

| STUDY MODULE DESCRIPTION FORM | | |
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| Name of the module/subject Basic of light engineering and optical radiation | | Code 1010321331010324776 |
| Field of study Electrical Engineering | Profile of study (general academic, practical) (brak) | Year /Semester 2 / 3 |
| Elective path/specialty - | Subject offered in: Polish | Course (compulsory, elective) obligatory |
| Cycle of study: First-cycle studies | Form of study (full-time, part-time) full-time | |
| No. of hours Lecture: 30 Classes: - Laboratory: 30 Project/seminars: - | | No. of credits 4 |
| Status of the course in the study program (Basic, major, other) (brak) | | (university-wide, from another field) (brak) |
| Education areas and fields of science and art technical sciences | | ECTS distribution (number and %) 4 100% |
| Responsible for subject / lecturer: dr inż. Małgorzata Górczewska email: malgorzata.gorczevska@put.poznan.pl tel. 61 665 23 98 Electrical Engineering ul. Piotrowo 3A, 60-965 Poznań | | Responsible for subject / lecturer: dr hab. inż. Krzysztof Wandachowicz email: krzysztof.wandachowicz@put.poznan.pl tel. 61 665 23 98 Electrical Engineering ul. Piotrowo 3A, 60-965 Poznań |
| Prerequisites in terms of knowledge, skills and social competencies: | | |
| 1 | Knowledge | Basic knowledge of visible light, infrared and ultraviolet |
| 2 | Skills | The ability to acquire knowledge of the phenomena associated with optical radiation. Basic skills in measuring non-electrical quantities. Ability to effectively self-education in a field related to the chosen field of study. |
| 3 | Social competencies | Awareness of the need to expand their competence, ready to work together as a team |
| Assumptions and objectives of the course: Getting to Know with the basic values of light, lighting elements and principles of assessment and the basics of lighting design. Understanding the nature of optical radiation (thermal, visible and ultraviolet), methods of generation, propagation and detection, the impact of organic and inorganic matter and its applications. | | |
| Study outcomes and reference to the educational results for a field of study | | |
| Knowledge: 1. . The student should define the basic concepts of lighting technology, explain rules for the calculation and the measurement of the size of the light; know the parameters of lighting equipment, describe the requirements required for lighting design, formulate laws of optical radiation - [[K_W09 ++, K_W15 +++,K_W17 +++]] 2. . As a result of completion of this course the student should be able to: Describe the construction of solar energy conversion devices including IR and UV and explain their actions - [K_W014 +]] | | |
| Skills: 1. The student will be able to apply his knowledge of lighting technology to carry out computations, measurement and evaluation of performance lighting - [K_U02 +, K_U14 ++] 2. The student will be able to analyze and evaluate the requirements and make the selection of individual pieces of equipment indoor lighting and outdoor lighting - [K_U23 ++, K_U14 ++] 3. The student will be able to apply knowledge of optical radiation for basic analysis of systems using optical radiation in the energy sector, surveying, telecommunications, electroheating - [K_U23 ++, K_U12 ++] 4. The student will be able to recognize the applicability of optical radiation devices in a variety of industrial processes - [K_U23 ++] | | |
| Social competencies: 1. . Is aware of the importance of the work and their willingness to comply with the principles of teamwork and shared responsibility for the implementation of tasks - [K_K03 +++]] 2. Is aware of the need for consistent training - [K_K01 ++] | | |

| Assessment methods of study outcomes | | |
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| <p>Lectures:</p> <ul style="list-style-type: none"> - evaluation of the knowledge with a written exam related to the content of lectures (test, computational and problem questions), awarding marks in laboratory exercises) - continuous estimation in all classes (awarding attendance in lectures, activity and quality of perception). <p>Laboratory exercises:</p> <ul style="list-style-type: none"> - continuous estimating with the tests, - awarding the skill increase, - the evaluation of knowledge and skills connected with the measuring tasks and prepared reports <p>Getting additional points for the activity during classes, in particular:</p> <ul style="list-style-type: none"> - 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 | | |
| Course description | | |
| <p>Psychophysiology of view (structure and function of the eye). The basic values the light - definitions, calculation, measurement. Fundamentals of colorimetry. Construction, principle of operation, operating systems, parameters and characteristics of electric lamps: incandescent, HID and LED. Lighting fixtures: design, performance, characteristics, application. Fundamentals of lighting design.</p> <p>Law and Characteristics of the optical radiation.</p> <p>Applied methods of education:</p> <p>Lecture with multimedia presentation (including drawings, photos, videos) supplemented by examples. Theory presented in close association with practice.</p> | | |
| Basic bibliography: | | |
| <ol style="list-style-type: none"> 1. Żagan W.: Podstawy techniki świetlnej. Ofic. Wyd. Pol. Warszawskiej, Warszawa 2005 2. Hauser J.: Elektrotechnika ? Podstawy elektrotermii i techniki świetlnej, Wyd. PP, Poznań, 2006 3. Laboratorium z techniki świetlnej. Praca zbiorowa. Wyd. Pol. Pozn. nr 1792, Poznań 1989 | | |
| Additional bibliography: | | |
| <ol style="list-style-type: none"> 1. Technika Świetlna &#39;09. Poradnik- Informator. Wyd. PKOś, Warszawa 2009 2. Lighting Handbook, Reference &#38;#38;Application. IES of Nofth America, New York 2010 3. Lighting Standards | | |
| Result of average student's workload | | |
| Activity | Time (working hours) | |
| 1. participation in class lectures | 30 | |
| 2. participation in laboratories | 30 | |
| 3. participate in the consultations on the lectures and laboratory | 10 | |
| 4. preparation to laboratory | 20 | |
| 5. exam preparation | 15 | |
| 6. participation in the exam | 3 | |
| Student's workload | | |
| Source of workload | hours | ECTS |
| Total workload | 108 | 4 |
| Contact hours | 73 | 3 |
| Practical activities | 40 | 2 |