

PHYS-318

**Optics II**

Kapon Elyahou

| <b>Cursus</b> | <b>Sem.</b> | <b>Type</b> |
|---------------|-------------|-------------|
| Physics       | BA6         | Opt.        |

|                            |                 |
|----------------------------|-----------------|
| Language of teaching       | English         |
| Credits                    | 3               |
| Session                    | Summer          |
| Semester                   | Spring          |
| Exam                       | Oral            |
| Workload                   | 90h             |
| Weeks                      | 14              |
| <b>Hours</b>               | <b>3 weekly</b> |
| Courses                    | 2 weekly        |
| Exercises                  | 1 weekly        |
| <b>Number of positions</b> |                 |

**Summary**

Introduction to the basic concepts of classical and modern optics. The course provides the students with tools for understanding and analysing optical phenomena and designing various optical systems.

**Content****1. Coherence Theory**

- 1.1 Spatial and temporal coherence
- 1.2 Partial and mutual coherence
- 1.3 Correlation interferometry

**2. Photons**

- 2.1 Electromagnetic field quantization
- 2.2 Photon statistics
- 2.3 Photon detection

**3. Generation of Light**

- 3.1 Optical transitions
- 3.2 Spontaneous and stimulated emission
- 3.3 Einstein's relations

**4. Lasers**

- 4.1 Amplification of light
- 4.2 Optical resonators
- 4.3 Laser characteristics

**Learning Prerequisites****Recommended courses**

Optics I

**Learning Outcomes**

By the end of the course, the student must be able to:

- Elaborate on a chapter of the course
- an exercise on a chapter of the course

**Teaching methods**

Ex cathedra with exercises in class