

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Measurement Methods in Safety and Ergonomics		Code 1011105221011126441
Field of study Safety Engineering - Part-time studies - Second-	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
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) part-time	
No. of hours Lecture: 8 Classes: 12 Laboratory: - 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		ECTS distribution (number and %)
Responsible for subject / lecturer: Adam Górny email: adam.gorny@put.poznan.pl tel. 61 665 34 07 Wydział Inżynierii Zarządzania ul. Strzelecka 11, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	A student has basic knowledge of measurement techniques.
2	Skills	The student can perform the measurement using a simple measuring tools.
3	Social competencies	The student is aware of the role and importance of measurement to ensure safety.
Assumptions and objectives of the course: Understanding the issues from the scope of the measurement technology applied for the assessment of the working environment.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Knows the data and basic standards, basic statistical distributions of random variables, confidence intervals, statistical hypotheses testing, statistical measurements of phenomena interdependencies, correlation, analysis of phenomena dynamics, drawing techniques, designing statistical experiments - [K2A_W02] 2. Knows the determining factors for safety, the types of safety, ways and mechanisms to preserve safety, safety systems, basic safety entities, organizations, bodies and structures responsible for safety, safety strategies, forecasting the state of safety, preventive measures for safety - [K2A_W12] 3. Knows the methodological problems of ergonomic diagnosis, diagnostic techniques, psychosomatic workload, assessment of ergonomics and safety, methodology of measuring the body burdens arising from the way the work is performed, rules concerning the achievement of the ergonomic conditions in relation to a performance of a human-object system - [K2A_W25]		
Skills:		

<p>1. 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_U01]</p> <p>2. Can apply various techniques in order to communicate in occupational environment and other environments - [K1A_U02]</p> <p>3. 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_U03]</p> <p>4. Can prepare and give oral presentation relating to detailed issues within the realm of Safety Engineering in Polish and other foreign language - [K2A_U04]</p> <p>5. Has self-study ability and comprehends it - [K2A_U05]</p> <p>6. Can, while formulating and solving engineering tasks, discern their systemic and non-technical aspects and also socio-technical, organizational and economic approach - [K1A_U10]</p> <p>7. Can come up with a suggestion how to make use of state-of-the art technology (techniques and technology) within the studied subject - [K1A_U12]</p> <p>8. 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 - [K1A_U13]</p> <p>9. Student can, according to a given specification, design and operate simple equipment, object, system or a process, typical for Safety Engineering, while using appropriate methods, techniques and tools, as well as solve complex engineering tasks, characteristic of Safety Engineering (including some uncommon ones which possess research component) - [K1A_U18]</p>
<p>Social competencies:</p> <p>1. 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 argument the need to learn for the whole life - [K2A_K01]</p> <p>2. Ma świadomość odpowiedzialności za pracę własną oraz gotowość 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 taskssię zasadom pracy w zespole i ponoszenia odpowiedzialności za wspólnie realizowane zadania - [K1A_K03]</p> <p>3. Can determine some causal relationships in the process of targets implementation and rank pertinence of alternative or competitive tasks - [K1A_K04]</p>

Assessment methods of study outcomes	
<p>Formative assessment::</p> <ul style="list-style-type: none"> - w zakresie zajęć ćwiczeniowych: na podstawie sprawozdań z wykonanych ćwiczeń, - w zakresie zajęć wykładowych: na podstawie odpowiedzi pisemnych na pytania dotyczące materiału przerobionego na wykładzie. <p>Collective assessment:</p> <ul style="list-style-type: none"> - w zakresie zajęć ćwiczeniowych: średnia z ocen za przygotowane sprawozdania, - w zakresie zajęć wykładowych: zaliczenie w formie testu, w którym co najmniej jedna odpowiedź jest poprawna (odpowiedź punktowana jest jako 0 lub 1), lub odpowiedzi pisemne na pytania otwarte (odpowiedzi punktowane są w skali od 0 do 3); zaliczenie otrzymuje się po uzyskaniu co najmniej 31% możliwych do zdobycia punktów. 	
Course description	
<p>Theory of measurements. Methods and accuracy of measurements. Types of errors. The accuracy of measuring devices. The accuracy and precision of measurements. Uncertainty of the measurements. The rounding results. System of units (SI). Measurements of the material working environment. Legal regulations on the measurements. Competence of calibration and research laboratories. Methods of measuring the risk assessment.</p>	
Basic bibliography:	
<p>1. Koradecka D. (red.), Bezpieczeństwo pracy i ergonomia (Occupational safety and ergonomics), t. I i II, Centralny Instytut Ochrony Pracy, Warszawa, 1997</p>	
Additional bibliography:	
<p>1. regulacje prawne dotyczące zasad wykonywania pomiarów środowiska pracy (legal regulations on the measurement principles of the working environment)</p>	
Result of average student's workload	
Activity	Time (working hours)

1. Participation in lectures	8	
2. Participation in classes	12	
3. Preparation for classes	10	
4. Preparation for the written credits (based on lecture)	7	
5. Overview of the credits	2	
6. Writing a report based on classes	6	
Student's workload		
Source of workload	hours	ECTS
Total workload	45	4
Contact hours	22	2
Practical activities	12	2