

Major Unit: Photonics Labs (3 ECTS) RADMEP/ UJM semester 3

Course instructors: Prof. Emmanuel Marin, Ass. Prof Adriana Morana / Language of instruction: English

Overview

Working skills in optical laboratory form the basis for optical measurements and development of the novel optical and photonic systems and measurement devices. The current development of advanced photonic technologies and their implementation in radiation-rich environments requires more and more people who, in addition to theoretical knowledge, have good practical skills.

The unit introduces the basics of optical measurement systems which include the technologies presented in the previous major unites. Important laboratory safety issues are handled both in theory and in practice. Constructing of optical measurement setups will be taught in small groups. The topics of these hands-on works are related to photonics technologies and to the radiation effects on photonics technologies:

1. Lasers
2. Optical fiber-based sensors and lasers
3. Image Sensors and Detectors
4. Optoelectronic - Photonic components and systems:

Learning outcomes

After successful completion of the unit, students are aware of the risks related to laboratory work and possess practical skills for working with lasers, optical systems, and components as well as performing some basic radiation testing. Students understand various advanced measurement techniques, analysis methods and can write scientific reports.

Teaching methods

- Teamwork in a teaching laboratory 30h.
- Advanced laboratory practices, topics related to photonics.10h

Study materials

- Handouts and other materials will be distributed before the lab experiments

Evaluation criteria

- Passing the training in a teaching laboratory requires active participation.
- Students need to pass both the lab exam and training before they are allowed to start advanced laboratory practices. Supervisors evaluate individual laboratory practice reports and the final grade is based on the average of the grades of all reports.