

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Macroergonomics		Code 1011102231011120211
Field of study Safety Engineering - Full-time studies - Second-	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
Elective path/specialty Ergonomics and Work Safety	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 15 Classes: 30 Laboratory: - Project/seminars: 15		No. of credits 3
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		ECTS distribution (number and %)
Responsible for subject / lecturer: dr hab.inż. Aleksandra Jasiak, prof.nadzw email: Aleksandra.Jasiak@put.poznan.pl tel. +48(61) 665 3374 Faculty of Engineering Management ul. Strzelecka 11 60-965 Poznań		Responsible for subject / lecturer: prof. dr hab. inż. Leszek Pacholski email: leszek.pacholski@put.poznan.pl tel. +48(61) 665 3374 Faculty of Engineering Management ul. Strzelecka 11 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has a basic knowledge within ergonomic issues of the third-generation and management.
2	Skills	Student is able to properly analyze the causes and course of ergonomic phenomena as well as to interpret the results of these observations.
3	Social competencies	Student is able to identify priorities for implementation of specified by himself or others tasks. The student is able to interact in a group.
Assumptions and objectives of the course: Basic knowledge within ergonomic issues of the third-generation and management.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student has expanded knowledge of macroergonomics. - [K2A_W03] 2. Student knows the rules and concepts relating to the development of macroergonomic zones of business cooperation. - [K2A_W034]		
Skills:		
1. Student can acquire, integrate, interpret data from literature, database or other properly matched sources, both in English or other foreign language accepted as an international language of communication within Safety Engineering, as well as to draw conclusions, formulate and justify opinions. - [K2A_U1] 2. Student can create, both in English and Polish language, a well- documented report of problems within Safety Engineering, which present the results of their own research. - [K2A_U3] 3. Student has self-study ability and comprehends it - [K2A_U5] 4. Student can apply information-communicative techniques to deal with tasks that are typical of engineering activity. - [K2A_U7] 5. Student can, while formulating and solving engineering tasks, discern their systemic and non-technical aspects and also socio-technical, organizational and economic approach. - [K2A_U10] 6. Student has got the preparation that is indispensable to be able to work in an industrial environment and also knows safety rules connected with a given work along with the ability to impose their use in practice. - [K2A_U13] 7. Student, according to predetermined specifications, design and implement a simple device, object, system or process that is typical of Safety Engineering, by using methods, techniques and tools and solve complex engineering tasks that are characteristic of Safety engineering (including uncommon cases which have exploratory component). - [K2A_U18]		

Social competencies:
1. Student understands the need and knows means how to self-study (first, second and third cycle studies, postgraduate studies, qualification courses)- improving professional, personal and social competence; can argue the need to learn for the whole life . - [K2A_K1]
2. Student is fully aware of the responsibility that he has taken for his own work and expresses readiness to comply with the rules of team work as well as responsibility for mutually realized and completed tasks. - [K2A_K3]
3. Student can determine some causal relationships in the process of targets implementation and rank pertinence of alternative or competitive tasks. - [K2A_K4]

Assessment methods of study outcomes
Formative assessment: Projects: on the basis of assessment of particular project elements Lectures: on the basis of oral or written answers to the questions connected with the covered lecture content from current and previous lectures.
Collective assessment: Laboratories: on the basis of grades from tests and an assignment Projects: on the basis of project work evaluation Lectures: on the basis of the final exam results

Course description
Three stages of the evolution of ergonomics-macroergonomics. Macroergonomic paradigm regarding the development of an area describing the human factor in technology. Macroergonomic information system (valuing and decomposition of the criteria. Formal synthesis of evaluations . The credibility of the macroergonomic information. A criteria problem in a macroergonomic design (the complexity of relationships in macroergonomic systems. Basic methodological assumptions of non-traditional design information). Macroergonomic diagnostics (Model. Concept. The issue of the diagnostic conditions.Focus list). Intelligent macroergonomic system. The development of macroergonomic zones of business cooperation.

Basic bibliography:
1. Makroergonomia (Macroergonomics), Pacholski L., Jasiak A., Wyd. Politechniki Poznańskiej, Poznań , 2011.
2. Kryterium czynnika ludzkiego w projektowaniu systemów wytwarzania (The criterion of the human factor in the design of manufacturing systems), Jasiak A., Wyd. Politechniki Poznańskiej, Rozprawy nr 283, Poznań, 1993.
3. Reengineering.Reformowanie procesów biznesowych w przedsiębiorstwie (Reforming business processes in an enterprise), Pacholski L., Cempel W., Pawlewski P., Wyd.PP, Poznań, 2009.
4. Ergonomia. (Ergonomics), Pacholski L., (red.), Wyd. PP, Poznań, 1986.
5. Macroergonomics: A system approach for dramatically improving occupational health and safety., Hendrick H.,W., IOS Press, Amstardam, 1998.

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	15
2. Participation in classes	30
3. Participation in project classes	15
4. Preparation for project classes	20
5. Preparation for written assignment (based on lectures)	15
6. Consultations	10
7. Exam	2
8. Overview of exam results	2

Student's workload		
Source of workload	hours	ECTS
Total workload	109	3
Contact hours	74	2

Practical activities	55	1
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