



# Çanakkale Onsekiz Mart University

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## Course Information

### COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Advance Optical Design I	FZ 5077		3 + 0	3.0	7.5

<b>Prerequisites</b>	None
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<b>Language of Instruction</b>	Turkish
<b>Course Level</b>	Second Cycle
<b>Course Type</b>	Elective
<b>Mode of delivery</b>	Face to face
<b>Course Coordinator</b>	Assist. Prof. Dr. Mustafa KURT
<b>Instructors</b>	Assist. Prof. Dr. Mustafa KURT
<b>Assistants</b>	
<b>Course Objectives</b>	Introduction to optical design program ZEMAX, investigate optical component and install to the software, optical aberrations and how to tolerate in an optical system.
<b>Course Content</b>	Introduction to Optical Design software ZEMAX. Paraxial ray tracing. Stops, pupils, glass and landscape lenses. Aberrations in general and Merit functions Spherical aberrations, chromatic aberrations and aberration balancing. Coma, astigmatism, Field curvature and Field flattener. Mid-Term exam. Distortions, achromats, bending achromats and large air-spaced achromat. Field lens and windows Mirrors and corrector plates. Design a Project 1 Design a Project 2 Design a Project 3
<b>Course Learning Outcomes</b>	1) investigate the optical design program ZEMAX. 2) investigate optical component used in optical design 3) understand optical aberrations 4) able to explain optical analyze results 5) make simple optical design.

### WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction to Optical Design software ZEMAX.	Face to faceLecture	
2. Week	Paraxial ray tracing.	Face to faceLecture	
3. Week	Stops, pupils, glass and landscape lenses.	Face to faceLecture	
4. Week	Aberrations in general and Merit functions	Face to faceLecture	
5. Week	Spherical aberrations, chromatic aberrations and aberration balancing.	Face to faceLecture	

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### Physics (Master)

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6. Week	Coma, astigmatism,	Face to faceLecture	
7. Week	Field curvature and Field flattener.	Face to faceLecture	
8. Week	Mid-Term exam.	Written Exam	
9. Week	Distortions, achromats, bending achromats and large air-spaced achromat.	Face to faceLecture	
10. Week	Field lens and windows	Face to faceLecture	
11. Week	Mirrors and corrector plates.	Face to faceLecture	
12. Week	Design a Project 1	Face to faceLecture	
13. Week	Design a Project 2	On computerLecture	
14. Week	Design a Project 3	On computerLecture	
15. Week	Review	Face to faceLecture	
16. Week	Final Exam		

## RESOURCES

Recommended Sources
Introduction to Lens Design, Joseph M. Geary, ISBN-13: 978-0943396750
Introduction to Optics, Pedrotti, ISBN: 978-0131499331

## ASSESSMENT

Measurement and Evaluation Methods and Techniques
• Mid-term • Final exam • Quiz • Project

## COURSE CATEGORY

Course Category	Percentage
Area of pecialization 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>	5	5	5	5	5	5
<u>PY4</u>	4	4	4	4	4	4
<u>PY5</u>	4	4	4	4	4	4
<u>PY6</u>	5	5	5	5	5	5
<u>PY7</u>	5	5	5	5	5	5
<u>PY8</u>	4	4	4	4	4	4
<u>PY9</u>	4	4	4	4	4	4
<u>PY10</u>	5	5	5	5	5	5
<u>PY11</u>	3	3	3	3	3	3
<u>PY12</u>	2	2	2	2	2	2
<u>PY13</u>	5	5	5	5	5	5

PY14	3	3	3	3	3	3
PY15	3	3	3	3	3	3

\*DK = Course's Contribution.

	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Level of contribution</b>	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
Presentation/Seminar	2	20	40
Research&Project	1	23	23
Assignment 1	5	10	50
Final Exam	1	4	4
Mid Term Exam 1	1	3	3
Mid Term Exam Preparation	1	15	15
Preliminary Study	14	1	14
<b>Total Workload</b>			191
<b>Total Workload / 25.5 (s)</b>			7.49
<b>ECTS Credit of the Course</b>			7