emitting diodes, Introduction to lasers, Einstein relations, Population inversion, Laser modes and types of laser, Semiconductor, gas and liquid dye lasers, Principles of operation of lasers, Mode locking, Q-switching, Laser applications, Holography, Photodetectors, Photonic devices, Fiber optic waveguides, Optical communication systems, Integrated optical systems.
Course Learning Outcomes	1) Describe electromagnetic spectrum and semiconductor photon sensors 2) Explain the optical components 3) Apply properties of materials to device fabrication 4) Analyze optoelectronics devices and their working principles 5) Associate the obtained information with technology and industry

Quick Access

Physics (Master)

- Qualification Awarded
- Level of Qualification
- Qualification Requirements and Regulations
- Specific Admission Requirements
- Recognition of Prior Learning
- Profile of the Program
- Program Key Learning Outcomes
- Occupational Profile of Graduates
- Access to Further Studies
- Course Structure & Credits
- Exam Regulations & Assessment & Grading
- Graduation Requirements
- Mode of Study
- Programme Director(or Equivalent)
- Evaluation Questionnaire
- TYYÇ

Course Information

- Course Information
- Weekly Course Content
- Resources
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Light and its nature, Concepts in quantum mechanics, Basic concepts in solid state physics	Lecture, Problem solving, Homework	
2. Week	Modulation of light, Nonlinear optics, Display devices	Lecture, Problem solving, Homework	
3. Week	Luminescence phenomena, Light emitting diodes	Lecture, Problem	

		solving, Homework	
4. Week	Introduction to lasers, Einstein relations	Lecture, Problem solving, Homework	
5. Week	Population inversion, Laser modes and types of laser	Lecture, Problem solving, Homework	
6. Week	Semiconductor, gas and liquid dye lasers	Lecture, Problem solving, Homework	
7. Week	Principles of operation of lasers	Lecture, Problem solving, Homework	
8. Week	Midterm exam	Exam	
9. Week	Mode locking, Q-switching	Lecture, Problem solving, Homework	
10. Week	Laser applications, Holography	Lecture, Problem solving, Homework	
11. Week	Photodetectors	Lecture, Problem solving, Homework	
12. Week	Photonic devices	Lecture, Problem solving, Homework	
13. Week	Fiber optic waveguides	Lecture, Problem solving, Homework	
14. Week	Optical communication systems	Lecture, Problem solving, Homework	
15. Week	Integrated optical systems	Lecture, Problem solving, Homework	
16. Week	Final Exam	Exam	

RESOURCES

Recommended Sources
Wilson, J. & Hawkes, J.F.B, (1983); Optoelectronics: An Introduction, Exeter: Prentice – Hall.
E.Uİga ,Optoelectronics,Prentice Hall,Englewood Cliffs,N.J.,1995.
M.Tischler,Optoelectronics:Fiber Optics and Lasers,Macmillan/Mc Graw-Hill(Glencoe), Columbus,Ohio,1992

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Midterm exam, Homework, Final exam

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5
<u>PY1</u>	3	3	3	3	3	3
<u>PY2</u>	4	4	4	4	4	4
<u>PY3</u>	3	3	3	3	3	3
<u>PY4</u>	3	3	3	3	3	3
<u>PY5</u>	3	3	3	3	3	3

<u>PY6</u>	4	4	4	4	4	4
<u>PY7</u>	0	0	0	0	0	0
<u>PY8</u>	3	3	3	3	3	3
<u>PY9</u>	4	4	4	4	4	4
<u>PY10</u>	0	0	0	0	0	0
<u>PY11</u>	3	3	3	3	3	3
<u>PY12</u>	3	4	2	3	3	3
<u>PY13</u>	0	0	0	0	0	0
<u>PY14</u>	2	2	2	2	2	2
<u>PY15</u>	0	0	0	0	0	0

*DK = Course's Contribution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	22	22
Mid Term Exam Preparation	1	15	15
Further Study	14	4	56
Assignment 1	2	25	50
Final Exam	1	3	3
Mid Term Exam 1	1	3	3
Total Workload			191
Total Workload / 25.5 (s)			7.49
ECTS Credit of the Course			7

