COURSE DESCRIPTION CARD - SYLLABUS

Course name

Optoelectronic

Course

Field of study

Electrical Engineering

Year/Semester

3 / 6

Area of study (specialization)

Profile of study

practical

Level of study

First-cycle studies

Course offered in

polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

0

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

Joanna Parzych

email: joanna.parzych@put.poznan.pl

tel. 61 665 2614

Faculty of Control, Robotics and Electrical Engineering

ul. Piotrowo 3A, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Student starting this item should have basic knowledge of semiconductors, optics, electrotechnics, electronics and metrology. Also should have ability to realize the efficient self-education in the area related to the chosen field of study and have awareness of the necessity of broadening of the competence in the field of electrical engineering and willingness to cooperate in a team

Course objective

Knowledge of fundamentals of optoelectronics and photonics and the selected applications of modern optoelectronic devices and equipment

Course-related learning outcomes

Knowledge

Student:

- has knowledge about the importance and scope of the optoelectronics a

- has knowledge about structure and principles of optoelectronic devices

- has knowledge about generation, transmission and detection of optical signals

Skills

Student:

- is ability to characterize the importance and scope of the optoelectronics

- is ability to plan and accomplish a simple engineering task by the use of the selected basic optoelectronic elements

Social competences

Student is especially understanding the need of formulating and information of the relating achievements of optoelectronics and photonic engineering and bringing it clearly into general use

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Continuous estimating with the tests.,

Awarding the skill increase.

The evaluation of knowledge and skills connected with the measuring tasks and prepared reports.

Getting additional points for the activity during classes, in particular:

- the efficiency of the use of acquired knowledge to solve a given problem;

- skill of the co-operation within the team practically realizing a given detailed task in the laboratory;

- remarks connected with the improvement of didactic materials;

- the aesthetic qualities of the reports.

Programme content

Implementation of work in teams and carrying out experiments including:

- Acquisition and transmission of measuring information by optical link.

- Fibre-optic cables.

- Optoelectronic separation of signals.

- Measurement of selected photoemiters and photodetectors parameters.

- Accuracy of optoelectronic measurements.

Teaching methods

Teamwork and performing experiments including: the connection of a measuring system, measuring the indicated quantities, preparing a report.

Bibliography

Basic

1. A. Cysewska-Sobusiak, J. Parzych, Optoelektronika i fotonika. Zagadnienia wybrane, Wyd. Politechniki Poznańskiej, Poznań 2020

2. A. Cysewska-Sobusiak, Podstawy metrologii i inżynierii pomiarowej, Wyd. Politechniki Poznańskiej, Poznań 2010

3. Z. Bielecki, A. Rogalski, Detekcja sygnałów optycznych, WNT, Warszawa 2001

4. K. Booth, S. Hill, Optoelektronika WKŁ, Warszawa 2001

5. R. Jóźwicki Podstawy inżynierii fotonicznej, Oficyna Wyd. Politechniki Warszawskiej, Warszawa 2006

6. Z. Kaczmarek - Światłowodowe czujniki i przetworniki pomiarowe, Agenda Wydawnicza PAK, Warszawa 2006

7. Parzych J., Pomiarowy model detekcji promieniowania w układzie dioda LED - przetwornik CCD, Przegląd Elektrotechniczny, nr 6, 2016, s. 176-179

8. Szlaferek M., Parzych J., Układy chłodzenia diod i matryc LED, Poznan University of Technology Academic Journals, Electrical Engineering No 88, Computer Applications in Electrical Engineering 2016, Poznan 2016, s. 273-287

9. Parzych J., Hulewicz A., Krawiecki Z., Matryce światłoczułe - właściwości, parametry, zastosowania, Poznan University of Technology Academic Journals, Electrical Engineering, No 92, Poznań 2017, s. 189-204

Additional

1. A. Cysewska-Sobusiak - Modelowanie i pomiary sygnałów biooptycznych, Wyd. Politechniki Poznańskiej, Poznań 2001

2. R. Jóźwicki - Technika laserowa i jej zastosowania, Oficyna Wyd. Politechniki Warszawskiej, Warszawa 2009

3. J. Siudak - Wstęp do współczesnej telekomunikacji światłowodowej, WKŁ, Warszawa 1999

4. A. Szwedowski, R. Romaniuk - Szkło optyczne i fotoniczne, WNT, Warszawa 2009

5. W. Żagan - Podstawy techniki świetlnej, Oficyna Wyd. Politechniki Warszawskiej, Warszawa 2007

6. www.bipm.org

7. www.gum.gov.pl

Breakdown of average student's workload

	Hours	ECTS
Total workload	27	1,0
Classes requiring direct contact with the teacher	17	0,5
Student's own work (literature studies, preparation for laboratory classes, preparation for tests, preparation of raports) [1]	10	0,5

[1] delete or add other activities as appropriate