

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-4011	Introduction to Laser Physics	3.00	0.00	0.00	3.00	6.00
Course Detail						
<b>Course Language</b>	: Turkish					
<b>Qualification Degree</b>	: Bachelor					
<b>Course Type</b>	: Optional					
<b>Preconditions</b>	: Not					
<b>Objectives of the Course</b>	: Fundamentals of laser light, the nature of light, the origin of light, laser action, optical resonator, population inversion mechanism, absorptions and emissions are understood.					
<b>Course Contents</b>	: 1 : The Nature of Light 2 : The Origin of Light 3 : Amplification of light 4 : Laser Action 5 : Laser Gain 6 : Optically active materials 7 : Component of lasers 8 : Optical Resonator 9 : Cavity Threshold 10 : Population Inversion 11 : Laser Output 12 : Properties of Lasers 13 : Types of lasers 14 : Semiconductor Lasers					
<b>Recommended or Required Reading</b>	: Lasers, J.Wilson and J.F.B. Hawkes, ISBN-13: 978-0135237052 LASERS, A. E. Siegman, Stanford University, University Science Books, 1986, ISBN-13: 978-0935702118 Principles of Lasers, Orazio Svelto, ISBN-13: 978-1441913012					
<b>Planned Learning Activities and Teaching Methods</b>	: Lecturing Assignment Presentation Doing Project Discussion Group work Make critique Reading					
<b>Recommended Optional Programme Components</b>	: Current research topics for students					
<b>Instructors</b>	: Prof. Dr. Mustafa Kurt					
<b>Instructor's Assistants</b>	: NA					
<b>Presentation Of Course</b>	: Face to face					

## Course Outcomes

## Upon the completion of this course a student :

- 1 explain Properties of light and laser light
- 2 define light sources and optically active medium.
- 3 capable of solving the Einstein coefficient any laser active materials.
- 4 solve the laser gain coefficient for any laser system.
- 5 design any resonator and calculate the laser modes.
- 6 define the principles of population inversion and calculate the gain.
- 7 classify the laser and understand working principals each of them

## Preconditions

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## Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Nature of Light				
2.Week	*The Origin of Light				
3.Week	*Amplification of light				
4.Week	*Laser Action				
5.Week	*Laser Gain 1				
6.Week	*Laser Gain 2				
7.Week	*Optically active materials				
8.Week	*Optically active materials				
9.Week	*Component of lasers				
10.Week	*Optical Resonator				
11.Week	*Cavity Threshold				
12.Week	*Population Inversion				
13.Week	*Laser Output				
14.Week	*Properties of Lasers				

## Assesment Methods %

1 Md Term Exam 1 : 40.000

2 Final : 60.000

## ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	3.00	3.00
Ödev	7	2.00	14.00

