Study plan

Name of study plan: Digitalizace ve stavebnictví - prezenční forma studia

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: Digitalization in Civil Engineering
Type of study: Follow-up master full-time
Required credits: 90
Elective courses credits: 0
Sum of credits in the plan: 90
Note on the plan: Studijní plán pro prezenční formu studia od akademického roku 2025/2026

Name of the block: Compulsory courses
Minimal number of credits of the block: 52
The role of the block: Z

Code of the group: NT202502
Name of the group: Digitalizace ve stavebnictví, 2. semestr
Requirement credits in the group: In this group you have to gain at least 28 credits
Requirement courses in the group: In this group you have to complete at least 8 courses
Credits in the group: 28
Note on the group:

Code	**Name of the course / Name of the group of courses** ***(in case of groups of courses the list of codes of their members)*** *Tutors,* ***authors*** *and guarantors (gar.)*	**Completion**	**Credits**	**Scope**	**Semester**	**Role**
125DNPS	**Digitization in HVAC Service Design and Operation**	Z,ZK	3	1P+1C	L	z
126SYPR	**Management Support Systems**	Z,ZK	3	2P+1C	L	z
154VMGD	**Advanced Methods in Geodesy and Digitization**	Z,ZK	4	1P+2C	L	z
105PDKS	**Law in Digitization and Communication in Digital World**	KZ	3	3C	L	z
155DPFS	**Digitization in Operational Phase of Construction**	Z,ZK	4	1P+2C	L	z
122DKKS	**Digitization of Quality Control in Civil Engineering**	Z,ZK	2	1P+1C	L	z
124PNAV	**Parametric design**	Z	4	1P+2C	L	z
126PJDS	**Project**	KZ	5	4C	L	z

Characteristics of the courses of this group of Study Plan: Code=NT202502 Name=Digitalizace ve stavebnictví, 2. semestr

125DNPS	Digitization in HVAC Service Design and Operation	Z,ZK	3
The course focuses on the design and operation of HVAC with respect to the use of digital technologies in the construction industry. First, the design of energy sources is addressed, followed by distribution systems and their condition analysis. Subsequently, the operation of these systems is addressed. Individual building systems are addressed with respect to their specificities.			
126SYPR	Management Support Systems	Z,ZK	3
This course aims to provide knowledge of standards and tools for management support. The whole course is introduced by topics that aim to explain the basic background of system management support and concepts in this area. The course focuses on process modelling, its relation to the specification of requirements for software systems and the specifics of the application of process modelling in the construction industry - especially in relation to building information modelling.			
154VMGD	Advanced Methods in Geodesy and Digitization	Z,ZK	4
105PDKS	Law in Digitization and Communication in Digital World	KZ	3
This course prepares students for the legal and communication aspects related to the BIM (Building Information Management) methodology, which is becoming mandatory for certain public contracts. Emphasis is placed not only on understanding copyright law, the management of digital databases, and licensing contracts but also on the ability to communicate project outcomes clearly and convincingly in both digital and public spaces. Students will develop skills in presentation, non-verbal communication, and emotional intelligence, with a strong focus on professional practice in the digital world.			
155DPFS	Digitization in Operational Phase of Construction	Z,ZK	4
122DKKS	Digitization of Quality Control in Civil Engineering	Z,ZK	2
124PNAV	Parametric design	Z	4
126PJDS	Project	KZ	5

Code of the group: NT202503

Name of the group: Digitalizace ve stavebnictví, 3. semestr
Requirement credits in the group: In this group you have to gain at least 24 credits
Requirement courses in the group: In this group you have to complete at least 2 courses
Credits in the group: 24
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
126DPDS	**Diploma Thesis**	Z	19	11C	Z	Z
126OPDS	**Professional Practice**	Z	5	8C	Z	Z

Characteristics of the courses of this group of Study Plan: Code=NT202503 Name=Digitalizace ve stavebnictví, 3. semestr

126DPDS	Diploma Thesis	Z	19
126OPDS	Professional Practice	Z	5

Name of the block: Compulsory courses in the program
Minimal number of credits of the block: 30
The role of the block: P

Code of the group: NT202501
Name of the group: Digitalizace ve stavebnictví, 1. semestr
Requirement credits in the group: In this group you have to gain at least 30 credits
Requirement courses in the group: In this group you have to complete at least 8 courses
Credits in the group: 30
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
126DSTA	**Digitalization in Civil Engineering**	ZK	4	3P	Z	P
126DATM	**Data Management**	Z,ZK	4	2P+1C	Z	P
132PYT1	**Computing in Python 1**	Z	3	1P+2C	Z	P
126DOCS	**Digitization in Construction Pricing**	Z,ZK	4	2P+2C	Z	P
126DASY	**Database Systems**	Z,ZK	4	2P+2C	Z	P
124DNRS	**Digitization in Design and Construction Execution**	KZ	4	2P+1C	Z	P
126COMS	**Commissioning**	Z,ZK	3	1P+1C	Z	P
126DKSZ	**Digital Communication and Contract Assurance**	Z,ZK	4	1P+2C	Z	P

Characteristics of the courses of this group of Study Plan: Code=NT202501 Name=Digitalizace ve stavebnictví, 1. semestr

126DSTA	Digitalization in Civil Engineering	ZK	4
126DATM	Data Management	Z,ZK	4
132PYT1	Computing in Python 1	Z	3
126DOCS	Digitization in Construction Pricing	Z,ZK	4
126DASY	Database Systems	Z,ZK	4
Modeling of relational databases, basics of SQL language for creating relational database, manipulation of data in database, retrieving data from database. Principles of object-oriented modeling and its application in EXPRESS modeling language, STEP data format and their use in IFC data structure, structure and basic content of IFC data.			
124DNRS	Digitization in Design and Construction Execution	KZ	4
126COMS	Commissioning	Z,ZK	3
126DKSZ	Digital Communication and Contract Assurance	Z,ZK	4
Within the course, the student will learn about tools enabling digital communication in construction projects during preparation and implementation. Furthermore, the student will learn the basics of enterprise business architecture of information systems and contractual provision of information systems. Within the course, the student will also learn about information systems such as data warehouses, document management systems, shared data environments and ticketing systems and their application for digital communication within construction projects.			

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 8
The role of the block: PV

Code of the group: NT202502PV

Name of the group: Digitalizace ve stavebnictví, povinně volitelné předměty, 2. semestr
Requirement credits in the group: In this group you have to gain at least 2 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 2
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
132YPYT2	**Computing in Python 2**	Z	2	2C	L	PV
132YMAT	**Computing in Matlab**	Z	2	2C	L	PV
126YVBA	**Computing in VBA**	Z	2	2C	L	PV

Characteristics of the courses of this group of Study Plan: Code=NT202502PV Name=Digitalizace ve stavebnictví, povinně volitelné předměty, 2. semestr

132YPYT2	Computing in Python 2	Z	2
132YMAT	Computing in Matlab	Z	2
This course focuses on developing students' programming skills in MATLAB.			
126YVBA	Computing in VBA	Z	2

Code of the group: NT202503PV
Name of the group: Digitalizace ve stavebnictví, povinně volitelné předměty, 3. semestr
Requirement credits in the group: In this group you have to gain at least 6 credits
Requirement courses in the group: In this group you have to complete at least 3 courses
Credits in the group: 6
Note on the group:

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors,* ***authors*** *and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
126YASU	**Data Analysis and Machine Learning**	Z	2	2C	Z	PV
155YPMV	**Advanced Visualization Methods**	Z	2	2C	Z	PV
126YKBR	**Cybersecurity and IT Risk Management**	Z	2	2C	Z	PV
122YRST	**Robotic and Special Technologies**	Z	2	2C	Z	PV
125YENB	**Building Energy Efficiency**	Z	2	2C	Z	PV
126YMIS	**Managerial Information Systems** *Lucie Brožová, Petr Kalčev* ***Petr Kalčev*** *Petr Kalčev (Gar.)*	Z	2	2C	Z	PV
134YTNK	**Information technology in Fundamentals of Sustainable Structural Design**	Z	2	2C	Z	PV

Characteristics of the courses of this group of Study Plan: Code=NT202503PV Name=Digitalizace ve stavebnictví, povinně volitelné předměty, 3. semestr

126YASU	Data Analysis and Machine Learning	Z	2
155YPMV	Advanced Visualization Methods	Z	2
126YKBR	Cybersecurity and IT Risk Management	Z	2
The course provides students with a broad spectrum of knowledge and skills in the field of cyber security and risk management in an IT environment. Upon completion of the course, students will be able to successfully identify and minimize risks associated with cyber security within the construction industry. Students will also be able to understand international standards and guidelines for cyber security, as well as relevant Czech legislation.			
122YRST	Robotic and Special Technologies	Z	2
During the course, students will be introduced to the basics of robotics, the basics of industrial automation, the programming of industrial robots in construction technology, and the basics of parametric modeling and its use for controlling industrial robots.			
125YENB	Building Energy Efficiency	Z	2
126YMIS	Managerial Information Systems	Z	2
Enterprise IS architecture, internal and external information sources to support managerial decision-making - Business Intelligence, information strategy of the enterprise, IS effectiveness, structure and function of managerial IS, multidimensional database and OLAP technology, procedure for building and implementing managerial IS, practical demonstration of Business Navigation System applications and the COGNOS system in construction companies, knowledge management and knowledge base to support strategic management, Competitive Intelligence.			
134YTNK	Information technology in Fundamentals of Sustainable Structural Design	Z	2

List of courses of this pass:

Code	Name of the course	Completion	Credits
105PDKS	Law in Digitization and Communication in Digital World	KZ	3
This course prepares students for the legal and communication aspects related to the BIM (Building Information Management) methodology, which is becoming mandatory for certain public contracts. Emphasis is placed not only on understanding copyright law, the management of digital databases, and licensing contracts but also on the ability to communicate project outcomes clearly and convincingly in both digital and public spaces. Students will develop skills in presentation, non-verbal communication, and emotional intelligence, with a strong focus on professional practice in the digital world.			
122DKKS	Digitization of Quality Control in Civil Engineering	Z,ZK	2
122YRST	Robotic and Special Technologies	Z	2
During the course, students will be introduced to the basics of robotics, the basics of industrial automation, the programming of industrial robots in construction technology, and the basics of parametric modeling and its use for controlling industrial robots.			
124DNRS	Digitization in Design and Construction Execution	KZ	4
124PNAV	Parametric design	Z	4
125DNPS	Digitization in HVAC Service Design and Operation	Z,ZK	3
The course focuses on the design and operation of HVAC with respect to the use of digital technologies in the construction industry. First, the design of energy sources is addressed, followed by distribution systems and their condition analysis. Subsequently, the operation of these systems is addressed. Individual building systems are addressed with respect to their specificities.			
125YENB	Building Energy Efficiency	Z	2
126COMS	Commissioning	Z,ZK	3
126DASY	Database Systems	Z,ZK	4
Modeling of relational databases, basics of SQL language for creating relational database, manipulation of data in database, retrieving data from database. Principles of object-oriented modeling and its application in EXPRESS modeling language, STEP data format and their use in IFC data structure, structure and basic content of IFC data.			
126DATM	Data Management	Z,ZK	4
126DKSZ	Digital Communication and Contract Assurance	Z,ZK	4
Within the course, the student will learn about tools enabling digital communication in construction projects during preparation and implementation. Furthermore, the student will learn the basics of enterprise business architecture of information systems and contractual provision of information systems. Within the course, the student will also learn about information systems such as data warehouses, document management systems, shared data environments and ticketing systems and their application for digital communication within construction projects.			
126DOCS	Digitization in Construction Pricing	Z,ZK	4
126DPDS	Diploma Thesis	Z	19
126DSTA	Digitalization in Civil Engineering	ZK	4
126OPDS	Professional Practice	Z	5
126PJDS	Project	KZ	5
126SYPR	Management Support Systems	Z,ZK	3
This course aims to provide knowledge of standards and tools for management support. The whole course is introduced by topics that aim to explain the basic background of system management support and concepts in this area. The course focuses on process modelling, its relation to the specification of requirements for software systems and the specifics of the application of process modelling in the construction industry - especially in relation to building information modelling.			
126YASU	Data Analysis and Machine Learning	Z	2
126YKBR	Cybersecurity and IT Risk Management	Z	2
The course provides students with a broad spectrum of knowledge and skills in the field of cyber security and risk management in an IT environment. Upon completion of the course, students will be able to successfully identify and minimize risks associated with cyber security within the construction industry. Students will also be able to understand international standards and guidelines for cyber security, as well as relevant Czech legislation.			
126YMIS	Managerial Information Systems	Z	2
Enterprise IS architecture, internal and external information sources to support managerial decision-making - Business Intelligence, information strategy of the enterprise, IS effectiveness, structure and function of managerial IS, multidimensional database and OLAP technology, procedure for building and implementing managerial IS, practical demonstration of Business Navigation System applications and the COGNOS system in construction companies, knowledge management and knowledge base to support strategic management, Competitive Intelligence.			
126YVBA	Computing in VBA	Z	2
132PYT1	Computing in Python 1	Z	3
132YMAT	Computing in Matlab	Z	2
This course focuses on developing students' programming skills in MATLAB.			
132YPYT2	Computing in Python 2	Z	2
134YTNK	Information technology in Fundamentals of Sustainable Structural Design	Z	2
154VMGD	Advanced Methods in Geodesy and Digitization	Z,ZK	4
155DPFS	Digitization in Operational Phase of Construction	Z,ZK	4
155YPMV	Advanced Visualization Methods	Z	2

For updated information see http://bilakniha.cvut.cz/en/FF.html
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