Study plan

Name of study plan: obor Projektový management a inženýring

Faculty/Institute/Others:
Department:
Branch of study guaranteed by the department: Welcome page
Garantor of the study branch:
Program of study: 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: tento studijní plán platí do nástupu 2022/23

Name of the block: Compulsory courses
Minimal number of credits of the block: 86
The role of the block: Z

Code of the group: NP20170100
Name of the group: obor Projektový management a inženýring, 1. semestr
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 30
Note on the group: 126PLCO místo 126INGZ

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
126BIMB	**BIM - Information modeling** *Petr Matějka, Josef Žák* ***Petr Matějka*** *Petr Matějka (Gar.)*	Z,ZK	4	1P+3C	Z	z
126FIMA	**Financial Management** *Aleš Tomek, Radan Tomek* ***Aleš Tomek*** *Aleš Tomek (Gar.)*	Z,ZK	5	2P+2C	Z	z
126MJKP	**Quality and Risk Management** *Vilém Berka* ***Petr Dlask***	ZK	4	3P	Z	z
126OCNE	**Property Appraisal** *Renáta Schneiderová Heralová* ***Renáta Schneiderová Heralová*** *Renáta Schneiderová Heralová (Gar.)*	Z,ZK	5	2P+2C	Z	z
126PLCO	**Construction economics (prices, costs, costing)** *Renáta Schneiderová Heralová* ***Renáta Schneiderová Heralová*** *Renáta Schneiderová Heralová (Gar.)*	Z,ZK	5	1P+3C	Z	z
126PM01	**Project Management 1** *Michal Vondruška* ***Michal Vondruška*** *Michal Vondruška (Gar.)*	Z,ZK	7	3P+3C	Z	z

Characteristics of the courses of this group of Study Plan: Code=NP20170100 Name=obor Projektový management a inženýring, 1. semestr

126BIMB	BIM - Information modeling	Z,ZK	4
Subject deals with Building Information Modeling (BIM) topic as with the modern tool for management and operation of construction projects. It is oriented to handling basic relevant software (Autodesk Revit, Autodesk Navisworks) and especially to understanding meaning of BIM in current construction business and its future and importance in specific phases of construction projects.			
126FIMA	Financial Management	Z,ZK	5
Advanced course in the financial management of a construction company - links to project finance and the system of intra-company economic management (centres). Corporate budgets as a tool for implementing the company's strategy. Liquidity management of a construction company - working capital management and cashflow forecast. Financial analysis and its application in a construction company. Financial controlling of the company and its functions. Valuation of construction companies. Corporate financial policies - optimal mix of debt and equity, financing of new projects, dividend policy. The EVA method. Project finance and its application in BOT projects. Financing of standard contract projects (domestic and international).			
126MJKP	Quality and Risk Management	ZK	4
The course offers a basic orientation in terminology and normative documents related to the issue of quality management and risk management. The problem is applied to practical examples solved within the extended knowledge of office applications. More the course provides extended practical skills for working with data in current office tools.			
126OCNE	Property Appraisal	Z,ZK	5
Basic terms from the property appraisal area. Property appraisal methods, purpose and utilization, appraisal theory. Cost method, method of comparison, method of returns. Market value analysis - methods of final analysis of market value. Administrative price of real estates, property appraisal in banking, insurance industry, in business activities, in property administration.			

126PLCO	Construction economics (prices, costs, costing)	Z,ZK	5
Planning and controlling with a focus on project controlling, getting acquainted with modern tools and managerial decision-making techniques that enable efficient management of the construction company and independent solution of tasks on real projects using modern management tools (SW for cost, time and resource management).			
126PM01	Project Management 1	Z,ZK	7
The subject is focused on important decision-making processes and management processes in the preparation and implementation of construction from the perspective of the owner of the construction project. The goal is to analyze the appropriateness of developer acquisition, project activity, legislative preparation, permitting processes, choice of supplier system, choice of supplier evaluation method, choice of contract form. The main attention will be paid to the comparison of the traditional construction delivery method (Design Bid Build) with current alternative delivery systems (Design Build, Integrated Project Delivery, Construction Management). The teaching is supplemented by a number of case studies.			

Code of the group: NP20170200
Name of the group: obor Projektový management a inženýring, 2. semestr
Requirement credits in the group: In this group you have to gain 26 credits
Requirement courses in the group: In this group you have to complete at least 6 courses
Credits in the group: 26
Note on the group: 126INGZ místo 126PLCO, úpravy kreditů

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
101MMR	**Mathematical Methods of Controlling** *Martin Hála, Jozef Bobok* ***Martin Hála*** *Jozef Bobok (Gar.)*	Z,ZK	3	2P+1C	L	z
126FAMG	**Facility Management** *Daniel Macek* ***Daniel Macek*** *Daniel Macek (Gar.)*	Z,ZK	4	1P+3C	L	z
126KIST	**Calculation of Transport Infrastructure** *Josef Žák, Stanislav Vitásek, Iveta Střelcová* ***Iveta Střelcová*** *Iveta Střelcová (Gar.)*	Z,ZK	5	2P+2C	L	z
126INZG	**Engineering** *Dana Měšťanová, Václav Tatýrek* ***Václav Tatýrek*** *Dana Měšťanová (Gar.)*	Z,ZK	5	2P+2C	Z,L	z
126PM2	**Project Management 2** *Michal Vondruška* ***Michal Vondruška*** *Michal Vondruška (Gar.)*	Z,ZK	5	3P+1C	L	z
126DISP	**Diploma Seminar** *Petr Matějka, Aleš Tomek, Radan Tomek, Martin Čásenský, Renáta Schneiderová Heralová, Michal Vondruška, Daniel Macek, Dana Měšťanová, Václav Tatýrek, ...* ***Eduard Hromada***	Z	4	3C	L	z

Characteristics of the courses of this group of Study Plan: Code=NP20170200 Name=obor Projektový management a inženýring, 2. semestr

101MMR	Mathematical Methods of Controlling	Z,ZK	3
Within the course some chapters on probability theory and selected statistical methods are explained. The material presented is illustrated with examples focusing on economic applications and applications in theory of controlling. Excel and the freely available statistical software Jamovi are used to solve the examples.			
126FAMG	Facility Management	Z,ZK	4
The aim of the course is to understand the issue of integrated facility management in the context of the currently valid standards ČSN EN 15221 and ČSN EN ISO 41001 - Facility management. Students will become familiar with the principles of efficient building operation, including the provision of support activities in the form of in-house and outsourcing. As part of the life cycle of buildings, they solve the issue of operating costs, including maintenance and renewal planning, where they use the Buildpass application. Students will learn to work with the ARCHIBUS CAFM system, from linking the BIM model from the Revit application to solving practical tasks in building management and operation.			
126KIST	Calculation of Transport Infrastructure	Z,ZK	5
Deepening of knowledge in the field of transport constructions (roads, bridges, culverts and retaining walls) both in terms of valuation and preparation of constructions (prices, cost calculation, construction site equipment) and in terms of technology.			
126INZG	Engineering	Z,ZK	5
Conceptual and operational management of development projects from perspective of time, resources, cost, analysis of resources, solution design, external examination, investment opportunities study, feasibility study, interest optimization, technological, legal, financial resources, price determination, commercial contractual law, engineering contracts specimens, VOB (Verdingungsordnung für Bauleistungen) delivery conditions used by german investors - FIDIC contractual terms used in international construction practice, contractual determination of performance and quality parameters, contractual sanctions, time realistic plans, territorial, constructional governance, law no. 183/2006 Sb. fulfilment, construction order assignment, investment engineering, supplier engineering, suppliers coordination, financial management, capacity management, quality control, technological regulations, handover proceedings plan, test run operation, parameters fulfilment assessment, construction maintenance planning, marketing, building changes prior completion, building handover and acceptance, handover documentation, performance audit, decision processes and methods, invested energy. BIM. Documentation rules. Insolvency, Social responsibility in construction firms, RIPRAN method.			
126PM2	Project Management 2	Z,ZK	5
The teaching of the subject Project management 2 is focused on the acquisition of project management methods in the implementation of large-scale technological constructions and constructions of transport infrastructure. The curriculum is based on the classical theory of project management according to the PMBOK (Project Management Body of Knowledge) and its application to the construction project management manuals of major construction companies (Best Practice). Detailed attention is paid to the main processes of project management (scope, time, cost, quality, human resources, risk and procurement management). The procedural management of construction projects is supplemented by the current issue of claims management and crisis management of construction projects.			
126DISP	Diploma Seminar	Z	4
At the beginning of the semester, each student contacts the supervisor from the Department of Construction Management and Economics (the list of framework topics is published in the KOS information system). In cooperation with the work supervisor, the topic of work from the field of construction and economics is specified. The project deals with problems mainly from construction practice. The project is a preparation for own diploma thesis. The output of the project is the assignment of the topic of the diploma thesis, preparation of the thesis outline, search and study of literature, research and detailed familiarization with the solved problem. The student studies the methodological instructions of the CTU in Prague on how to write university final theses - see http://knihovna.cvut.cz/cs/seminare-a-vyuka/jak-psat/jak-psat-zaverecnou-praci.			

Code of the group: NP20160300

Name of the group: obor Projektový management a inženýring, diplomová práce
Requirement credits in the group: In this group you have to gain 30 credits
Requirement courses in the group: In this group you have to complete at least 1 course
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
126DPM	**Diploma Thesis** *Petr Matějka, Josef Žák, Robert Bouška, Aleš Tomek, Radan Tomek, Martin Časenský, Renáta Schneiderová Heralová, Michal Vondruška, Daniel Macek, ... **Eduard Hromada** Václav Tatýrek (Gar.)*	Z	30	24C	Z	z

Characteristics of the courses of this group of Study Plan: Code=NP20160300 Name=obor Projektový management a inženýring, diplomová práce

126DPM	Diploma Thesis	Z	30

In his/her diploma thesis a student deals with topics from civil engineering and construction, economic and management. He/she solves problems both from operational practice and from research and development. A thesis contains a text part, drawings and possibly documentation. In the project conclusion a student will highlight his/her own contribution to the assigned topic. A thesis links to diploma project and augments knowledge gained of it. The student continuously consults the work with the supervisor, when he submits the individual parts in progress.

Name of the block: Compulsory elective courses
Minimal number of credits of the block: 4
The role of the block: S

Code of the group: NP20160200_1
Name of the group: obor Projektový management a inženýring, povinně volitelné předměty
Requirement credits in the group: In this group you have to gain 4 credits
Requirement courses in the group: In this group you have to complete at least 1 course
Credits in the group: 4
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
126YBM	**Safety Management** ***Petr Dlask***	Z,ZK	4	2P+2C	L	s
126YCEM	**Construction Economics and Management** *Aleš Tomek, Radan Tomek* ***Aleš Tomek*** *Aleš Tomek (Gar.)*	Z,ZK	4	2P+2C	L	s
126YCON	**Construction Contracting** *Aleš Tomek, Radan Tomek* ***Aleš Tomek***	Z,ZK	4	4P	L	s
126YEMB	**Energy Management** *Jiří Karásek* ***Jiří Karásek*** *Jiří Karásek (Gar.)*	Z,ZK	4	2P+2C	L	s

Characteristics of the courses of this group of Study Plan: Code=NP20160200_1 Name=obor Projektový management a inženýring, povinně volitelné předměty

126YBM	Safety Management	Z,ZK	4

Basic presumption of successfull manager's career is the knowledge of safety management. The student receives structural information and theoretical overview of the safety management system according to the international standards and validated methods.

126YCEM	Construction Economics and Management	Z,ZK	4

A-Z of construction engineering and management both at the corporate and project level. All participants, processes and aspects of the construction industry are introduced. Course concentrates on all major topics of company and project management, e.g. business development and marketing, bidding, planning and controlling of all vital processes, financial management, cost control, risk management, etc. Lectures are based on the real practice experience of all course's lecturers and various case studies are studied and solved. Online Building Industry Game (BIG) will be played by all course participants through the whole semester (a computer simulation of a realistic business environment where participants play the role of contractors, competing in a market with variable demand for construction work). In this online game, developed and directly operated by the California Polytechnic State University, students act as contractors, managing both, their companies and projects.

126YCON	Construction Contracting	Z,ZK	4

As every project manager in construction business has to be a contract manager at the same time, understanding the contract - respectively contracting in general - is a must. Course of Construction Contracting is oriented on current business practices and methods, management techniques and understanding general legal principles, codes and regulations. It is about doing business in construction using standard procurement systems and applying given types of contracts, respectively standard contracts (e.g. FIDIC). Lectures are based on the real practice experience of both course's lecturers and various case studies are studied and solved in the course.

126YEMB	Energy Management	Z,ZK	4

The course on energy management covers the issues of management in general, energy management, energy systems, and energy efficiency in the European legislation framework. The main target of the course is to explain basic principles and future changes in the construction industry, specifically in the field of energy efficiency economics. The students will increase their knowledge about strategies towards sustainable energy in buildings and mainly about energy efficiency. A specific part of the course is dedicated to the evaluation of energy efficiency measures, supporting schemes for energy efficiency, tackling energy poverty, multi-criterial evaluation of projects, LCA (live cycle assessment) and LCC (life cycle cost), moreover the students receive overview of the cost optimum calculation.

List of courses of this pass:

Code	Name of the course	Completion	Credits
101MMR	Mathematical Methods of Controlling	Z,ZK	3
	Within the course some chapters on probability theory and selected statistical methods are explained. The material presented is illustrated with examples focusing on economic applications and applications in theory of controlling. Excel and the freely available statistical software Jamovi are used to solve the examples.		
126BIMB	BIM - Information modeling	Z,ZK	4
	Subject deals with Building Information Modeling (BIM) topic as with the modern tool for management and operation of construction projects. It is oriented to handling basic relevant software (Autodesk Revit, Autodesk Navisworks) and especially to understanding meaning of BIM in current construction business and its future and importance in specific phases of construction projects.		
126DISP	Diploma Seminar	Z	4
	At the beginning of the semester, each student contacts the supervisor from the Department of Construction Management and Economics (the list of framework topics is published in the KOS information system). In cooperation with the work supervisor, the topic of work from the field of construction and economics is specified. The project deals with problems mainly from construction practice. The project is a preparation for own diploma thesis. The output of the project is the assignment of the topic of the diploma thesis, preparation of the thesis outline, search and study of literature, research and detailed familiarization with the solved problem. The student studies the methodological instructions of the CTU in Prague on how to write university final theses - see http://knihovna.cvut.cz/cs/seminare-a-vyuka/jak-psat/jak-psat-zaverecnou-praci.		
126DPM	Diploma Thesis	Z	30
	In his/her diploma thesis a student deals with topics from civil engineering and construction, economic and management. He/she solves problems both from operational practice and from research and development. A thesis contains a text part, drawings and possibly documentation. In the project conclusion a student will highlight his/her own contribution to the assigned topic. A thesis links to diploma project and augments knowledge gained of it. The student continuously consults the work with the supervisor, when he submits the individual parts in progress.		
126FAMG	Facility Management	Z,ZK	4
	The aim of the course is to understand the issue of integrated facility management in the context of the currently valid standards ČSN EN 15221 and ČSN EN ISO 41001 - Facility management. Students will become familiar with the principles of efficient building operation, including the provision of support activities in the form of in-house and outsourcing. As part of the life cycle of buildings, they solve the issue of operating costs, including maintenance and renewal planning, where they use the Buildpass application. Students will learn to work with the ARCHIBUS CAFM system, from linking the BIM model from the Revit application to solving practical tasks in building management and operation.		
126FIMA	Financial Management	Z,ZK	5
	Advanced course in the financial management of a construction company - links to project finance and the system of intra-company economic management (centres). Corporate budgets as a tool for implementing the company's strategy. Liquidity management of a construction company - working capital management and cashflow forecast. Financial analysis and its application in a construction company. Financial controlling of the company and its functions. Valuation of construction companies. Corporate financial policies - optimal mix of debt and equity, financing of new projects, dividend policy. The EVA method. Project finance and its application in BOT projects. Financing of standard contract projects (domestic and international).		
126INZG	Engineering	Z,ZK	5
	Conceptual and operational management of development projects from perspective of time, resources, cost, analysis of resources, solution design, external examination, investment opportunities study, feasibility study, interest optimization, technological, legal, financial resources, price determination, commercial contractual law, engineering contracts specimens, VOB (Verdingungsordnung für Bauleistungen) delivery conditions used by german investors - FIDIC contractual terms used in international construction practice, contractual determination of performance and quality parameters, contractual sanctions, time realistic plans, territorial, constructional governance, law no. 183/2006 Sb. fulfilment, construction order assignment, investment engineering, supplier engineering, suppliers coordination, financial management, capacity management, quality control, technological regulations, handover proceedings plan, test run operation, parameters fulfilment assessment, construction maintenance planning, marketing, building changes prior completion, building handover and acceptance, handover documentation, performance audit, decision processes and methods, invested energy. BIM. Documentation rules. Insolvency, Social responsibility in construction firms, RIPRAN method.		
126KIST	Calculation of Transport Infrastructure	Z,ZK	5
	Deepening of knowledge in the field of transport constructions (roads, bridges, culverts and retaining walls) both in terms of valuation and preparation of constructions (prices, cost calculation, construction site equipment) and in terms of technology.		
126MJKP	Quality and Risk Management	ZK	4
	The course offers a basic orientation in terminology and normative documents related to the issue of quality management and risk management. The problem is applied to practical examples solved within the extended knowledge of office applications. More the course provides extended practical skills for working with data in current office tools.		
126OCNE	Property Appraisal	Z,ZK	5
	Basic terms from the property appraisal area. Property appraisal methods, purpose and utilization, appraisal theory. Cost method, method of comparison, method of returns. Market value analysis - methods of final analysis of market value. Administrative price of real estates, property appraisal in banking, insurance industry, in business activities, in property administration.		
126PLCO	Construction economics (prices, costs, costing)	Z,ZK	5
	Planning and controlling with a focus on project controlling, getting acquainted with modern tools and managerial decision-making techniques that enable efficient management of the construction company and independent solution of tasks on real projects using modern management tools (SW for cost, time and resource management).		
126PM01	Project Management 1	Z,ZK	7
	The subject is focused on important decision-making processes and management processes in the preparation and implementation of construction from the perspective of the owner of the construction project. The goal is to analyze the appropriateness of developer acquisition, project activity, legislative preparation, permitting processes, choice of supplier system, choice of supplier evaluation method, choice of contract form. The main attention will be paid to the comparison of the traditional construction delivery method (Design Bid Build) with current alternative delivery systems (Design Build, Integrated Project Delivery, Construction Management). The teaching is supplemented by a number of case studies.		
126PM2	Project Management 2	Z,ZK	5
	The teaching of the subject Project management 2 is focused on the acquisition of project management methods in the implementation of large-scale technological constructions and constructions of transport infrastructure. The curriculum is based on the classical theory of project management according to the PMBOK (Project Management Body of Knowledge) and its application to the construction project management manuals of major construction companies (Best Practice). Detailed attention is paid to the main processes of project management (scope, time, cost, quality, human resources, risk and procurement management). The procedural management of construction projects is supplemented by the current issue of claims management and crisis management of construction projects.		

126YBM	Safety Management	Z,ZK	4
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126YEMB	Energy Management	Z,ZK	4
The course on energy management covers the issues of management in general, energy management, energy systems, and energy efficiency in the European legislation framework. The main target of the course is to explain basic principles and future changes in the construction industry, specifically in the field of energy efficiency economics. The students will increase their knowledge about strategies towards sustainable energy in buildings and mainly about energy efficiency. A specific part of the course is dedicated to the evaluation of energy efficiency measures, supporting schemes for energy efficiency, tackling energy poverty, multi-criterial evaluation of projects, LCA (live cycle assessment) and LCC (life cycle cost), moreover the students receive overview of the cost optimum calculation.			

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