TECHNICAL INFORMATICS I.

2022/23. 1. SEMESTER

BASIC DATA			
COURSE NAME	**Műszaki Informatika I.**		**Technical Informatics I.**
COURSE CODE(S)	YCRMIN1BNF		
DEPARTMENT	Óbuda University Ybl Miklós Faculty of Architecture and Civil Engineering, Institute of Civil Engineering		
PROGRAMME, TRAINING	BSc		full time, Erasmus
COURSE INSTRUCTOR (Instructor managing the course)	Dr. Gergely MÉSZÁROS PhD, Associate Professor	meszaros.gergely@ybl.uni-obuda.hu	consulting hours: According to schedule (online)
INSTRUCTORS, LECTURERS	Dr. Gergely MÉSZÁROS PhD, Associate Professor	meszaros.gergely@ybl.uni-obuda.hu	
PRE-REQUIREMENT	none		
HOURS OF LECTURES (WEEKLY)	0 hours		
HOURS OF CLASSROOM PRACTICE/ LAB EXERCISE (WEEKLY)	3 hours		
FIELD AND TRAINING (WEEKLY)	0 hours		
ASSIGNMENT	Midterm assignment		
CREDITS	6 credits (ECTS)		
AIM OF THE COURSE, BRIEF DESCRIPTION	Within the course, students gain application-level IT knowledge. They learn the theory and application of the most important spreadsheet and database management systems. Practical training takes place in computer labs.		
RECOMMENDED LITERATURE	Builtin/online manual, basics: https://www.york.ac.uk/it-services/coursefiles/booklets/Essential%20spreadsheets_Book-1.pdf calculations: https://faculty.fuqua.duke.edu/~pecklund/ExcelReview/ExcelFormulasReview.pdf SQL: https://www.sqlite.org/docs.html SQL: https://www.w3schools.com/sql/sql_intro.asp		
REQUIRED TECHNICAL APPLIANCES/ SOFTWARE	Online form: personal computer with mic, Contact form: personal laptop (optional)		

SCHEDULE OF THE SEMESTER

WEEK	LECTURE	LECTURER	FORM OF PRACTICE	PROGRAM OF PRACTICE
1	Spreadsheet basics 1.	G.M.		Data representation in memory, numerical and string digital data formats, level test, reminder: spreadhseet basics, functions, absolute/relative/mixed refs, working with large tables. Solving simple engineering task.
2	Spreadsheet basics 2.	G.M.		Typical errors, special functions, circular reference, iterative evaluation, cell range filling with sequences. Concepts: operating systems, mobile platforms.
3	Data management in spreadsheets	G.M.		Working with data. Data entry, sorting, filtering, querying. Formats, data control, data protection in spreadsheets. Concepts: Networking basics, data protection, compression and basic cryptography.
4	Solving engineering problems 1.	G.M.		Macros, automation. Solving equations with goal seek, optimization. Concepts: Programming languages basics, libraries, numerical methods, computer algebra methods (CAS).
5	Solving engineering problems 2.	G.M.		Solving equations, systems of equations with Solver or matrix operations. Solving an unambiguous linear programming problem with Solver. Fitting line to set of points using least squares method.
6	Test #1: Spreadsheet calculations	G.M.		Spreadsheet test
7	Database basics	G.M.		Database management basics, DMBS types, concept of RDBMS. Data types in database management. Data export and import from other systems. Simple tables and queries.
8	Data queries in SQL	G.M.		Queries, aggregates, computed fields and subqueries. CG data structures.
9	Database design basics	G.M.		Database design basics, mapping plan to tables. Create tables, primary and foreing keys. Short introduction to network, IT and data security.
10	Database planning and optimalization basics	G.M.		Constraints, stored procedures and triggers and indexes in DBMS. Implementing 1:n, 1:1, n:m relationships. Working with tables. Transaction management, UPDATE, and DELETE queries.
11	Advanced queries	G.M.		Complex queries in SQL. Query representation in GUI.
12	Test #2 and #3: Databases and IT concepts	G.M.		Test: Databases and IT concepts (basic theory)
13	Supplementary exams	G.M.		

REQUIREMENTS FOR THE COMPLETION OF THE SEMESTER

MID-SEMESTER TASKS AND TESTS

Requirement	Description	Value *(point, %, grade)*
PARTICIPATION AT LESSONS	Up to three practice lessons can be missed (see § 46 ETVSZ)	-
IN CASE OF ABSENCE FROM LESSONS AND EXAMINATIONS	Absence is considered to be justified with a medical certificate presented.	-
TEST #1: Spreadsheet calculations	Solving numerical computations with spreadsheet (based on lessons 1-5).	35 points
TEST#2: Databases	Working with databases (based on lessons 7-11)	35 points
TEST #3:	Databases and generic IT theory	30 points
TOTAL		100 points

SEMESTER CLOSING REQUIREMENTS

CONDITIONS FOR OBTAINING A SIGNATURE	Minimum 10 points per exams.				
SEMESTER GRADE	0-55 %	56-65%	66-75%	76-85%	86%-100%
	1 - FAIL	2 - PASS	3 - SATISFACTORY	4 - GOOD	5 - EXCELLENT