

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject (-)		Code 1010331451010327141
Field of study Information Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 5
Elective path/specialty -	Subject offered in: polish	Course (compulsory, elective) elective
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: - Laboratory: 1 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 hab. inż. Konrad Domke, prof. nadzw. email: konrad.domke@put.poznan.pl tel. 6652397 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		Responsible for subject / lecturer: dr inż. Krzysztof Wandachowicz email: krzysztof.wandachowicz@put.poznan.pl tel. 6652397 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of physics, electronics and electrical engineering
2	Skills	Ability to effectively self-education in a field related to the chosen field of study.
3	Social competencies	Is aware of the need to broaden their competence, willingness to work together as a team
Assumptions and objectives of the course: Gaining knowledge about the sources of heat generation in electronic equipment, computer hardware cooling methods and basic ways of colorimetry and color management in peripheral hardware (screens, monitors)		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. has a basic knowledge of physics, including mechanics, thermodynamics, optics, electricity, magnetism, nuclear physics, solid state physics, including the knowledge necessary to understand the physical phenomena occurring in electronic circuits - [K_W02]		
Skills: 1. can make a critical analysis of the way the hardware, the operating system (or portions thereof) and computer networks - [K_U11] 2. has the ability to self-education, including in order to improve the professional competence - [K_U05]		
Social competencies: 1. are aware of their own responsibility for their work and a willingness to comply with the principles of teamwork and shared responsibility for the tasks performed and the resulting responsibility for decisions - [K_K04]		
Assessment methods of study outcomes		
Lecture: assess the knowledge and skills listed on the written exam grading Laboratory: assessment of knowledge and skills related to the implementation of the tasks your practice, the assessment report performed exercise.		

Course description		
<p>Termokinyki base. Convection, and radiation Conductivity. Ventilation in enclosed spaces. Electronic components as a heat source. Heat flow path. Cooling method, cooling methods intensified. Cooling processors, memory and other computer components.</p> <p>Basics of light. Eye and vision, structure and properties of the eye. Basic laws of light technology. Fundamentals of colorimetry. Additive and subtractive color mixing. Description colorimetric systems. Color management systems for computing devices. Study colorimetric and photometric properties of monitors based on regulatory requirements.</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. Janna W. S. Engineering Heat Transfer 2nd ed., Boca Raton, London, Washington, CRC Press, 2000 2. Ellison G. N. Thermal Computations for Electronics-Conductive, Radiative and Convective Air Cooling. Boca Raton, London, Washington, CRC Press, 2011 3. Żagan W.: Podstawy techniki świetlnej. Oficyna Wydawnicza Politechniki Warszawskiej 2005, 4. Bunting F., Fraser B., Murphy C.: Profesjonalne zarządzanie barwą, wydanie II. Helion 2006 5. Felhorski W., Stanioch W.: Kolorymetria trójchromatyczna. WNT, Warszawa 1973. 6. Schanda J., Handbook of Applied Photometry, chapter 9 Colorimetry. DeCusatis Casimer (EDT). 7. PN-EN 61966: Urządzenia i systemy multimedialne -- Pomiary i zarządzanie kolorami. 8. PN-EN ISO 9241: Wymagania ergonomiczne dotyczące pracy biurowej z zastosowaniem terminali wyposażonych w monitory ekranowe 9. PN-EN ISO 13406: Wymagania ergonomiczne dotyczące pracy biurowej z zastosowaniem monitorów ekranowych z płaskim 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. Hering M.: Termokinyka dla elektryków. Warszawa: WNT, 1980 2. Yunus A. Cengel : Heat and mass transfer ? A practical approach. Mc Graw Hill, N.York, 2006 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	30	
2. Participation in laboratory activities	15	
3. Preparation for laboratory classes, development performed exercises, preparing to pass the course	60	
4. Consultation, reckoning	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	115	4
Contact hours	45	2
Practical activities	15	2