COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Faculty of Electrical Engineering</td></tr>
<tr><td>Field of study</td><td colspan="5">Electrical and Electronics Engineering</td><td colspan="2">Degree level and programme type</td><td colspan="2">bachelor's degree, full time programme</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="5">-</td><td colspan="2">Study profile</td><td colspan="2">-</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="5" rowspan="2">Databases Systems and Security</td><td colspan="2">Course code</td><td colspan="2">IS-FEE-10075S</td></tr>
<tr><td colspan="2">Course type</td><td colspan="2">elective</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td colspan="2">summer</td></tr>
<tr><td>15</td><td></td><td></td><td></td><td>30</td><td></td><td></td><td>No. of ECTS credits</td><td colspan="2">4</td></tr>
<tr><td>Entry requirements</td><td colspan="9">-</td></tr>
<tr><td>Course objectives</td><td colspan="9">To familiarize students with the knowledge of database systems and database languages. To help them acquire the skills of designing and using databases and database processing in different systems.</td></tr>
<tr><td>Course content</td><td colspan="9">Lecture: Introduction to database, basic terminology. History of database system development as well as their position and role in information system. Concept of relational model of data: terminology of relation, modelling of connections, notion of data integrity. Other models of data. Basics of SQL: definition and modification of data, queries, control of data. Design and management of a database: user interface, processing and optimisation of queries, protection, encoding and restoration of data. Processing of transactions. Development trends of database systems.
Specialization workshop: Design, programming and implementation of a database: modelling of a database and its constraints. Standards of SQL language: key words, identifiers, names, notation; definition, manipulation and connectivity of data. Verifications of data integrity, connections, queries, subqueries, transactions on testing data. Forming and processing of queries, management of memory and transactions.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">Informative and problem lecture, discussions, implementation of projects</td></tr>
<tr><td>Assessment method</td><td colspan="9">Lecture - written test; Specialization workshop - evaluation of projects, verification of preparation for classes</td></tr>
<tr><td>Symbol of learning outcome</td><td colspan="7">Learning outcomes</td><td colspan="2">Reference to the learning outcomes for the field of study</td></tr>
<tr><td>LO1</td><td colspan="7">The student knows the basic concepts of a relational data model, design techniques and security of databases.</td><td colspan="2"></td></tr>
<tr><td>LO2</td><td colspan="7">The student can develop documentation of the project task implementation, prepare and introduce a presentation on the implementation of the project task.</td><td colspan="2"></td></tr>
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LO3	The student can choose solutions for the designed database, evaluate and compare design solutions and can discuss their results.	
LO4	The student is ready to work in a team, to think and act creatively.	
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	final test, documentation of the project	L, SW
LO2	documentation and presentation of the project	SW
LO3	report on project implementation and discussion on the project	SW
LO4	discussion on the project, observation of students 'work in classes	SW
Student workload (in hours)		No. of hours
Calculation	Lecture attendance	15
	Participation in seminar workshop	30
	Preparation for seminar workshop	15
	Completion of project tasks (including work on reports)	20
	Participation in student-teacher sessions related to the classes	5
	Preparation for and participation in the final test	20
	TOTAL:	105

Quantitative indicators	HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation	50	2
Student workload – practical activities	85	3

Basic references	1. Kroenke D.M., Auer D.J.: Database concepts, Upper Saddle River: Pearson Education, 2011. 2. Garcia-Molina H., Ullman J.D., Widom J.: Database systems: the complete book, Upper Saddle River: Prentice-Hall, 2002. 3. Elmasri R.A., Navathe S.B.: Fundamentals of database systems, Boston: Pearson Addison-Wesley, 2011.
Supplementary references	1. Connolly T., Begg C.: Database Systems: A Practical Approach to Design, Implementation, and Management, Pearson, 2015. 2. Ras Z.W.(Ed.), Dardzińska A.(Ed.): Advances in data management, Berlin: Springer, 2009. 3. Król D.(Ed.), Nguyen N.T.(Ed.), ShiraiK.(Ed.): Advanced topics in intelligent information and database systems, Cham: Springer, 2017.

Organisational unit conducting the course	Department of Photonics, Electronics and Lighting Technology	Date of issuing the programme
Author of the programme	Grażyna Gilewska, Ph. D.	25.02.2021