

| STUDY MODULE DESCRIPTION FORM | | |
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| Name of the module/subject Construction Project Management | | Code 1010102111010111978 |
| Field of study Civil Engineering second-cycle studies | Profile of study (general academic, practical) (brak) | Year /Semester 1 / 1 |
| Elective path/specialty Costruction Engineering and Management | Subject offered in: Polish | Course (compulsory, elective) obligatory |
| Cycle of study: Second-cycle studies | Form of study (full-time, part-time) full-time | |
| No. of hours Lecture: 2 Classes: - Laboratory: - Project/seminars: 1 | | No. of credits 3 |
| Status of the course in the study program (Basic, major, other) (brak) | | (university-wide, from another field) (brak) |
| Education areas and fields of science and art technical sciences | | ECTS distribution (number and %) 3 100% |
| Responsible for subject / lecturer: dr inż. Tomasz Wiatr email: tomasz.wiatr@put.poznan.pl tel. 665-2464, 665-2457 Faculty of Civil and Environmental Engineering ul. Piotrowo 5, 60-965 Poznań | | |
| Prerequisites in terms of knowledge, skills and social competencies: | | |
| 1 | Knowledge | Knowledge from area of key subjects contained in educational standard of the first-cycle civil engineer studies, including knowledge of construction techniques. |
| 2 | Skills | Designing of simpler construction facilities (building-, bridge-, road-, railway- type) at the area of selected branch of civil engineering, having regard operation needs. |
| 3 | Social competencies | Basic teamwork competences, openness for cooperation, respect for common effects of creative designing work of engineers (authorship, as a result of teamwork). |
| Assumptions and objectives of the course: 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. | | |
| Study outcomes and reference to the educational results for a field of study | | |
| Knowledge: | | |
| 1. Project management knowledge areas recognition and connection of them with 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] | | |
| Skills: | | |
| 1. Facility designing in 3D BIM approach in resource-cost aspect with aid of industrial foundation classes. - [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] | | |
| Social competencies: | | |
| 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). - [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] | | |

| Assessment methods of study outcomes | | |
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| <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> | | |
| Course description | | |
| <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.</p> | | |
| Basic bibliography: | | |
| <ol style="list-style-type: none"> 1. Gasparski W., Projektowanie. Konceptyjne przygotowanie działań. PAN PWN, Warszawa 1978. 2. Pawlak M., Zarządzanie projektami. Wydawnictwo Naukowe PWN, Warszawa 2006. 3. Behrens W., Hawranek P. M., Poradnik przygotowania przemysłowych studiów feasibility. UNIDO, 1993. 4. Behnke M., Czajka-Marchlewicz B., Dorska P., Umowy w procesie budowlanym. Wolters Kluwer, Warszawa 2011. 5. Praca zbiorowa. Podręcznik dla inwestorów przedsięwzięć infrastrukturalnych. MRR, Warszawa 2010. 6. Korzeniewski W., Poradnik projektanta budownictwa mieszkaniowego. Arkady, Warszawa 1989. 7. Praca zbiorowa. Poradnik kierownika budowy. PZITB Arkady, Warszawa 1990. | | |
| Additional bibliography: | | |
| <ol style="list-style-type: none"> 1. Caupin G., Knöpfel H., Morris P., Motzel E., Pannenbäcker O., National Competence Baseline (NCB) Based on IPMA Competence Baseline. SPMP, 1999. 2. Hendrickson C., Project Management for Construction. Fundamentals Concepts for Owners, Engineers, Architects and Builders. Carnegie Mellon University, Pittsburgh 2008. 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. 4. O'Brien J., Plotnick F., CPM in Construction Management. 6th Edition. McGraw-Hill, 2006. 5. Winch G. M., Managing Construction Projects. Blackwell Publishing, 2002. | | |
| Result of average student's workload | | |
| Activity | Time (working hours) | |
| 1. Classes participation | 45 | |
| 2. Work preparation | 20 | |
| 3. Computer work | 30 | |
| 4. Work finishing | 10 | |
| Student's workload | | |
| Source of workload | hours | ECTS |
| Total workload | 90 | 3 |
| Contact hours | 45 | 1 |
| Practical activities | 75 | 2 |