

| <b>STUDY MODULE DESCRIPTION FORM</b>                                                                                                                                                                                                                                                                                               |                                                                 |                                                                                                                                                                                                                    |
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| Name of the module/subject<br><b>Ergonomics in Technology</b>                                                                                                                                                                                                                                                                      |                                                                 | Code<br><b>1011102211011126457</b>                                                                                                                                                                                 |
| Field of study<br><b>Safety Engineering - Full-time studies - Second-</b>                                                                                                                                                                                                                                                          | Profile of study (general academic, practical)<br><b>(brak)</b> | Year /Semester<br><b>1 / 1</b>                                                                                                                                                                                     |
| Elective path/specialty<br><b>Ergonomics and Work Safety</b>                                                                                                                                                                                                                                                                       | Subject offered in:<br><b>Polish</b>                            | Course (compulsory, elective)<br><b>obligatory</b>                                                                                                                                                                 |
| Cycle of study:<br><b>Second-cycle studies</b>                                                                                                                                                                                                                                                                                     | Form of study (full-time, part-time)<br><b>full-time</b>        |                                                                                                                                                                                                                    |
| No. of hours<br>Lecture: <b>30</b> Classes: <b>15</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>                                                                                                                                                                                                                              |                                                                 | No. of credits<br><b>2</b>                                                                                                                                                                                         |
| Status of the course in the study program (Basic, major, other)<br><b>(brak)</b>                                                                                                                                                                                                                                                   |                                                                 | (university-wide, from another field)<br><b>(brak)</b>                                                                                                                                                             |
| Education areas and fields of science and art<br><b>technical sciences</b>                                                                                                                                                                                                                                                         |                                                                 | ECTS distribution (number and %)<br><b>2 100%</b>                                                                                                                                                                  |
| <b>Responsible for subject / lecturer:</b><br>prof. dr hab. inż. Edwin Tytyk<br>email: edwin.tytyk@put.poznan.pl<br>tel. tel. 61-665-33-77; 61-665-33-74<br>Wydział Inżynierii Zarządzania<br>60-965 Poznań, ul. Strzelecka 11                                                                                                     |                                                                 | <b>Responsible for subject / lecturer:</b><br>mgr inż. Aleksandra Dewicka<br>email: aleksandra.dewicka@put.poznan.pl<br>tel. 61-665-33-74<br>Faculty of Engineering Management<br>60-965 Poznań, ul. Strzelecka 11 |
| <b>Prerequisites in terms of knowledge, skills and social competencies:</b>                                                                                                                                                                                                                                                        |                                                                 |                                                                                                                                                                                                                    |
| 1                                                                                                                                                                                                                                                                                                                                  | <b>Knowledge</b>                                                | basic knowledge of ergonomics                                                                                                                                                                                      |
| 2                                                                                                                                                                                                                                                                                                                                  | <b>Skills</b>                                                   | aptitude for technical thinking                                                                                                                                                                                    |
| 3                                                                                                                                                                                                                                                                                                                                  | <b>Social competencies</b>                                      | group work                                                                                                                                                                                                         |
| <b>Assumptions and objectives of the course:</b><br>The main objective of the course is to acquaint the students with a problematic aspects of ergonomics in industrial applications and familiarize with the methods of shaping a material working environment but also rules of ergonomic diagnosis and technical objects design |                                                                 |                                                                                                                                                                                                                    |
| <b>Study outcomes and reference to the educational results for a field of study</b>                                                                                                                                                                                                                                                |                                                                 |                                                                                                                                                                                                                    |
| <b>Knowledge:</b>                                                                                                                                                                                                                                                                                                                  |                                                                 |                                                                                                                                                                                                                    |
| 1. . has extensive knowledge of recognizing the association of a certain problem to a given discipline - [[K2A_W01]]                                                                                                                                                                                                               |                                                                 |                                                                                                                                                                                                                    |
| 2. knows an in-depth characterization of dependencies within a given discipline - [[K2A_W02]]                                                                                                                                                                                                                                      |                                                                 |                                                                                                                                                                                                                    |
| 3. knows the meaning of most dependencies present in a given discipline for Security Engineering - [[K2A_W03]]                                                                                                                                                                                                                     |                                                                 |                                                                                                                                                                                                                    |
| 4. knows detailed dependencies present in a given discipline - [[K2A_W10]]                                                                                                                                                                                                                                                         |                                                                 |                                                                                                                                                                                                                    |
| 5. has basic knowledge of equipment and machines - [[K2A_W15]]                                                                                                                                                                                                                                                                     |                                                                 |                                                                                                                                                                                                                    |
| <b>Skills:</b>                                                                                                                                                                                                                                                                                                                     |                                                                 |                                                                                                                                                                                                                    |
| 1. can acquire, integrate, interpret data from literature, database or other properly matched sources - [[K2A_U1]]                                                                                                                                                                                                                 |                                                                 |                                                                                                                                                                                                                    |
| 2. can create, both in English and Polish language, a well- documented report of problems within Security Engineering - [[K2A_U3]]                                                                                                                                                                                                 |                                                                 |                                                                                                                                                                                                                    |
| 3. can prepare and give oral presentation relating to detailed issues within the realm of Security Engineering in Polish and other foreign language. - [[K2A_U4]]                                                                                                                                                                  |                                                                 |                                                                                                                                                                                                                    |
| 4. can, while formulating and solving engineering tasks, discern their systemic and non-technical aspects and also socio-technical, organizational and economic approach - [[K2A_U10]]                                                                                                                                             |                                                                 |                                                                                                                                                                                                                    |
| 5. has got the preparation that is indispensable to be able to work in an industrial environment and also knows security rules connected with a given work along with the ability to impose their use in practice - [[K2A_U13]]                                                                                                    |                                                                 |                                                                                                                                                                                                                    |
| 6. can, according to a given specification, design and operate simple equipment, object, system or a process, typical for Security Engineering - [[K2A_U18]]                                                                                                                                                                       |                                                                 |                                                                                                                                                                                                                    |
| <b>Social competencies:</b>                                                                                                                                                                                                                                                                                                        |                                                                 |                                                                                                                                                                                                                    |

1. 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]]
2. can determine some causal relationships in the process of targets implementation and rank pertinence of alternative or competitive tasks - [[K2A\_K4]]
3. is conscious of his social role as a student of technical university, especially comprehends the need to formulate a pass the information to the society - [[K2A\_K7]]

| <b>Assessment methods of study outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------|
| Credits (self-students works based);<br>Written exam (test-based)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |      |
| <b>Course description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |      |
| The position of ergonomics in technology. Designing material working environment. Technical solutions how to reduce the noise, vibrations, dust and radiation. Rules for ergonomic designing workplaces. The role of ergonomics during the application of modern technologies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |      |
| <b>Basic bibliography:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                      |      |
| <ol style="list-style-type: none"> <li>1. Ergonomia w technice (Ergonomics in technology), Edwin Tytyk, Marcin Butlewski, Politechnika Poznańska, Poznań, 2011</li> <li>2. Projektowanie ergonomiczne (Ergonomic design), Edwin Tytyk, Wydawnictwo Naukowe PWN, Warszawa, 2001</li> <li>3. Ergonomia (Ergonomics), Leszek Pacholski (red.), Politechniki Poznańskiej, Poznań, 1986</li> <li>4. Diagnoza ergonomiczna stanowisk pracy (Ergonomic diagnosis of workplace); Ewa Górską, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998</li> </ol>                                                                                                                                                                                                                                                                              |                      |      |
| <b>Additional bibliography:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |      |
| <ol style="list-style-type: none"> <li>1. Ergonomia produktu (Product ergonomics). Ergonomiczne zasady projektowania produktów; Jan Jabłoński (red.), Wydawnictwo Politechniki Poznańskiej, Poznań, 2006</li> <li>2. Ergonomia z elementami bezpieczeństwa i ochrony zdrowia w pracy (4 tomy) (Ergonomics with elements of security and health protection at work); Wiesława Horst (red.), Wydawnictwo Politechniki Poznańskiej, Poznań, 2011</li> <li>3. Atlas antropometryczny populacji polskiej (Anthropometric atlas op Polish population); Ewa Nowak, Wydawnictwo Instytutu Wzornictwa Przemysłowego, Warszawa, 2000</li> <li>4. Ergonomia w projektowaniu stanowisk pracy. Podstawy teoretyczne (Ergonomics in workplace design); Ewa Górską, Edwin Tytyk, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1998</li> </ol> |                      |      |
| <b>Result of average student's workload</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |      |
| Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Time (working hours) |      |
| 1. lecture                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 30                   |      |
| 2. practicals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15                   |      |
| 3. individual work                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 15                   |      |
| <b>Student's workload</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |      |
| Source of workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | hours                | ECTS |
| Total workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 60                   | 2    |
| Contact hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 45                   | 2    |
| Practical activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 15                   | 1    |