

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Ergonomics		Code 1010531121011120136
Field of study Automatic Control and Robotics	Profile of study (general academic, practical) general academic	Year /Semester 1 / 2
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: 15 Classes: - Laboratory: - Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: prof. dr hab. inż. Edwin Tytyk email: edwin.tytyk@put.poznan.pl tel. 61-665-33-77; 61-665-33-74 Faculty of Engineering Management ul. Strzelecka 11 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has consolidate knowledge from mathematics, physics and human anatomy taught in secondary school.
2	Skills	Student have skills in solving the main problems from technic area and associate of facts from different areas of knowledge, gain the information from recommended sources. Student is aware of the necessity of continuous learn through his all life
3	Social competencies	Student ought to present such attitude as honesty, responsibility, endurance, curiosity, creativity, self-culture, respect to others people.
Assumptions and objectives of the course: The objective of the subject is to present basic issues concerning ergonomics and Occupational Health and Safety in modern companies, especially in automation and robotics systems, and in everyday life. Patterns for solving problems, will be explained, concerning the formation of conditions at work with use of, for example, diagnostics and reduction of occupational burdens and designing ergonomic solutions. Relations between technique, human well-being, ecology, and economy will be presented.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Student knows and understand the influence of the automation and robotics engineering to natural environment. Student has the ordered knowledge necessary for the understanding conditions exceeding beyond technical aspects, knows and understands the principles of Occupational Safety and Health which refer to the automation and robotics engineering - [K_W24]		
Skills: 1. Student is aware - by formulating and solving tasks concerned the automation and robotics engineering - take into account their beyond technical aspects, i.e. environmental, economy and law. - [-]		
Social competencies: 1. Student is aware of the importance and comprehends of non-technical aspects of the automation and robotics engineering and their consequences, including the influence to the natural environment, work environment and the responsibility for decisions he makes, cooperate in activities for social and natural environments - [K_K2]		
Assessment methods of study outcomes		

Written multi-choice test after full cycle of lectures, Checking of attendance in lectures.		
Course description		
Genesis of ergonomics on the background of technology and science development. Ergonomics v. OSH - economical aspects. Compound sciences and character of ergonomics. Human ? technical object system and its environment as a work place and work conditions. Contemporary trends in ergonomic researches. Methods of ergonomic diagnosis. Analysis of physical burdens in work and thermal balance of human body. Analysis of psychical burdens connected with work. Principles of burden optimization. Processes of perception and transformation of information. Principles of signaling and controlling devices choice. Designing of spatial parameters of work place, machines and hand tools on the basis of anthropometric data. Evaluation and designing of work environment features (mechanical vibrations, noise, micro-climate parameters, lighting, injurious radiation, air pollutions). Principles of ergonomic design method. Examples of ergonomic design of automation and robotics work places by: mechanical working, assembling, controlling, computerized office. Ergonomics for disabled and senior people.		
Basic bibliography:		
<ol style="list-style-type: none"> 1. Ergonomia w technice, Edwin Tytyk, Marcin Butlewski, Wydawnictwo Politechniki Poznańskiej, Poznań, 2011 2. Projektowanie ergonomiczne, Edwin Tytyk, Wydawnictwo Naukowe PWN, Warszawa, 2001 3. Diagnoza ergonomiczna stanowisk pracy, Ewa Górská, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998 4. Ergonomia w projektowaniu stanowisk pracy. Podstawy teoretyczne, Ewa Górská, Edwin Tytyk, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998 5. Ergonomia z elementami bezpieczeństwa i ochrony zdrowia w pracy, Wiesława M. Horst i współautorzy, Wyd. PP, Poznań, 2011 6. Ergonomia produktu. Ergonomiczne zasady projektowania produktów, Jan Jabłoński (red.), Wydawnictwo Politechniki Poznańskiej, Poznań, 2006 		
Additional bibliography:		
<ol style="list-style-type: none"> 1. Bezpieczeństwo i higiena pracy, ergonomia i ochrona własności intelektualnych. Wydawnictwo Politechniki Poznańskiej, Poznań, 2017 2. Podstawy ergonomii i fizjologii pracy, Jerzy Olszewski, Wyd. Akademia Ekonomiczna, Poznań, 1997 3. Ryzyko zawodowe na stanowisku pracy. Ergonomiczne czynniki ryzyka. Część I. Wiesława M. Horst. Wydawnictwo Politechniki Poznańskiej, Poznań, 2004 4. Atlas antropometryczny populacji polskiej, Ewa Nowak, Wydawnictwo Instytutu Wzornictwa Przemysłowego, Warszawa, 2000 5. Dz.U. 2009.105.869, Rozporządzenie Rady Ministrów z dnia 30 czerwca 2009 r. w sprawie chorób zawodowych 		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	15	
2. Study of recommended literature	15	
3. Participations in consultations	5	
4. Participation in the test and discussion of the result	10	
Student's workload		
Source of workload	hours	ECTS
Total workload	45	2
Contact hours	20	1
Practical activities	0	0