Doporučený průchod studijním plánem

Název průchodu: Master Specialization Digital Business Engineering, 2023

Fakulta: Fakulta informačních technologií
Katedra:
Průchod studijním plánem: Master Specialization Digital Business Engineering, 2023
Obor studia, garantovaný katedrou: Úvodní stránka
Garant oboru studia:
Program studia: Informatics
Typ studia: Navazující magisterské prezenční
Poznámka k průchodu: The remaining credits to the obligation to get a minimum of 120 credits can be obtained for any course of this study plan

Kódování rolí předmětů a skupin předmětů:
P - povinné předměty programu, PO - povinné předměty oboru, Z - povinné předměty, S - povinně volitelné předměty, PV - povinně volitelné předměty, F - volitelné předměty odborné, V - volitelné předměty, T - tělovýchovné předměty

Kódování způsobů zakončení predmětů (KZ/Z/ZK) a zkratek semestrů (Z/L):
KZ - klasifikovaný zápočet, Z - zápočet, ZK - zkouška, L - letní semestr, Z - zimní semestr

Číslo semestru: 1

Kód	Název předmětu / Název skupiny předmětů *(u skupiny předmětů seznam kódů jejích členů)* *Vyučující,* ***autoři*** *a garanti (gar.)*	Zakončení	Kredity	Rozsah	Semestr	Role
NIE-KOP	**Combinatorial Optimization** *Petr Fišer, Jan Schmidt* ***Petr Fišer*** *Petr Fišer (Gar.)*	Z,ZK	6	3P+1C	Z	PP
NIE-MPI	**Mathematics for Informatics** *Francesco Dolce* ***Štěpán Starosta*** *Štěpán Starosta (Gar.)*	Z,ZK	7	3P+2C	Z	PP
DA-DMI	**Data Mining** ***Michal Valenta***	Z,ZK	6	30KP+30KC	Z,L	PS
NIE-DBE-PV1.23	**Compulsory Elective Courses for Master Specialization DBE - Modern Technology** *NIE-PDB,DD-ZUM,..... (pokračování viz seznam skupin níže)*	Min. předm. 1 Max. předm. 5	Min/Max 5/25			PV

Číslo semestru: 2

Kód	Název předmětu / Název skupiny předmětů *(u skupiny předmětů seznam kódů jejích členů)* *Vyučující,* ***autoři*** *a garanti (gar.)*	Zakončení	Kredity	Rozsah	Semestr	Role
NIE-PDP	**Parallel and Distributed Programming** *Pavel Tvrdík* ***Pavel Tvrdík*** *Pavel Tvrdík (Gar.)*	Z,ZK	6	2P+2C	L	PP
NIE-VSM	**Selected statistical Methods** *Petr Novák* ***Pavel Hrabák*** *Pavel Hrabák (Gar.)*	Z,ZK	7	4P+2C	L	PP
DA-DRS	**Digital Risk And Security** ***Michal Valenta***	Z,ZK	6	30KP+30KC	Z	PS
NIE-DBE-PVA.23	**Compulsory Elective Courses for Master DBE Specialization A - Normalized Systems Theory** *NIE-NSS,DA-SEA*	Min. předm. 1 Max. předm. 1	Min/Max 5/9			PV

Číslo semestru: 3

Kód	Název předmětu / Název skupiny předmětů *(u skupiny předmětů seznam kódů jejích členů)* *Vyučující,* ***autoři*** *a garanti (gar.)*	Zakončení	Kredity	Rozsah	Semestr	Role
DD-DIN	**Digital innovation** ***Michal Valenta***	ZK	6		Z	PS
DD-DSG	**Digital strategy and governance** ***Michal Valenta***	ZK	6	2P+2C	Z	PS
DD-SMN	**Strategic management** ***Michal Valenta***	ZK	6	4P+0C	Z	PS
NIE-MPR	**Master Project** ***Zdeněk Muzikář*** *Zdeněk Muzikář (Gar.)*	Z	7		Z,L	PV

NIE-DBE-PVB.23	**Compulsory Elective Courses for Master Double degree Specialization DBE B - Engineering and Ethics** *DD-DSE,DA-ESB*	Min. předm. 1 Max. předm. 2	Min/Max 3/6			PV

Číslo semestru: 4

Kód	Název předmětu / Název skupiny předmětů ***(u skupiny předmětů seznam kódů jejích členů)*** *Vyučující,* ***autoři*** *a garanti (gar.)*	Zakončení	Kredity	Rozsah	Semestr	Role
NIE-DIP	**Diploma Project** *Zdeněk Muzikář* ***Zdeněk Muzikář*** *Zdeněk Muzikář (Gar.)*	Z	30	270ZP	L,Z	PP

Seznam skupin předmětů tohoto průchodu s úplným obsahem členů jednotlivých skupin

Kód	Název skupiny předmětů a kódy členů této skupiny předmětů (specifikace viz zde nebo níže seznam předmětů)	Zakončení	Kredity	Rozsah	Semestr	Role
NIE-DBE-PV1.23	**Compulsory Elective Courses for Master Specialization DBE - Modern Technology**	**Min. předm. 1** **Max. předm. 5**	**Min/Max** 5/25			**PV**

NIE-PDB	Advanced Database Systems	DD-ZUM	Artificial Intelligence Fundamen ...	NIE-BLO	Blockchain
NIE-AM1	Middleware Architectures 1	NIE-SWE	Semantic Web and Knowledge Graph ...		

NIE-DBE-PVA.23	**Compulsory Elective Courses for Master DBE Specialization A - Normalized Systems Theory**	**Min. předm. 1** **Max. předm. 1**	**Min/Max** 5/9			**PV**

NIE-NSS	Normalized Software Systems	DA-SEA	Software Engineering And Archite ...

NIE-DBE-PVB.23	**Compulsory Elective Courses for Master Double degree Specialization DBE B - Engineering and Ethics**	**Min. předm. 1** **Max. předm. 2**	**Min/Max** 3/6			**PV**

DD-DSE	Data science and ethics	DA-ESB	Ethical And Sustainable Business

Seznam předmětů tohoto průchodu:

Kód	Název předmětu	Zakončení	Kredity
DA-DMI	Data Mining	Z,ZK	6

In the past decade, weve witnessed a huge increase in the amount of data being captured and stored. In these large datasets very useful knowledge is present, though often concealed in the vastness of the data. With data mining techniques patterns are automatically revealed from such large datasets. First, data mining techniques and applications are discussed. Next, we will go into popular predictive and descriptive data mining techniques, with applications in marketing and risk management. Also, analyses such as social network analysis, text mining, process mining, and Big Data will be looked at. Basic programming skills in Python will be learnt. The learned concepts, techniques and programming language will be applied and evaluated with a real-life case. Teaching takes place at University of Antwerpen. See the web page https://www.uantwerpen.be/en/study/programmes/all-programmes/digital-business-engineering/about-the-programme/study-programme/

DA-DRS	Digital Risk And Security	Z,ZK	6

Information technology has become crucial in the growth, sustainability and support of enterprises. However, the pervasive use of technologies also incurs many business risks, anging from abuse, cybercrime, fraud, errors and ommissions. The objective of this course is to understand and analyse IT related business risks and and how these risks can be translated into an appropiate information risk management and security strategy and action plan. In the course, will first discuss the basics of IT Risk, Information Security, and some of the general and specific standards and frameworks to address them. Next, we will elaborate on the IT risk management and IT security functions in an organisation. Specific attention will be given to risk assessment methods, both qualitative and quantitative. The theoretical knowledge will be applied in a group project, where students will conduct a risk assessment in a real organisation, and present the results to the responsible managers. Guarantor and teacher: MSc. Steven De Haes, Ph.D

DA-ESB	Ethical And Sustainable Business	ZK	3

This course covers corporate responsibility, morality and sustainability. It has three main parts: Part 1: Ethics and morality in business History of ethics in business Origins, stakeholder theory, basic philosophy Utilitarianism vs Kantian approaches Behavioural economic. Part 2: Corporate responsibility and sustainability in theory Shared value creation, social profit, social entrepreneurship Sustainable HR Circular Economy Green Deal and CSRD New business models for sustainability. Part 3: Corporate responsibility and sustainability in practice Implementing sustainability in the value chain of a company: products, operations, organisation and HR How to apply a management approach to sustainability. Teaching takes place at University Antwerpen. See the web page https://www.uantwerpen.be/en/study/programmes/all-programmes/digital-business-engineering/about-the-programme

DA-SEA	Software Engineering And Architecture	Z,ZK	9
Basic software engineering structures, practices, and patterns are explained in a realistic software engineering environment using the Java progarmming language. Practical assignments complement these lectures. Basic software architecture structures, practices, and patterns are explained and discussed, including various aspects of evolvability. Video lectures and a practical assignment deepen this. Teaching takes place at University of Antwerpen. See the web page https://www.uantwerpen.be/en/study/programmes/all-programmes/digital-business-engineering/about-the-programme/study-programme/			
DD-DIN	Digital innovation	ZK	6
This course focuses on innovation in the context of the digital, software-intensive economy. Starting from a broader perspective on innovation, both mainstream theories and thinking on innovation, as well as alternative views from challengers, are discussed. This includes omnipresent innovation models in which IT-related innovations are adopted by startups and scaleups (eg. blockchains or drones) and making them available in certain business domains, which requires agility and speed of development at the software level. Also, disruptive innovation, where existing value chains are challenged, is discussed with its requirement for new levels of productivity in software development. Leading theories are discussed and illustrated with local and international cases using guest lectures. Students of a master double degree specialisation Digital Business Engineering will attend this course during their stay at the partner university Antwerp			
DD-DSE	Data science and ethics	ZK	3
Ethics tell us about right and wrong. The course will provide an overview of key: (1) concepts, related to privacy, discrimination, transparency, and explainability, (2) techniques to assess and improve on these aspects, and (3) cautionary tales that motivate the importance thereof. The consideration of data science ethics is crucial for any data-driven company, as will be motivated by ample cautionary tales. With a wide range of cases, the large implications of new data science technologies on ethics will be discussed. These include online tracking, medical records, Facebook data, Internet censorship, big data, privacy engineering, and Artificial Intelligence. Data scientists and business managers are not inherently unethical, but at the same time not trained to think this through neither. This course aims to address this important gap. Students of a master double degree specialisation Digital Business Engineering will attend this course during their stay at the partner university Antwerp			
DD-DSG	Digital strategy and governance	ZK	6
The course provides a complete and comprehensive overview of what digital governance entails and how it can be applied in practice. The course is organized around the following three main themes: concepts and practices of digital governance, the impact of digital governance on business/IT strategic and operational alignment, and the notion of digital value and risk. The course is based on the teacher's knowledge obtained in applied research projects on the relationship between digital governance practices and digital value. To support the student in understanding and absorbing the material provided, the course uses short assignments and case studies. Students of a master double degree specialisation Digital Business Engineering will attend this course during their stay at the partner university Antwerp			
DD-SMN	Strategic management	ZK	6
In the first part of the course, the different concepts and perspectives of strategic management are analyzed. The basic characteristics of strategic thinking are being analyzed. Then the importance of mission/vision, as the starting point in strategic thinking, is being discussed. This is being linked to the broader concept of sustainability / corporate social responsibility. The remaining parts focus on the three basic dimensions of strategy: (1) the strategy content: business level strategy, corporate level strategy, and network level strategy (2) the strategy process: strategic formation, strategic change, and strategic innovation, (3) the strategy context: the industry context, the organizational context, and the international context. In each of the different chapters, the fundamental strategic management paradoxes are situated and evaluated in the strategic management theory. Attention is also given to some strategic management tools which can be used to manage the strategy process. Students of a master double degree specialisation Digital Business Engineering will attend this course during their stay at the partner university Antwerp			
DD-ZUM	Artificial Intelligence Fundamentals	Z,ZK	5
Students are introduced to the fundamental problems in the Artificial Intelligence, and the basic methods for their solving. It focuses mainly on the classical tasks from the areas of state space search, multi-agent systems, game theory, planning, and machine learning. Modern soft-computing methods, including the evolutionary algorithms and the neural networks, will be presented as well. This course is only for students of the double degree program with the University of Antwerp. Other students are not allowed to enrol this course, enrol the BIE-ZUM course instead.			
NIE-AM1	Middleware Architectures 1	Z,ZK	5
Students will study new trends, concepts, and technologies in the area of service-oriented architectures. The will gain an overview of information system architecture, web service architecture and aplication servers. The will also study principles and technologies for middleware focused on application integrations, asynchronous communications and high availability of applications. This course replaces the course MIE-MDW.			
NIE-BLO	Blockchain	Z,ZK	5
Students will understand the foundations of blockchain technology, smart contract programming, and gain an overview of most notable blockchain platforms. They will be able to design, code and deploy a secure decentralized application, and assess whether integration of a blockchain is suitable for a given problem. The course places an increased emphasis on the relationship between blockchains and information security. It is concluded with a defense of a research or applied semester project, which prepares the students for implementing or supervising implementation of blockchain-based solutions in both academia and business.			
NIE-DIP	Diploma Project	Z	30
NIE-KOP	Combinatorial Optimization	Z,ZK	6
The students will gain knowledge and understanding necessary deployment of combinatorial heuristics at a professional level. They will be able not only to select and implement but also to apply and evaluate heuristics for practical problems.			
NIE-MPI	Mathematics for Informatics	Z,ZK	7
The course focuses on selected topics from general algebra with emphasis on finite structures used in computer science. It includes topics from multi-variate analysis, smooth optimization, and multi-variate integration. The third large topic is computer arithmetics and number representation in a computer along with error manipulation. The last topic includes selected numerical algorithm and their stability analysis. The topics are completed with the demonstration of applications in computer science. The course focuses on clear presentation and argumentation.			
NIE-MPR	Master Project	Z	7
1. At the beginning of the semester, a student reserves her/his final thesis topic and gets together with its supervisor. Together they decide on partial tasks that should be carried out during the semester. If the requirements they agreed upon are met, the supervisor awards the student an assessment for the course MI-MPR at the end of the semester. 2. The external supervisor enters the information on granting the credit using the form "Granting credit from the external supervisor of the final thesis" (http://fit.cvut.cz/student/studijni/formulare). The completed and signed form must be delivered in person or by email to the SZZ coordinator, who will arrange for the credit to be granted. 3. If the FT topic that the student has reserved is rather general, the immediate tasks the supervisor assigns to the student for the upcoming semester should aim at fine-tuning the FT topic so that the FTT will be complete and approvable at the end of the semester.			
NIE-NSS	Normalized Software Systems	ZK	5
Students will learn the foundations of normalized systems theory that studies the evolvability of modular structures based on concepts from engineering, such as stability from system theory and entropy from thermodynamics. Students will understand a set of principles that indicate where violations of stability and entropy-related issues occur in any given software architecture. In the second part of the course, students learn how to construct software architectures using a set of 5 design patterns called elements. These elements provide the core functionality of information systems in terms of storing data, executing actions, workflows, connectors, and triggers, while handling violations of the stability and entropy-related principles. This knowledge allows students to realize new levels of evolvability in software architectures.			
NIE-PDB	Advanced Database Systems	Z,ZK	5
Students orient themselves in problems of evaluation and optimization of SQL queries. The next part of the course deals with new concepts of database machines (so called NoSQL databases), with the related new data models (XML, graph databases, column databases) and languages for working with them (XQuery, XPath, CYPHER, Gremlin). The last part of the course deals with performance evaluation of database machines. This course is equivalent to the course MIE-PDB.			

NIE-PDP	Parallel and Distributed Programming	Z,ZK	6
21st century in computer architectures is primarily influenced by the shift of the Moore's law into parallelization of CPUs at the level of computing cores. Parallel computing systems are becoming a ubiquitous commodity and parallel programming becomes the basic paradigm of development of efficient applications for these platforms. Students get acquainted with architectures of parallel and distributed computing systems, their models, theory of interconnection networks and collective communication operations, and languages and environments for parallel programming of shared and distributed memory computers. They get acquianted with fundamental parallel algorithms and on selected problems, they will learn the techniques of design of efficient and scalable parallel algorithms and methods of performance evaluation of their implementations. The course includes a semester project of practical programming in OpenMP and MPI for solving a particular nontrivial problem.			
NIE-SWE	Semantic Web and Knowledge Graphs	Z,ZK	5
The students will learn the most recent concepts and technologies of the Semantic Web. The course will provide an overview of the Semantic Web technologies, methods and best practices for modelling, integration, publishing, querying and consumption of semantic data. The students will also gain skills in creation of knowledge graphs and their systematic quality assurance.			
NIE-VSM	Selected statistical Methods	Z,ZK	7
Summary of probability theory; Multivariate normal distribution; Entropy and its application to coding; Statistical tests: T-tests, goodness of fit tests, independence test; Random processes - stacionarity; Markov chains and limiting properties; Queuing theory			

Aktualizace výše uvedených informací naleznete na adrese http://bilakniha.cvut.cz/cs/FF.html
Generováno: dne 22.07.2025 v 09:43 hod.