ÓBUDA UNIVERSITY
JOHN VON NEUMANN FACULTY OF INFORMATICS

Institute of Applied Mathematics			Semester 1. of the curriculum 2023-24-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Multivariate statistical methods	NMXTS1EBNF	4	full-time	2	2	0
Responsible person for the subject: Dr. KÁRÁSZ Péter			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	exam					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Biomatics and Applied Artificial Intelligence Institute			Semester 1. of the curriculum 2023-24-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Business and informatic strategy	NBXUI1EBNF	5	full-time	2	2	0
Responsible person for the subject: Prof. Dr. LAZÁNYI Kornélia			Classification: professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	exam					

Course description	
Goal:	The aim of the course is to create a general understanding of business strategy and its relation with IT system – how they can support businesses and the fulfilment of their strategies, and how the functional (IT) strategy is subordinated to and supportive of corporate strategy.
Course description:	The course introduces students to the purpose and tools of business and strategic planning. It presents techniques by which the external and internal conditions, as well as the goals of different stakeholders can be analysed. By learning and mastering the strategic approach, students will be able to analyse and evaluate various scenarios through which the organisations are able to respond to and adapt to current turbulent environmental changes. They will be able to make make or buy decisions related to IT systems and initiate BPR processes to improve the performance of the technical infrastructure. The aim of the course is to acquaint students with the tools of business and IT strategy, to emphasise the importance of strategic planning and to enable them to actively participate in the process of strategic management with the acquired knowledge.

Lecture schedule	
Education week	Topic
1.	**Roots and background**
2.	**Strategy as a process**
3.	**Internal perspective**
4.	**Factors of success**
5.	**IT systems and their roles in strategy**
6.	**The environment and its analysis**
7.	**Visualising the ideal state**
8.	**Operationalising strategy**
9.	**Corporate level**
10.	**General strategies**
11.	**Business level strategies**
12.	**IT strategy**
13.	**Portfolio strategies**
14.	**Change management**

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	The precondition of a signature is the submission of all 4 assignments and obtaining at least 20 points from the potential 40 points.

Assessment schedule	
Education week	Topic
5	VRIO analysis

8	Operationalization of business strategy
12	Strategy creation
13	IT strategy

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)
Type of the replacement

Type of the replacement of written test/mid-term grade/signature	The worst of the during the semester submissions can be replaced by a resubmission till the end of the 14th week. The exam can be retaken during the exam period once with a special retake fee.

Type of the exam (to be filled out only for subjects with exams)
Case study based, open-book, written exam
Calculation of the exam mark (to be filled only for subjects with exams)
40% of the mark can be obtained through the assignments submitted during the semester and 60% through the exam, which is conducted in the exam period.
Final grade calculation methods:
0-59 points failed 60-69 points satisfactory 70-79 points mediocre 80-89 points good 90-100 points excellent
References

Obligatory:	Scholes, K., Johnson, G., Whittington, R. (2002): Exploring corporate strategy. Financial Times Prentice Hall. Applegate, L. M., Austin, R. D., & McFarlan, F. W. (2006). Corporate information strategy and management. McGraw-Hill/Irwin Custom Publishing.
Recommended:	Barney, J. B., Hesterly, W. S. (2009): Strategic management and competitive advantage. Upper Saddle River, NJ: Pearson Education
Other references:	Additional materials uploaded to the Moodle system

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			Semester 1. of the curriculum 2023-24-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Business economics	GSXUG1EBNF	5	full-time	2	2	0
Responsible person for the subject: Dr. Takácsné Prof. Dr. GYÖRGY Katalin			Classification: professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	The aim of the course is to explore business from a holistic point of view; relations to their environment along with their internal processes. The general characteristics, such as the work and power structures, business functions of organizations, questions of resource management from wider aspect, value creating processes and financial aspects of investment strategies and general operations are also discussed.
Course description:	

Lecture schedule	
Education week	Topic
1.	TYPES OF ENTREPRENEURSHIP FORMS – WHAT ARE THE CRITERIA TO CHOOSE THEM? Introduction of the subject. Case study based on literature - general economic environment
2.	BUSINESS AS ORGANIZATION. BUSINESS ENVIRONMENT Theory of Costs
3.	RESULT – WHY FOR BUSINESS? HOW FOR BUSINESS? VALUE CHAIN Profit and economic variables I.
4.	STAKEHOLDERS – BASICS OF PLANNING Profit and economic variables II.
5.	QUESTIONS OF SIZE ECONOMY Macro environment analysis methods (PEST, PESTEL, STEEP)
6.	DEMAND AND SUPPLY. PRICE Micro-level business environment - the five forces of competition
7.	RESOURCE MANAGEMENT I. – FEATURES Micro-level business environment - resource analysis, resource management.
8.	RESOURCE MANAGEMENT II. – PHYSICAL RESOURCE MANAGEMENT Presentations I Cost and profit analysis
9.	RESOURCE MANAGEMENT III. – CURRENT ASSETS MANAGEMENT Investment decisions, Cost and profit analysis – calculations Deadline of the individual essay!
10.	NON-PHYSICAL ASSETS, ROLE IN BUSINESS I Presentations II
11.	NON-PHYSICAL ASSETS, ROLE IN BUSINESS II. Presentations III
12.	BUSINESS, PRODUCTION STRUCTURE, CONNECTION TO STRATEGY Core competencies. – Closing test.
13.	SUMMARIZATION I. Managing of business risks

14.	SUMMARIZATION II. Presentations IV

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Completion of the subject is achieved by obtaining an exam. During the semester it is required an essay and presentation on a special topic of business economics (max, 15 pages, min 10 minutes; following the requirements of the closing thesis, based on the Business Economics outlines in the Moodle.) Written exam paper (Moodle) at the end of the semester (week 12).

Assessment schedule	
Education week	Topic
9.	Individual essay, presentation.
12.	Closing test

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	Closing test re-writing in the 14th week.

Type of the exam (to be filled out only for subjects with exams)

Individual essay and presentation. Written closing test.

Calculation of the exam mark (to be filled only for subjects with exams)

Assey and presentation on a special topic of business economics (min. 8 pages, min 10 minutes, following the guide): 30 %; team work: case study and a presentation, characterising an enterprise (15-20 pages, following the requirements of the closing thesis), three-four members per group: 30 %, closing exercise (written): 40 %. During the semester 10 extra % can be gathered by extra homeworks.

Final grade calculation methods:

90-100 excellent (5)
80-89 good (4)
70-79 satisfactory (3)
60-69 pass (2)
0-59 fail (1)

References

Obligatory:	Campbell, D.J. - Craig, T. (2005) Organisations and the Business Environment, Routledge. Elsevier Butterworth-Heinemann, p. 696
Recommended:	Savov R, Takács-György K: Selected chapters from strategic management Nyitra: Slovak Agricultural University, 2016. 85 p. Turèková,N. – Svetlanská, T. – Takács I. (2016): Business Economics – International V4 Studies. Nitra. International Visegrad Fund´s, Visegrad University Studies Grant No. 61200004. 109. p
Other references:	

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			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Operations research	GGXOK1EBNF	4	full-time	1	2	0
Responsible person for the subject: Dr. NAGY Viktor			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	exam					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Institute of Cyberphysical Systems			Semester 4. of the curriculum 2024-25-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Management decision support systems	NKXVD1EBNF	4	full-time	2	0	2
Responsible person for the subject: Dr. ALMÁSI Anikó			Classification: senior lecturer			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	In the framework of the subject, students acquire theoretical and practical knowledge of managerial decision support systems. They understand the connections between basic decision making systems and processes, and the corporate context of the decision-making process. They gain insight into the data analysis background of decision-making, both the IT and business sides of input and output expectations.
Course description:	The subject goes through the basics of the decision-making process (information as a resource, corporate information management) and the essential decision-making aspects (individual, group, organizational decision), as well as the context of the decision (management and organization, company infrastructure, IT support and systems). During the course, we deal with the modeling of organizations of different sizes and decision situations of different complexity, processing real company examples and case studies.

Lecture schedule	
Education week	Topic
1.	1st project: Introduction of management decisions / foundational theoretical part Written note + video + self-check test to support student preparation
2.	1st project: decision specifics arising at the time of founding a business. Lack of internal data + evaluation problems of secondary data on the external environment. Analysis and forecasts of companies of different sizes, industry characteristics, market data. Theoretical part, model presentation, case study processing Description of project task Written note + video + self-check test to support student project
3.	1st project: presentation of student groups, presentation of project tasks, feedback The groups upload the reflective essay on the Moodle interface.
4.	Moodle test from the theoretical part of topic 1 (entry condition for topic 2: min. 60% result)
5.	2nd project: change management. Evaluation of resources and competences, organizational learning, information flow, evaluation of innovation opportunities. Optimal solutions, subsystems, and infrastructure that fit the company. Prognoses, prediction methods, decision traps. Uncertainty and risk management. Theoretical part, model presentation, case study processing Description of project task Written note + video + self-check test to support student project
6.	2nd project: MS Teams consultations with student groups. Coordination of topic and content, discussion of peculiarities and pitfalls, delivery of individual theoretical parts related to each group's own topic
7.	2nd project: presentation of student groups, presentation of project tasks, feedback
8.	The groups upload the reflective essay on the Moodle interface.

	Moodle test from the theoretical part of the 2nd topic (entry condition for the 3rd topic is a minimum score of 60%)
9.	3rd project: Managerial decisions in a crisis situation. Analysis of crisis situations, description of decision support systems, examination of the structure of problems, choice of decision alternatives, specification of criteria
10.	3rd project: MS Teams consultations with student groups. Coordination of topic and content, discussion of peculiarities and pitfalls, delivery of individual theoretical parts related to each group's own topic. Theoretical part, model presentation, case study processing Description of project task Written note + video + self-check test to support student project
11.	3rd project: presentation of student groups, presentation of project tasks, feedback
12.	Theoretical part: model presentation, case study processing Note + video written to support student in live case
13.	Theoretical part: model presentation, case study processing Note + video written to support student in live case
14.	Live case task: case study solution. Individual task. Real time assignment in Moodle. Source materials, reports and databases for the case study are available in Moodle. The task is to solve a management decision problem / specific company situation.

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Moodle tests min. 60% completion + 3 project tasks + live case

Assessment schedule	
Education week	Topic
4 + 8 + 12	Moodle tests from the current project
14	Live case task

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

End of semester: live case assignment
Evaluation method: mid-semester performance measurement, individual + group performance measurement with tests and project tasks
End-of-semester grade calculated from the summary of continuous performance: 100%
3 tests: 5 + 5 + 5%
3 group tasks: 20 + 20 + 20%
Live case assignment: 25%
By evaluation form:
100%= Individual performance: 40% / Measurement of group tasks: 60%
100%= Measurement of theoretical knowledge: test + live case: 40% / Measurement of practical knowledge: project tasks: 60%

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	Mid-semester small ZHs / Moodle tests can always be written during the next class in the week after the exam. The large ZH / live case task at the end of the semester can be replaced in the signature replacement exam of the exam period.

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)

Final grade calculation methods:	
0% - 59%: fail (1) 60% - 69%: pass (2) 70% - 79%: satisfactory (3) 80% - 89%: good (4) 90% - 100%: excellent (5)	
References	
Obligatory:	J.G. March: Bevezetés a döntélshozatalba. Panem Kiadó. 2000 V. Dörfler: What Every CEO Should Know About AI. Cambridge Elements 2021.
Recommended:	J. Storey – G. Salaman: Vezetői dilemmák. Akadémiai Kiadó. 2010. J.G. March: Szervezeti tanulás és döntéshozatal. Alinea Kiadó. 2005. J. Fulop: Introduction to Decision Making Methods.
Other references:	Moodle

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			Semester 4. of the curriculum 2024-25-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Managerial economics, accounting and controlling	GSXSC1EBNF	4	full-time	1	0	2
Responsible person for the subject: Dr. KATONA Ferenc			Classification: senior lecturer			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	exam					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Biomatics and Applied Artificial Intelligence Institute			Semester 1. of the curriculum 2023-24-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Introduction to cybersecurity	NBXBK1EBNF	5	full-time	2	0	2
Responsible person for the subject: Dr. PÓSER Valéria			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	exam					

Course description	
Goal:	The main goal of the subject is not to present in-depth technical implementations, but rather to develop a security-conscious approach, to provide a comprehensive picture of the dangers of cyberspace, IT security protection solutions, and to prepare future IT professionals to deal with IT security-related challenges that may arise in their later work.
Course description:	The most important topics of the subject: Basic concepts and historical overview of IT security. Ethical issues of cyberspace. Safety awareness, regulations. Attack possibilities, sources of danger, defense solutions in cyberspace. Security solutions for operating systems. Security of communication. Mobile and cloud security solutions. Risk analysis.

Lecture schedule	
Education week	Topic
1.	LEC: Basic concepts of information security. Ethical issues. Legal regulations. LAB: Requirements. The test environment. Putting basic concepts into practice.
2.	LEC: Risk analysis, risk management. LAB: Risk management.
3.	LEC: Cryptography. Symmetric, asymmetric encryption, digital signature. LAB: Overview of risks and security measures on an example system.
4.	LEC: Overview of cryptographic algorithms. LAB: Encryption - historical basics.
5.	LEC: Password management. LAB: Encryption - server-side basics
6.	LEC: Malicious code, virus protection. LAB: Network security - border protection
7.	LEC: Network border security. LAB: Network security - DMZ, VPN
8.	LEC: Authentication, user identification. LAB: Operating Systems Security - AAA
9.	LEC: Public key infrastructure. LAB: Operating Systems Security - Group Policy
10.	LEC: Authorisation management. LAB: Exercise.
11.	LEC: Safety Application Development, Web Application Security. LAB: User Security Awareness
12.	LEC: Data protection, data backup. LAB: Data backup and monitoring
13.	LEC: Guest lecture. LAB: Final paper
14.	LEC: Preliminary exam. LAB: Extra Final paper

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	The conditional of signature are the successful (at least satisfactory) completion of a final paper containing practical exercises and the submission of the mid-therm assignment. Optionally, extra credit may be obtained by completing supplementary course materials and module tests. Attendance of laboratory exercises is compulsory.

Assessment schedule	
Education week	Topic
13.	Practical ZH
14.	Preliminary exam Practical ZH reetake, correction

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	Extra final paper at week 14. Substitution of the signature: once during one of the first 10 working days of the examination period.

Type of the exam (to be filled out only for subjects with exams)
Students who meet the signature requirements during the semester (even during the last week) may take a written preliminary examination at the last week. Otherwise, they may take an oral examination during the examination period.

Calculation of the exam mark (to be filled only for subjects with exams)
The exam mark is determined on the basis of the oral exam result or the written pre-exam mark and the performance of the mid-semester practicals (ZH, assignment, optional supplementary material test results).
Final grade calculation methods:
0% - 49%: fail (1) 50% - 61%: pass (2) 62% - 73%: satisfactory (3) 74% - 85%: good (4) 86% - 100%: excellent (5)

References	
Obligatory:	Class materials published in Moodle.
Recommended:	• Mark S. Merkow Jim Breithaupt: Information Security: Principles and Practices, Second Edition, Pearson Education, 2014 (electronic note) • Howard M.: "A tutorial on linear and differential cryptanalysis." Cryptologia 26.3, 189-221, 2002 (electronic note)
Other references:	

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			Semester 1. of the curriculum 2023-24-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Solution of programming problems	GSVPP1EBNF	5	full-time	1	0	3
Responsible person for the subject: Dr. SZIKORA Péter			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	The purpose of the subject is to present the basics of computer programming and to develop the skills of algorithmic thinking and computer problem solving.
Course description:	The subject material covers the most important elements of general-purpose programming languages, such as the use of variables, control structures and functions, as well as the methodology of structured programming. Students will also learn the basics of the object-oriented programming paradigm, the process of program code development with objects, the use of complex data structures, strings and files. Within the framework of the subject, students learn the basic use of a specific programming language by implementing some well-known and commonly used algorithms, and by solving practical problems with a computer program.

Lecture schedule	
Education week	Topic
1.	Basic characteristics of programming languages, instructions, keywords
2.	Using variables, data types and operators
3.	Control Structures (if , else, elseif)
4.	Control Structures (for, while, do-while)
5.	Arrays and counting loops
6.	Basic query operations on arrays
7.	Use of functions, basis of parameter transfer
8.	The basis of recursive algorithms
9.	Characters and strings
10.	Basics of object-oriented programming, structure of classes
11.	Program development in an object-oriented approach
12.	File management, reading and writing data
13.	Sorting algorithms
14.	Troubleshooting in practice

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Successful writing of 2 tests

Assessment schedule	
Education week	Topic
6-7	
12-13	

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

The average result of the 2 tests, but both tests must be completed at least sufficiently.	
Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	In the 14th week, from the entire semester's material
Type of the exam (to be filled out only for subjects with exams)	
Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
0-49 points failed 50-64 points satisfactory 65-74 points mediocre 75-89 points good 90-100 points excellent	
References	
Obligatory:	moodle materials
Recommended:	
Other references:	

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Institute of Cyberphysical Systems			Semester 3. of the curriculum 2024-25-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Database- and Big Data technologies	NKXAB1EBNF	5	full-time	2	0	2
Responsible person for the subject: Dr. FLEINER Rita			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	In the course, students learn the principles and implementation of relational database management, the process of database design and modern data management methods. During the course, students will gain insights into the world of non-relational database management and Big Data, and will become familiar with the concepts, procedures and tools of NoSQL and Big Data data storage.
Course description:	Relational data model, relational algebra, RDBMS architecture, logical and physical data model, database design, normal forms. Database management in Oracle environment database instances, memory structures, transactions. Execution planning, optimization, SQL tuning. Index structures, join methods. NoSQL database types and their operation, their relation to Big Data systems. Understanding the use of MongoDB and Cassandra database management systems: basics, architecture, queries. Big data basics and the Hadoop framework. Apache Spark.

Lecture schedule	
Education week	Topic
1.	T: Introduction. Knowledge assessment. Relational database systems. L:Basic SQL exercises.
2.	T: Data modelling, single-relationship data model. L: Multi-table queries.
3.	T: Normal forms, dependencies, decomposition of relations. L: DDL, constraints.
4.	T: Relational algebra, relational data model. L: DML, views.
5.	T: Data storage, file organisation, indexes. L: Grouping functions (GROUP BY, HAVING statement parts).
6.	T: Query processing, query optimization. L: Transaction handling.
7.	T: Database tuning. Execution plan, access paths, indexes, join types, CBO statistics, selectivity, cost, materialization, pipelining. L: Execution plan analysis.
8.	T: Database tuning. Execution plan, access paths, indexes, join types, CBO statistics, selectivity, cost, materialization, pipelining. L: Execution plan analysis.
9.	T: NoSQL databases. Cassandra: concepts, architecture, queries. L: Cassandra in practice.
10.	T: NoSQL databases. MongoDB: concepts, architecture, queries. L: MongoDB in practice.
11.	T: Basics of Big data. Hadoop framework. L: Spark in practise.
12.	T: Basics of Big data. Apache Spark. L: Spark in practise.
13.	T: Test (theory + practise)
14.	T: Test replacement

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Students have to pass at least 51% in both tests (theory and practise).

Assessment schedule	
Education week	Topic
13	Theory test, Lab test
14	Theory test replacement, Lab test replacement

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)
The mid-term grade is determined by the sum of the points obtained in the tests.

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	Both tests can be replaced in the 14th week and at the beginning of the exam period.

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)
Final grade calculation methods:
0% - 51%: failed (1) 52% - 65%: satisfactory (2) 66% - 75%: average (3) 76% - 87%: good (4) 88% - 100%: excellent (5)

References	
Obligatory:	Jeffrey D. Ullman; Jennifer Widom: Adatbázisrendszerek – Alapvetés (2. kiadás), Panem, 2009. Budapest, ISBN: 9635454815 Elmasri, R., Navathe, S. B.:Fundamentals of Database Systems 7th Edition, ISBN: 978-0133970777
Recommended:	Alex Holmes: Hadoop In Practice, 2nd Edition, September 2014, ISBN 978-1-617-29222-4 Dirk deRoos, Paul C. Zikopoulos, Roman B. Melnyk PhD, Bruce Brown, Rafael Coss: Hadoop for Dummies, 2014 John Wiley & Sons, Inc., Hoboken, New Jersey, ISBN 978-1-118-65220-6
Other references:	

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Institute of Cyberphysical Systems			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Network Technologies	NKXHT1EBNF	4	full-time	2	0	2
Responsible person for the subject: Balázsné Dr. KAIL Eszter			Classification: senior lecturer			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	exam					

Course description	
Goal:	The aim of the course is to introduce the students to the network technologies, to familiarize them with the basic characteristics and uses of network devices and transmission media that form the basis of IT systems. Configuration, testing and troubleshooting of networks built from real devices will help students to master the course material.
Course description:	The course introduces modern local and wide area network (LAN, WAN) technologies, their signaling media, physical and logical topologies of networks. Based on the OSI system model, it describes the internal architecture and services of communication systems, the related protocols from the TCP/IP model, the purpose and function of the protocols and interfaces involved, the theoretical possibilities of their implementation and typical practices. It provides a more in-depth knowledge of the basic operational (switching, traffic management) and network security solutions (administrative protection of devices, traffic filtering, address translation) for enterprise networks, and also covers the Quality of Service (QoS) functions and implementation models.

Lecture schedule	
Education week	Topic
1.	Layered models, network models
2.	Physical components and properties of networks, physical layer
3.	Switching processes and their principles of operation in local area networks
4.	Addressing systems and their interconnections
5.	Routing principles for internal and external networks
6.	Transport layer protocols
7.	Structure and operation of the Internet and its services
8.	Address translation
9.	Emerging trends in networking (IPv6, IoT devices)
10.	Emergence and evolution of network security
11.	Administrative protection of devices, traffic filtering
12.	Implementing quality of service
13.	Lab exam
14.	Lab exam (replacement)

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	The students are required to attend at least 70% of the classes, and pass the laboratory exam with at least a satisfactory result.

Assessment schedule	
Education week	Topic
13	Lab exam
14	Lab exam (replacement)

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)	
Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	During the first week of the exam period the laboratory exam can be replaced
Type of the exam (to be filled out only for subjects with exams)	
Oral exam based on predefined topics.	
Calculation of the exam mark (to be filled only for subjects with exams)	
The final grade is the average of the laboratory and the theoretical exam.	
Final grade calculation methods:	
References	
Obligatory:	Lecture slides available at at https://elearning.uni-obuda.hu/
Recommended:	Wendell Odom: CCNA Routing and Switching 200-125 Official Cert Guide Library, Pearson Education, 2016, ISBN: 1587205815 Andrew Tanenbaum, Nick Feamster, David Wetherall: Computer Networks, Sixth Edition, Pearson Education Limited, 2022, ISBN: 978-1292374062 Larry L. Peterson, Bruce S. Davie: Computer Networks, Elsevier Science & Technology, 2021, ISBN: 0128182008
Other references:	

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Institute of Cyberphysical Systems			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Computer architectures	NKXSA1EBNF	4	full-time	3	0	0
Responsible person for the subject: Prof. Dr. SIMA Dezső			Classification: professor emeritus			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	exam					

Course description	
Goal:	The aim of the course is to provide students with a deeper understanding of the internal structure and operating mechanisms of computers and processors, and to introduce them to the main concepts, cause-effect relationships and emerging trends. The course will introduce students to instruction-level architectures, the micro-architecture of traditional Neumann computers. The approach of the course is based on the design space concept and focuses on concrete implementation examples and trends.
Course description:	Topics: Computing models, architectures, ISA. Memory space and register space. Data types, operations, operand types, instruction formats, addressing modes. User-manageable state attributes. RISC, CISC architectures and main features of the most common instruction level architectures. Operation execution unit, operation execution, the principle of parallel addition and multiplication. Basics of bus system, types of buses, parallel/serial buses, main features of most important parallel and serial buses (FSB, USB, PCIe, HT, QPI). DMA, and interrupt system. The concept of DRAM, types of DRAM technologies (SDRAM, DDR memory generations). Evolution of transistor technology. Levels of parallelism that can be exploited. Flynn and modern classification of processors. Data, control and resource dependencies and their main management techniques and how to maintain sequential consistency. Conveyor belt and superscalar processors. ISA extensions (MMX, SSE, ...). Cache organization alternatives, cache coherence, trends, examples. Processor performance issues. Main areas of dissipation management. Thread level and process level parallel architectures.

Lecture schedule	
Education week	Topic
1.	Computing models, the concept of architecture, data space, register space
2.	Instruction processing thread, state space, state operations, building blocks of microprocessors
3.	Arithmetic-logic unit structure, working principle. Operation executor
4.	Floating point number representation, IEEE754 standard
5.	Bus system, I/O system, DMA
6.	Interrupt system, Memory, addressing modes,
7.	Transistor technology evolution
8.	Introduction to parallel processing, dependencies and sequential consistency
9.	Pipeline architectures, CISC-RISC architectures
10.	1st, 2nd and 3rd generation superscalars. ISA extensions. Netburst architecture
11.	Performance, dissipation and frequency constraints, thread and process level parallel architectures
12.	Alternatives for cache organisation
13.	Lecture ZH
14.	Substitution of lecture ZH

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Pass mark of at least 51% in the ZH lecture

Assessment schedule	
Education week	Topic
13	Theoretical ZH from the lecture material
14	Replacement of the theoretical ZH from the lecture material.

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	In week 14, the ZH can be replaced. A minimum of 51% must be achieved in the ZH to pass

Type of the exam (to be filled out only for subjects with exams)

Written exam
Admission to the examination is only possible if the subjects specified as prerequisites have been passed. Students write an examination paper during the examination period in order to obtain a mark. The marking of questions is linear. Bonus marks will be awarded for a logical, clear and convincing answer to each question, and malus marks for a mosaic, confused and uncertain answer. Marks for drawings will only be awarded if their context (description of operation, example, etc.) demonstrates understanding. Successful is the examination paper,
- at least 15% of all questions have been answered, and
- at least the minimum score per paper is achieved.

Calculation of the exam mark (to be filled only for subjects with exams)

The minimum score (out of 100%):
60% with the first exam,
which increases by 6% after the first failed exam.

Final grade calculation methods:

Exam mark	First time score in %	After first failed exam, in %
pass (5)	90-100	90-100
good (4)	80-99	80-99
average (3)	70-79	70-79
fair (2)	60-69	66-69
unsatisfactory (1)	<60	<66

References

Obligatory:	Materials published on Moodle
Recommended:	•D. Sima, T. Fountain és P. Kacsuk: Advanced Computer Architectures, Addisson Wesley Longman 1997 •J. L. Hennessy és D. A. Patterson: Computer Architecture: A Quantitative Approach, Morgan Kaufmann Inc., San Mateo, 2002
Other references:	The slides used in the lecture will be available on the course website at https://elearning.uni-obuda.hu/ after the lecture.

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			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Business intelligence systems	GSXUR1EBNF	5	full-time	1	0	2
Responsible person for the subject: Dr. habil. TICK Andrea			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Institute of Cyberphysical Systems			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Cloud-based IoT and Big Data platforms	NKXFIBEBNF	4	full-time	2	0	2
Responsible person for the subject: Dr. habil. LOVAS Róbert			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	The course introduces distributed/parallel architectures, operating mechanisms, technologies and cloud services for different IT platforms with the main objective of serving Big Data and IoT (Internet of Things) application areas. The course will cover the evolution and characteristics of Big Data solutions, the theoretical and practical background of management and orchestration solutions (Ambari/CloudBreak) for the cloud-based Big Data application domains, IoT and related frameworks.
Course description:	The course will discuss the evolution and characteristics of Big Data solutions, including Hadoop, SPARK, Hana and noSQL databases (including some related Platform-as-a-Service), which are widely used in different research and industrial domains. Also cover the theoretical and practical background of management and orchestration solutions (Ambari/CloudBreak) in the field of cloud-based Big Data applications. Later the course, the focus will shift to IoT and related frameworks, with different use cases for data collection, including medical and agricultural domains. The theoretical background will be extended with Lambda, Kappa and other approaches and further practical solutions for Azure. By the end of the subject, students will have developed their problem solving and modelling/design skills in the area of large-scale parallel and distributed computing platforms, using engineering approaches for pervasive Big Data/IoT platforms, using the most advanced Big Data/IoT platforms (tools from Microsoft, Amazon, Hortonworks, etc.), and various solutions specific to medical and other application domains.

Lecture schedule	
Education week	Topic
1.	Introduction to Big Data
2.	Hadoop Basics
3.	Database scaling and noSQL basics
4.	Document databases
5.	Graph databases
6.	Column-oriented databases
7.	In-memory databases
8.	Hadoop reference architecture for cloud computing
9.	Cloud-based IoT application in healthcare
10.	IoT and Big Data processing on Azure platform
11.	Cloud-based IoT backend
12.	Cloud-based IoT data collector
13.	Midterm test
14.	Midterm test retake
Mid-term requirements	

Conditions for obtaining a mid-term grade/signature	Passing at least 51% of the midterm test Completion of the Project work

Assessment schedule

Education week	Topic
13	Midterm test
14	Replacement occasion of the midterm test

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

The final grade is determined by the midterm test

Type of the replacement

Type of the replacement of written test/mid-term grade/signature	In week 14, the midterm test can be replaced. A minimum of 51% must be achieved to pass the subject.

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)

Final grade calculation methods:

0% - 50%: fail (1)
51% - 62%: pass (2)
63% - 75%: satisfactory (3)
76% - 88%: good (4)
89% - 100%: excellent (5)

References

Obligatory:	Materials published in Moodle Guy Harrison: Next Generation Databases - NoSQL, NewSQL, and Big Data, Apress, 2015, ISBN 978-1-4842-330-8
Recommended:	Zoiner Tejada: Mastering Azure Analytics, O'Reilly, 2017, ISBN 978-1491956656 R. Estrada, I. Ruiz: Big Data SMACK - A Guide to Apache Spark, Mesos, Akka, Cassandra, and Kafka. Apress, 2016 (electronic notes), ISBN: 9781484221747 C. Bhatt, N. Dey, A. S. Ashour (Eds.): Internet of Things and Big Data Technologies for Next Generation Healthcare. Springer, 2017, ISBN: 9783319497358
Other references:	The slides and material used in the lecture will be available on the course website at https://elearning.uni-obuda.hu/ after the lecture.

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Institute of Cyberphysical Systems			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Financial technologies	NKXPT1EBNF	4	full-time	1	0	2
Responsible person for the subject: Dr. NAGY Enikő			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	The aim of the course is to familiarise students with financial techniques supported by IT solutions. Financial areas such as controlling, business analysis and financial management will be highlighted. Students will be introduced to computer tools for financial analysis through practical exercises. They will enable them to analyse and understand their operation and their potential uses. The course will cover how to analyse and visualise source data with differences in magnitude and how to quickly produce charts and statements. An additional important unit of study is the solution of linear programming (or other optimization) problems with large numbers of variables and constraints. There is a wide range of software developed to solve optimisation problems efficiently. Their applications and capabilities are reviewed. General optimisation problems are also solved, where the constraints and the objective function are not necessarily linear. Thus, in addition to linear programming problems, solutions to nonlinear optimization problems are also covered.
Course description:	The course includes: Introduction to financial technologies, rules of charting, charting options, functions to be used in financial analysis, approximation, target value search (APR, calculation of break-even points) and optimisation (bottlenecks, production losses, collateral losses) procedures (SOLVER), handling large data tables, company analyses, report tables (PIVOT), financial calculations, annuity and non-annuity credit constructions, complex calculations, solutions to problems

Lecture schedule	
Education week	Topic
1.	Introduction to financial technologies with computer-assisted solutions, Warm-up exercises
2.	Data cleaning, financial, statistical functions, financial statements, distributions
3.	Statistical analysis, regression calculations, time series analysis
4.	Financial calculations, present value, future value, credit constructions (annuity, non-annuity)
5.	Target value search, APR, break-even point determination, optimisation, programmes with shortfall, shortfall in production
6.	Transfer of data from other systems, web, online database, data management and analysis, account activity, loan repayment
7.	Filtering, optimisation, creating drop-down menus, chart details
8.	Data visualisation, chart types, combined charts, trend lines, financial forecasting
9.	Capital budgeting, solving optimisation problems with SOLVER
10.	Creating summary tables from large data lists, creating one and two dimensional data tables, using PIVOT tables for financial statements
11.	Complex analyses and reports, sales reports, delivery tasks, statements
12.	Complex tasks: trended historical financial data, annual profit and loss statements
13.	Trend forecasts, annual financial statements, forecasting

14.	Replacement, correction
Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	During the semester, students will write a two-part (multiple-choice test and practical exercises with Ms Excel) final paper on the course material in week 13. The papers will be worth 50-50 points, the sum of which will give a final score (max. 100 points). A minimum of 26 points is required in both exams to pass the course. Participation in the practicals is compulsory. If the student's absences exceed 30% of the total number of hours for the semester, the student will not receive a signature or a mid-term grade. Absence does not exempt the student from fulfilling the requirements of the course.
Assessment schedule	
Education week	Topic
13	Multiple-choice test and practical exercises
14	Completion of tests
Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)	
Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	In week 14, during the last practical session, one of the ZH can be substituted. In the case of a complex mid-term grade, both mid-term exams can be made up with a (medical) certificate of absence. Here too, a minimum of 26 points must be obtained in both tests. Correction is also possible in week 14. It is important to note that in all cases, the result obtained in the latter examination will be counted towards the practical grade.
Type of the exam (to be filled out only for subjects with exams)	
Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
The final semester grade is based on the number of marks obtained in the examinations, for which a maximum of 100 points can be obtained. 0% - 51%: unsatisfactory (1) 52% - 62%: satisfactory (2) 63% - 73%: averagee (3) 74% - 84%: good (4) 85% - 100%: excellent (5)	
References	
Obligatory:	Materials published in Moodle Wayne Winston (2019) Microsoft Excel 2019 Data Analysis and Business Modeling (Business Skills) 6th Edition Timothy R. Mayes (2019) Financial Analysis with Microsoft Excel 9th Edition
Recommended:	Susanne Chishti - Janos Barberis (2016) The FinTech Book, Wiley Bártfai Barnabás (2012) Excel haladóknak, BBS-INFO KÖNYVEK. ÉS INFORM. KFT. ISBN: 9789639425774

	Bártfai Barnabás (2015) Excel a gyakorlatban - Gyakorlati példákkal és azok részletes megoldási leírásaival ISBN: 9786155477164
Other references:	

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			Semester 3. of the curriculum 2024-25-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Corporate finances and financial services	GGXVK1EBNF	5	full-time	1	2	0
Responsible person for the subject: Dr. VARGA János			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Biomatics and Applied Artificial Intelligence Institute			Semester 3. of the curriculum 2024-25-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Billing systems	NBXER1EBNF	5	full-time	1	0	2
Responsible person for the subject: Prof. Dr. LAZÁNYI Kornélia			Classification: professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	The aim of the course is to get students acquainted with billing and transfer systems, to establish a better understanding of current days' centralised monetary systems and their internal mechanisms.
Course description:	Centralized systems are needed to conduct payment operations due to the high number of participants, the huge volume of cleared transactions, security requirements and cost effectiveness. Hungary's central payment infrastructure consists of three main clearing and settlement systems. In the framework of the subject, students gain insight into the operation of all three systems (VIBER, KELER, BKR) and can learn about other elements of the payment infrastructure. In the framework of the subject, we also review the forms of settlement relationships and the operation of the GIRO system.

Lecture schedule	
Education week	Topic
1.	The roles of banks in financial systems
2.	Complexity and systemic risk
3.	Bank operations
4.	Bank performance
5.	Financial innovation and diffusion in banking
6.	Shadow bank monitoring
7.	Introduction to payment systems
8.	Retail payments
9.	Wholesale payments
10.	Payment activities of non-banks
11.	Regulatory perspectives
12.	Macroeconomic perspectives
13.	Banking systems around the world
14.	Central Billing System for Personal Bills

Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Submission of the two mid-trem reports.

Assessment schedule	
Education week	Topic
7	Report 1
14	Report 2

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Both reports constitute 50% of the grade.	
Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	Either of the reports, or both of them can be submitted in the form of a midterm mark retake within the first ten days of the exam period.
Type of the exam (to be filled out only for subjects with exams)	
Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
0-59 points failed 60-69 points satisfactory 70-79 points mediocre 80-89 points good 90-100 points excellent	
References	
Obligatory:	Humphrey, D. (2014). Payments and payment systems. The Oxford Handbook of Banking, 2. Huang, Y., & Wang, B. (2014). Central billing system for personal bills. International Journal of Innovation, Management and Technology, 5(4), 323.
Recommended:	
Other references:	Extra material provided on moodle

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Biomatics and Applied Artificial Intelligence Institute			Semester 3. of the curriculum 2024-25-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Introduction to blockchain programming	NBXBP0EBNF	4	full-time	1	0	2
Responsible person for the subject: Prof. Dr. LAZÁNYI Kornélia			Classification: professor			
Subject lecturer(s): Dániel Szegő						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	The course aims to provide a technological and programming introduction to distributed ledger technology through the two most typical protocols through Bitcoin and Ethereum. The lectures of the course mostly concentrate on the theoretical and practical aspects of blockchain protocols, whilst in the laboratory and exercise part we will focus on Ethereum, solidity smart contract and Web3 programming.
Course description:	Distributed ledger technology is expected to be one of the most significant transformative technologies of the decade, fundamentally influencing both present and future financial services and the creation of the value-based Internet. Although the legal regulation of the topic is still questionable in some places, the basic technological stack appears either in various cryptocurrencies, e.g. Bitcoin, or in more innovative consortium services launched by some banks.

Lecture schedule	
Education week	Topic
1.	Introduction to blockchain, disruptive technologies and technology life-cycles. Bitcoin history.
2.	DLT platform working mechanism and platform comparison (transactions, signatures, smart contract, P2P network, consensus, transactional database).
3.	DLT platform working mechanism and platform comparison (Open Blockchain versus consortium DLT, Cryptocurrencies, Smart contract platforms, Ethereum, Hyperledger …).
4.	Cryptography and PKI summary.
5.	Elements of the decentralized infrastructure: keys, key generation, wallets.
6.	Elements of the decentralized infrastructure: Merkle trees, authenticated data structures, blocks, blockchain as a data structure.
7.	Elements of the decentralized infrastructure: P2P network. Consensus theory.
8.	Elements of the decentralized infrastructure: Blockchain consensus., PoW, mining, difficulty hashrate, PoS.
9.	Ethereum platform summary and deep-dive: EVM, bytecode, Accounts, smart contract call semantics …
10.	Introduction to tokenization
11.	Tokenization deep dive
12.	Architecting decentralized applications: DApp, Web3, layered architectures, Oracles, security, TDD.
13.	Selected topics from DeFi, blockchain security, consortium blockchain challenges or CBDC.
14.	Closing the course. Optional written evaluation. Optional and bonus content. Guest lecturers
Mid-term requirements	

Conditions for obtaining a mid-term grade/signature	Class activities and assignmnet.

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

1. Several small assignments, essays and challenges at each lecture. Each can be evaluated up to 10 points. Students can choose which to solve.
2. Programming assignment: There is a compulsory solidity programming assignment in solidity that is evaluated up to 70 points. The programming assignment can be done individually or in 2-3 people groups as well.

Type of the replacement

Type of the replacement of written test/mid-term grade/signature	In case someone could not manage to accomplish homeworks or assignments during the course there is the possibility for a written replacement test at the last week.

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)

Final grade calculation methods:

123-140 points – 5
105-122 points – 4
88-104 points – 3
71-87 points – 2
0-70 points – 1

References

Obligatory:	Andreas M. Antonopoulos, Mastering Bitcoin, https://github.com/bitcoinbook/bitcoinbook Andreas M. Antonopoulos, Gavin Wood, https://github.com/ethereumbook/ethereumbook
Recommended:	
Other references:	Articles provided during class

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			Semester 4. of the curriculum 2024-25-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Business process management with simulations	GSXUS1EBNF	4	full-time	1	0	2
Responsible person for the subject: Dr. habil. SZEGHEGYI Ágnes			Classification: associate professor			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Physical education I.	GTTTS1EBNF	1	full-time	0	1	0
Responsible person for the subject:			Classification:			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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			Semester 3. of the curriculum 2024-25-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Physical education Ii.	GTTTS1EBNF	1	full-time	0	1	0
Responsible person for the subject:			Classification:			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

ÓBUDA UNIVERSITY
JOHN VON NEUMANN FACULTY OF INFORMATICS

Institute of Applied Mathematics			Semester 1. of the curriculum 2023-24-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Mentoring	NDIPT1EBNF	0	full-time	0	1	0
Responsible person for the subject: Dr. VAJDA István			Classification: senior lecturer			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	Students get acquainted with the structure and life of the university, and they can manage issues occurring during their studies.
Course description:	Documents regulating students life (e.g. Study And Examination Regulations Of Óbuda University), types of stipends and other allowances, fees, students administrative commitments, the student government. Curriculum, the net of subjects, sample curriculum, prerequisites, criteria, distance training courses, KMOOC. Ways of assessments, midterm tests, exams, how to register for an exam, midterm grade. Special professional modules. Degree project, thesis. Available services in the university, open lab, library, psychologist, Students' Public Centres. The Neptun, Moodle and Teams systems. Cooperative studies. Erasmus, TDK conferences, working as a demonstrator. Community programmes.

Lecture schedule	
Education week	Topic
1.	Voting for students leaders. The university, faculties, buildings, classrooms.
2.	Studying system of a university, lectures, practical lessons, labs. Ways of assessment (signature, midterm grade, midterm tests, exams, homework, projects.)
3.	The net of subjects (prerequisites). Types of stipends, how to calculate the study stipend. Hungarian state (partial) stipend, state supported, subject to tuition fee payment Rules of reclassification.
4.	Methods of efficient learning.
5.	Special professional modules. Distance training courses, K-MOOC. Degree project, thesis..
6.	Library services. Directory databases.
7.	Students' Public Centres and their services. Services of the university psychologists.
8.	Making plans for the future studies, based on the experiences of the first midterm tests.
9.	TDK conferences. How to become a demonstrator?
10.	Cooperative studies.
11.	The Erasmus system.
12.	Plan for the exam period. How to register for an exam. Exam fees.
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Students have to visit the lessons regularly. Absence can not be higher as 30% of the lessons.

Assessment schedule	
Education week	Topic
Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)	
Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	
Type of the exam (to be filled out only for subjects with exams)	
Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	Document uploaded into the MOODLE system.

ÓBUDA UNIVERSITY
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Dékáni Hivatal			Semester 1. of the curriculum 2023-24-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Thesis work I.	NDDDP1EBNF	5	full-time	0	0	0
Responsible person for the subject:			Classification:			
Subject lecturer(s):						
Prerequisites:						
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Dékáni Hivatal			Semester 2. of the curriculum 2023-24-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Thesis work II.	NDDDP2EBNF	5	full-time	0	0	0
Responsible person for the subject:			Classification:			
Subject lecturer(s):						
Prerequisites:	NDDDP1EBNF	Thesis work I.				
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Dékáni Hivatal			Semester 3. of the curriculum 2024-25-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Thesis work III.	NDDDP3EBNF	10	full-time	0	0	0
Responsible person for the subject:			Classification:			
Subject lecturer(s):						
Prerequisites:	NDDDP2EBNF	Thesis work II.				
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	

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Dékáni Hivatal			Semester 4. of the curriculum 2024-25-2			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Thesis work IV.	NDDDP4EBNF	10	full-time	0	0	0
Responsible person for the subject:			Classification:			
Subject lecturer(s):						
Prerequisites:	NDDDP3EBNF	Thesis work III.				
Way of the assessment:	mid-term grade					

Course description	
Goal:	
Course description:	

Lecture schedule	
Education week	Topic
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Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	

Assessment schedule	
Education week	Topic

Method used to calculate the *mid-term grade* (to be filled out only for subjects with mid-term grades)

Type of the replacement	
Type of the replacement of written test/mid-term grade/signature	

Type of the exam (to be filled out only for subjects with exams)

Calculation of the exam mark (to be filled only for subjects with exams)	
Final grade calculation methods:	
References	
Obligatory:	
Recommended:	
Other references:	