

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 Michal Kabrhel, Karel Kabele Michal Kabrhel Michal Kabrhel (Gar.)	Z,ZK	3	1P+1C	L	Z
126SYPR	Management Support Systems Jiří Kaiser Jiří Kaiser Jiří Kaiser (Gar.)	Z,ZK	3	2P+1C	L	Z
154VMGD	Advanced Methods in Geodesy and Digitization Karel Pavelka, Karel Pavelka, Karel Pavelka, Martin Štroner Karel Pavelka Martin Štroner (Gar.)	Z,ZK	4	1P+2C	L	Z
105PDKS	Law in Digitization and Communication in Digital World Rudolf Pecha, Jitka Cirklová Rudolf Pecha Jitka Cirklová (Gar.)	KZ	3	3C	L	Z
155DPFS	Digitization in Operational Phase of Construction Aleš Choutka, Jiří Cajthaml, Tomáš Janata, Jaroslav Šedina Jiří Cajthaml Jiří Cajthaml (Gar.)	Z,ZK	4	1P+2C	L	Z
122DKKS	Digitization of Quality Control in Civil Engineering Linda Veselá Linda Veselá Linda Veselá (Gar.)	Z,ZK	2	1P+1C	L	Z
124PNAV	Parametric design Zdenko Malík Zdenko Malík Zdenko Malík (Gar.)	Z	4	1P+2C	L	Z
126PJDS	Project Daniel Macek Daniel Macek Daniel Macek (Gar.)	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
Current world trends in the field of quality management: quality management system (SMK) according to EN ISO 9001, Total Quality Management (TQM) and re-engineering in application to a construction company. Analysis of quality management system processes. Forms of familiarization with the subject on specific cases based on practical experience, namely: management of the organization so that quality management and assurance is reflected in the implementation of construction e meeting customer requirements that are defined in the contract continuous improvement of the effectiveness of SMK and training in the principles of quality policy, such as: Continuous satisfaction of external and internal customer requirements; execution of works; active involvement of all staff in quality improvement; creation of conditions by the management of the organization for flawless performance of all staff; application of the latest trends in achieving high quality processes and products; effective communication and teamwork in applying the process approach of the quality management system in the organisation; all-round training of employees in order to capture the current world trend; motivation of employees by management and differentiated remuneration for the results achieved in the performance of work tasks; growth of culture in the organisation, economic prosperity and the resulting social approach of management to employees.			
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 Daniel Macek	Z	19	11C	Z	Z
126OPDS	Professional Practice Daniel Macek	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 Robert Bouška, Zdeněk Rudovský Robert Bouška Robert Bouška (Gar.)	ZK	4	3P	Z	P
126DATM	Data Management Marek Suchánek, Jana Martínková Marek Suchánek Marek Suchánek (Gar.)	Z,ZK	4	2P+1C	Z	P
132PYT1	Computing in Python 1 Vít Šmilauer, Bořek Patzák Bořek Patzák Bořek Patzák (Gar.)	Z	3	1P+2C	Z	P
126DOCS	Digitization in Construction Pricing Stanislav Vitásek Stanislav Vitásek Stanislav Vitásek (Gar.)	Z,ZK	4	2P+2C	Z	P
126DASY	Database Systems Jiří Kaiser Jiří Kaiser Jiří Kaiser (Gar.)	Z,ZK	4	2P+2C	Z	P
124DNRS	Digitization in Design and Construction Execution Jaroslav Synek, Kristýna Schulzová Kristýna Schulzová Kristýna Schulzová (Gar.)	KZ	4	2P+1C	Z	P
126COMS	Commissioning Daniel Macek, Martin Václavík Daniel Macek Daniel Macek (Gar.)	Z,ZK	3	1P+1C	Z	P
126DKSZ	Digital Communication and Contract Assurance Josef Žák Josef Žák Josef Žák (Gar.)	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
The course focuses on an introduction to digitization in construction. It is designed to familiarize students with basic topics that will be followed up on in other courses within the program. The topics are selected to create the necessary terminology and knowledge base that can be built upon throughout the entire program. Some topics, on the other hand, link the topic of digitization in construction in the context of other specializations, allowing students to gain a comprehensive view of the issue.			

126DATM	Data Management	Z,ZK	4
The course "Data Management" provides an overview of the basic principles and practices of data management in the context of construction projects. This course will equip students with the necessary knowledge and skills to effectively collect, organize, analyze, and interpret data related to structural analysis, geotechnical investigation, and other construction activities. The course covers various data management techniques, including data acquisition, storage, integration, quality assurance, and visualization, while emphasizing the importance of data governance, security, and ethical aspects. Students will gain valuable insights into using data to make informed decisions, increase project efficiency, and improve overall data management.			
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 Vít Šmilauer, Bořek Patzák, Tomáš Janda, Jan Sýkora Vít Šmilauer Vít Šmilauer (Gar.)	Z	2	2C	L	PV
132YMAT	Computing in Matlab Jan Sýkora Jan Sýkora Jan Sýkora (Gar.)	Z	2	2C	L	PV
126YVBA	Computing in VBA Daniel Macek Daniel Macek Daniel Macek (Gar.)	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
The course deals with advanced programming in Python 3 - object-oriented programming, working with databases and images, APIs, GUIs, statistics, machine learning and neural networks.			
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 Karel Pavelka	Z	2	2C	Z	PV
126YKBR	Cybersecurity and IT Risk Management Robert Bouška	Z	2	2C	Z	PV

122YRST	Robotic and Special Technologies	Z	2	2C	Z	PV
125YENB	Building Energy Efficiency <i>Karel Kabele</i>	Z	2	2C	Z	PV
126YMIS	Managerial Information Systems <i>Lucie Brožová, Petr Kalčev Petr Kalčev Petr Kalčev (Gar.)</i>	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
Current world trends in the field of quality management: quality management system (SMK) according to EN ISO 9001, Total Quality Management (TQM) and re-engineering in application to a construction company. Analysis of quality management system processes. Forms of familiarization with the subject on specific cases based on practical experience, namely: management of the organization so that quality management and assurance is reflected in the implementation of construction e meeting customer requirements that are defined in the contract continuous improvement of the effectiveness of SMK and training in the principles of quality policy, such as: Continuous satisfaction of external and internal customer requirements; execution of works; active involvement of all staff in quality improvement; creation of conditions by the management of the organization for flawless performance of all staff; application of the latest trends in achieving high quality processes and products; effective communication and teamwork in applying the process approach of the quality management system in the organisation; all-round training of employees in order to capture the current world trend; motivation of employees by management and differentiated remuneration for the results achieved in the performance of work tasks; growth of culture in the organisation, economic prosperity and the resulting social approach of management to employees.			
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
The course "Data Management" provides an overview of the basic principles and practices of data management in the context of construction projects. This course will equip students with the necessary knowledge and skills to effectively collect, organize, analyze, and interpret data related to structural analysis, geotechnical investigation, and other construction activities. The course covers various data management techniques, including data acquisition, storage, integration, quality assurance, and visualization, while emphasizing the importance of data governance, security, and ethical aspects. Students will gain valuable insights into using data to make informed decisions, increase project efficiency, and improve overall data management.			

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
The course focuses on an introduction to digitization in construction. It is designed to familiarize students with basic topics that will be followed up on in other courses within the program. The topics are selected to create the necessary terminology and knowledge base that can be built upon throughout the entire program. Some topics, on the other hand, link the topic of digitization in construction in the context of other specializations, allowing students to gain a comprehensive view of the issue.			
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
The course deals with advanced programming in Python 3 - object-oriented programming, working with databases and images, APIs, GUIs, statistics, machine learning and neural networks.			
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>

Generated: day 2026-05-11, time 21:01.