Detailed description of the course
(COURSE CARD)

Name of the class: Informatics and information technologies
Course code: ROZ_ZIP_S1Is7_W_03
Belonging to a group of classes:
Type of classes: general
obligatory
Field of study: Management and Production Engineering
Study level: first-cycle studies
Study profile: general academic
Form of studies: stationary
Specialty (specialization):
Year of studies: 1
Study semester: 1
Forms of conducting classes, along with the number of teaching hours:
lectures - 15 h
laboratories - 15 h
Language / s in which the classes are conducted: English
Number of ECTS credits *(according to the study program)***:** 4
* - leave appropriate

1. Course objectives:

   Understanding the basic concepts and main theoretical and practical issues in the field of computer science and information technology along with the ability to use information technology tools in the field of production engineering

2. Relating the directional learning outcomes to the forms of conducting classes and the methods of verifying and assessing the learning outcomes achieved by the student:

symbol	**expected learning outcomes** *student who completed the classes:*	**forms of conducting classes**	**ways of verifying and assessing the learning effect**
Knowledge: knows and understands			
K1A_W08	Selected issues of computer science and information technology as well as the basics of signal analysis and data processing methods.	Lecture / laboratory	written test, participation in discussion, observation, active participation in classes
K1A_W08_01	The student has a basic understanding of the principles of operation of information and computer systems, and knows the possibilities and limitations of the most commonly used solutions.		
K1A_W08_02	The student knows the legal issues related to copyright, software legality and personal data protection		
K1A_W08_03	The student knows the legal issues related to copyright, software legality and personal data protection		
K1A_W08_04	The student has knowledge of information security, threats and methods of information protection and recovery		
Skills: can			
K1A_U14	use the acquired knowledge - formulate and solve complex and unusual problems and perform tasks in an innovative way in variable and not fully predictable conditions by: - proper selection of sources and information derived from them, evaluation, critical analysis and synthesis of this information, -selection and use of appropriate methods and tools, including advanced information and communication techniques (ICT)	Lecture / laboratory	written test, participation in discussion, observation, active participation in classes
K1A_U14_01	The student is able to solve tasks and problems in management and production engineering using various types of programs, applications and Internet tools (spreadsheets, word processors, presentation programs), as well as create their own simple tools (VBA programming language)		

K1A_U14_02	The student is able to solve complex and unusual problems in the field of management and production engineering with the use of properly selected information systems and information and communication techniques (ICT)		
Social Competence: is ready for			
K1A_K01	critical evaluation of knowledge and received content	Lecture / laboratory	written test, participation in discussion, observation, active participation in classes
K1A_K01_01	The student has the ability to effectively communicate in business with the use of modern IT tools		
K1A_K01_02	The student has the ability to search for the necessary information on the Internet and transform it into useful knowledge, and additionally constantly improves his qualifications		

3. Curriculum content ensuring the achievement of learning outcomes (according to the study program):

   Structured knowledge in the understanding of basic concepts and main issues in the field of computer science and information technology as well as the ability to use information tools in the field of mechanical engineering in practice.

4. Description of the method of determining ECTS credits:

Form of activity	Number of hours / ECTS credits
Number of hours of classes, regardless of the form of their conduct	30/1
Student's own work 1 * Preparation for the final test of the lecture	30/1
Student's own work 2 * Preparation for laboratory classes	30/1
Student's own work 3 * Student's own work: preparation for the laboratory test	30/1
Other**	
Sum of hours	**120**
Number of ECTS credits assigned to classes	**4**

Explanations:
* - student's own work, the forms of activity should be listed, e.g. preparation for classes, interpretation of results, preparation of a report on classes, preparation for the exam, reading the literature, preparation of a project, presentation, written work, report, etc.
** - other, e.g. additional hours of classes

5. Summary indicators:
   - number of hours of classes and number of ECTS points in classes with direct participation of academic teachers or other persons conducting classes and students: 30/1
   - number of hours of classes and number of ECTS points in classes related to the scientific activity conducted at the Silesian University of Technology in the discipline or disciplines to which the field of study is assigned - in the case of studies with a general academic profile: 120/4
   - number of hours of classes and number of ECTS points in classes that shape practical skills - in the case of studies with a practical profile:
   - number of hours of classes conducted by academic teachers employed at the Silesian University of Technology as their primary workplace: 30

6. Persons conducting individual forms of classes (name, surname, academic degree or degree in the field of art, title of professor, business e-mail address):

   Mateusz Naramski, PhD Eng., mateusz.naramski@polsl.pl

7. Detailed description of the forms of conducting classes:

   1) lectures:

   - detailed program content:

   1. Introduction to computer science - computer structure, history, development and the role of individual components.

   2. Information encoding - number systems: binary, octal and hexadecimal, Gray code, QR codes, asci, unicode.

   3. Algorithms, block diagrams and programming - Boolean algebra, control instructions, block diagrams

   4. Computer networks - DNS, fixed and dynamic IP address, MAC address, basics of network diagnosis, methods and techniques of data transmission, information units,

   5. Data security - information security policy, threats, basic concepts: passwords, data encryption, authentication, authorization,

   6. License rights and operating systems - types of licenses and the terms of use of the software dictated by them, open and closed software, history of creation and differences between operating systems: UNIX, Linux, Windows, MacOS, Android

7. Utility applications supporting management and design

- methods of education used, including distance learning methods and techniques:

Multimedia presentation, discussion, interactive tests to verify the understanding of the material developed in class (Kahoot platform).

- the form and criteria of pass, including the rules of re-pass, as well as the conditions of admission for the exam:

Completion of the course takes the form of a written assignment (multiple-choice test). The condition for obtaining a credit for the course is to obtain a positive result of the final test from the lectures and a positive grade from the final test during the laboratory classes.

- organization of classes and the rules of participation in the classes, indicating whether the student's presence in the classes is obligatory,

Lecture classes are held on the dates specified in the timetables and are in a full-time form. Attendance at lectures is not obligatory.

2) description of other forms of teaching:

laboratories:

- detailed program content:

1. Data analysis and processing (Use of commercial and non-commercial applications in the automation of computational processes, conditions and multivariate in the analysis of the computational process, matrix calculus, pivot tables and their importance in multi-faceted data analysis, data visualization, optimization)

2. Local and remote applications (cloud computing, data protection)

3. Presentation graphics (creating automatic multimedia presentations, personalized presentation designs)

4. The use of a word processor to automate work in multi-page and shared documents (style management, advanced page management, automatic tables of contents, drawings, tables, etc., integration with external data sources, mail merge)

5. Services in IT networks (Basic rules of network security, advanced information retrieval in computer networks)

6. The use of Microsoft Visual Basic in office applications to create unconventional solutions

- methods of education used, including distance learning methods and techniques:

Tasks and exercises performed using a dedicated computer application. Posting instructions, examples and tasks to be solved by the student on the Remote Education Platform of the Silesian University of Technology.

- the form and criteria of pass, including the rules of re-pass, as well as the conditions of admission for the exam:

Completion of the course takes the form of written work done on a computer, by solving tasks similar to the examples presented during laboratory classes.

- organization of classes and the rules of participation in the classes, indicating whether the student's presence in the classes is obligatory,

Laboratory classes are held on the dates specified in the class schedules and are in a full-time form. Attendance at laboratory classes is obligatory, with the student's right to one unexcused absence.

8. Description of the method of determining the final grade (rules and criteria for awarding the grade, as well as the method of calculating the grade in the case of classes which include more than one form of teaching taking into account all forms of conducting classes and all dates of exams and credits, including re-sit):

   Arithmetic mean, rounded to five tenths, from the final grades obtained by the student in the laboratory test and the lecture test.

9. The method and procedure for filling up arrears resulting from:

   – student's absence during classes,

     Depending on the form of the missed classes, it is determined by the tutor during consultations in accordance with the forms of conducting classes and the conditions of passing specified in point 7 of this sheet.

   – differences in study programs of people transferring from another field of study, from another university or resuming studies at the Silesian University of Technology,

     Depending on the form of the missed classes, it is determined by the tutor during consultations in accordance with the forms of conducting classes and the conditions of passing specified in point 7 of this sheet.

10. Prerequisites and additional requirements, taking into account the sequence of classes:

    Basic knowledge of computer science and information technology at high school level.

11. Recommended literature and teaching aids:

    PL:

• Wrycza S.: Informatyka ekonomiczna. Podręcznik akademicki, Polskie Wydawnictwo Ekonomiczne , 2010.

• Kisielnicki J.: Zarządzanie i informatyka, Wydawnictwo Placet, 2014 Warszawa.

• Informatyka w zarządzaniu w przykładach i zadaniach z wykorzystaniem arkusza kalkulacyjnego MS Excel, praca zbiorowa pod red. Iwony Zdonek, Wydawnictwo Politechniki Śląskiej, Gliwice 2011.

• Hysa B., Piekoszewska B., Rakowiecka K., Sobota M., Sołtysik-Piorunkiewicz A., Zdonek D., Zdonek I.: Laboratorium z podstaw informatyki w zarządzaniu. Część II: Wprowadzenie do MS Windows; MS Word,Wydawnictwo Politechniki Śląskiej, Gliwice 2003

EN:

• Gonzalez, T., Diaz-Herrera, J., & Tucker, A. (Eds.). (2014). Computing Handbook: Computer Science and Software Engineering (Vol. 1). CRC Press.

• Tucker, A. B. (Ed.). (2004). Computer science handbook. CRC press.

Additional items:

PL:

• Zawiła-Niedźwiecki J. (red.): Informatyka gospodarcza, tom 1, Wydawnictwo C.H. Beck, Warszawa 2010

• Kowalczyk G.: Word 2013 PL. Kurs, Helion 2013

• Walkenbach J.: Excel 2016 PL. Biblia, Helion 2016

EN:

• Microsoft MS Excel Manuals: https://support.microsoft.com/en-us/excel

12. Description of the competences of the lecturers (e.g. publications, professional experience, certificates, training, etc. related to the curriculum content implemented during the classes):

    Experience in conducting classes in the following subjects in previous years: computer science and information technologies, computer science, information technology in management, etc.

    Selected publications:

    Herman K., Naramski M., Szromek A.: Wykorzystanie mediów internetowych w promocji marki zakładów lecznictwa uzdrowiskowego [w:] A. R. Szromek (red.): Wybrane aspekty zarządzania zakładem uzdrowiskowym. Proksenia, Kraków 2016. ISBN: 978-83-60789-63-6.

    Naramski M.: Promocja śląskich obiektów turystycznych za pośrednictwem aplikacji mobilnych. [w:] Głuchowski J., Spyra Z., Maciąg J. (red.): Nowe media i technologie we współczesnej komunikacji marketingowej, Prokesenia, Kraków 2015. ISBN 978-83060789-62-9

    Herman K., Szromek A.R., Naramski M.: Sprawność wykorzystania narzędzi komunikacji e-mailowej w sprzedaży produktu turystycznego. [w:] Zeszyty Naukowe Politechniki Śląskiej seria Organizacja i Zarządzanie z.68,Wyd. Pol. Śl., Gliwice 2014. ISSN: 1641-3466.

    Naramski M., Szromek A.R., Herman K.: Analiza porównawcza wybranych stron internetowych służących do przeprowadzania badań ankietowych. [w:] Zeszyty Naukowe Politechniki Śląskiej seria Organizacja i Zarządzanie z.68,Wyd. Pol. Śl., Gliwice 2014. ISSN: 1641-3466.

13. Other informations:
    lack