

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Construction Project Management</b>		Code <b>1010102111010111978</b>
Field of study <b>Civil Engineering Second-cycle Studies</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 1</b>
Elective path/specialty <b>Railways</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>Second-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>-</b> Laboratory: <b>-</b> Project/seminars: <b>1</b>		No. of credits <b>3</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>3 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Tomasz Wiatr email: tomasz.wiatr@put.poznan.pl tel. 665-2454, 665-2457 Faculty of Civil and Environmental Engineering ul. Piotrowo 5, 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Knowledge from area of key subjects contained in educational standard of the first-cycle civil engineer studies, including knowledge of construction techniques.
2	<b>Skills</b>	Designing of simpler construction facilities (building-, bridge-, road-, railway- type) at the area of selected branch of civil engineering, having regard operation needs.
3	<b>Social competencies</b>	Basic teamwork competences, openness for cooperation, respect for common effects of creative designing work of engineers (authorship, as a result of teamwork).
<b>Assumptions and objectives of the course:</b> Co-creation of professional civil engineers qualifications (for own specialty), like a designers and managers in construction. Particular significance has integration of design and execution knowledge, as well computer modelling of construction facility and construction simulation, like a base of feasible project plan implementation and managing of them.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Project management knowledge areas recognition and connection of them rest construction knowledge (elements of construction project engineering). - [K_W10] 2. Classification and application of software for project scheduling (PMS), construction facility designing (BIM) and integrated construction planing/design (6D BIM). - [K_W08] 3. Knowledge improvement about construction facilities (specific for given specialty) across structures designing and optimisation of model facilities (concept and details). - [K_W09]		
<b>Skills:</b>		
1. Facility designing in 3D BIM approach with aid of resources and industrial foundation classes (IFC). - [K_U02] 2. Project network scheduling in time-cost aspect with aid of resources and project structure organisation. - [K_U10] 3. Visualisation in time-spatial approach (elements of 4D simulation) in context of safety and logistics. - [K_U12]		
<b>Social competencies:</b>		
1. Overall look at project from the recipient (user/orderer/investor) point of view in the aspect of whole life cycle of facility (construction-operation-deconstruction) and environment. - [K_K04] 2. Competences for project teamwork (sense of common goal and role of communication and motivation) with taking of other project participants needs (coworkers, cooperants, stakeholders). - [K_K05] 3. Readiness for engage in the professional practice towards independent technical functions with taking of society needs (ethics and professional liability). - [K_K01]		

<b>Assessment methods of study outcomes</b>		
<p>Base of lecture note is writing test contained up to 9 issues (short tasks of calculate-, describe-, indicate- type) with over 4 fully correct answers; base of laboratories note is project elaboration in electronic (source files) and printed (PDF) version as well ability to submit what was done (result and the way to achieve it).</p>		
<b>Course description</b>		
<p>Lecture: review of project management knowledge areas in construction; financial, procurement, payment and delivery systems of investment projects; formal and law procedures; project design, pre-tender and post-completion documentation (designing as project planing); categorisation of facilities with levels of design supervision and execution inspection; methods of project planning and control (products, processes, resources) in aspect of BIM; time-cost/values-resources analysis as well risk/reliability; fundamentals of construction project engineering (own model CMS/IVO with algorithms in CPM/IVO subsystem version); calculation examples, computer systems operating rules, practical tips.</p> <p>Laboratories: preparation of construction project plan for group of objects (under-ground, ground, above-ground) in teamwork mode. Base of works is settlement or plant incl. primary, auxiliary and accompanying objects as a subprojects. Developed are: general technical specification of performance and acceptance for given functional/utility program (scope), 3D model in BIM approach, components selection and layout with aid of cost/reliability criteria (design, as creating of components structure), project organisational structure of staff/crews with back-office, logistic/financial project schedule with visualisation of constructed facility and site/field (elements of 4D simulation), health and safety information with residual risks register.</p> <p>Software: Tekla Structures Construcion Modelling/Construction Management or Nemetchek Allplan Engineering/Terrain or tools of IntelliCAD (with BIM modules), OpenOffice class as well Pertmaster/Primavera Contractor or Project Constructor with library of BIM components created with participation of university scientific circle no 24: "Projects in Construction - CMS".</p>		
<b>Basic bibliography:</b>		
<ol style="list-style-type: none"> <li>1. Gasparski W., Projektowanie. Konceptyjne przygotowanie działań. PAN PWN, Warszawa 1978.</li> <li>2. Pawlak M., Zarządzanie projektami. Wydawnictwo Naukowe PWN, Warszawa 2006.</li> <li>3. Behrens W., Hawranek P. M., Poradnik przygotowania przemysłowych studiów feasibility. UNIDO, 1993.</li> <li>4. Behnke M., Czajka-Marchlewicz B., Dorska P., Umowy w procesie budowlanym. Wolters Kluwer, Warszawa 2011.</li> <li>5. Praca zbiorowa. Podręcznik dla inwestorów przedsięwzięć infrastrukturalnych. MRR, Warszawa 2010.</li> <li>6. Korzeniewski W., Poradnik projektanta budownictwa mieszkaniowego. Arkady, Warszawa 1989.</li> <li>7. Praca zbiorowa. Poradnik kierownika budowy. PZITB Arkady, Warszawa 1990.</li> </ol>		
<b>Additional bibliography:</b>		
<ol style="list-style-type: none"> <li>1. Caupin G., Knöpfel H., Morris P., Motzel E., Pannenbäcker O., National Competence Baseline (NCB) Based on IPMA Competence Baseline. SPMP, 1999.</li> <li>2. Hendrickson C., Project Management for Construction. Fundamentals Concepts for Owners, Engineers, Architects and Builders. Carnegie Mellon University, Pittsburgh 2008.</li> <li>3. Eastman C., Teicholz P., Sacks R., Liston K., BIM Handbook. A Guide to Building Information Modelling for Owners, Managers, Designers, Engineers and Contractors. Wiley, 2008.</li> <li>4. O'Brien J., Plotnick F., CPM in Construction Management. 6th Edition. McGraw-Hill, 2006.</li> <li>5. Winch G. M., Managing Construction Projects. Blackwell Publishing, 2002.</li> </ol>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Classes participation	45	
2. Works preparation	20	
3. Computer work	30	
4. Works finishing	10	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	90	3
Contact hours	45	1
Practical activities	75	2