

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Preparation for diploma examination		Code 1010102131010120975
Field of study Civil Engineering Second-cycle Studies	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty Railways	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: - Classes: - Laboratory: - Project/seminars: 1		No. of credits 7
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 7 100%
Responsible for subject / lecturer: DSc Eng. Włodzimierz Bednarek email: wlodzimierz.bednarek@put.poznan.pl tel. 2407 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		Responsible for subject / lecturer: DSc Eng. Jeremi Rychlewski email: jeremi.rychlewski@put.poznan.pl tel. 2407 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Knowledge about analysis of construction elements and complex construction systems, methods for solving tasks and undertake non-linear calculations of linear constructions; Knowledge of codes and norms for railroad design; Knowledge about design and construction of transport infrastructure; Knowledge and application of building code.
2	Skills	Can fulfil a static analysis and a stability analysis of a railroad track construction; Uses specialised tools in a search for useful information; Can define a computer model of a rail track and undertake an advanced linear and non-linear analysis of the track; Can critically evaluate results of a numerical analysis; Can choose tools for solving engineering problems; Has an ability to use scientific instruments, according to scientific rules, to formulate and execute preliminary investigation work, aimed at solving engineering problems
3	Social competencies	Can work individually and in a group (also as a leader) on a given task; Is responsible for solidity of results acquired from own or subordinate team's work; Individually supplements and enlarges knowledge about modern processes in rail transport; Is responsible for own and subordinate team's safety; Is conscious about a need to improve own professional and personal skills.
Assumptions and objectives of the course: Prepare for the diploma exam.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has knowledge about preparation for the final exam. - [K_W14]		
2. Knows process for swift and punctual preparation for the final exam. - [K_W17]		
3. Has knowledge of topics required for the final exam. - [K_W18]		
Skills:		
1. Can present problems alternative solutions of technical problems. - [K_U07]		
2. Can discuss solutions for technical problems. - [K_U13]		
3. Can justify the final solution presented in the thesis (during discussion). - [K_U17]		

Social competencies:
1. Is conscious about responsibility for solidity of acquired results and their interpretation. - [K_K02]
2. Independently supplements and increases own knowledge of railroads. - [K_K03]
3. Is conscious about a need to improve own professional and personal skills. - [K_K06]

Assessment methods of study outcomes
<p>Knowledge evaluation: activity during classes and presentation of substantive aspects of the diploma work, knowledge of alternative technical solutions. Acquiring points for:</p> <ul style="list-style-type: none"> - activity during lectures, - knowledge presented during work's presentation, - knowledge gained during previous semesters. <p>Skill evaluation: activity during seminar classes; presentation of diploma work; substantive discussion on the presented topics and solutions used in the work, presentation of alternative ways and solutions for problems presented in the thesis. Acquiring points for:</p> <ul style="list-style-type: none"> - activity during lectures, - knowledge of topics presented in the diploma work, - substantive quality of topics presented in the diploma work, - proposals of solutions alternative to those presented in the diploma work.

Course description
<ol style="list-style-type: none"> 1. Analysis of solutions used for tasks undertaken in the diploma work. 2. Discussion about alternative solutions for technical problems. 3. Inquiry on advances in diploma work. 4. Inquiry on knowledge acquired during studies

Basic bibliography:
<ol style="list-style-type: none"> 1. Układy geometryczne połączeń torów, H. Bałuch, WKiŁ, Warszawa 1989 2. Praca zbiorowa pod red. J. Sysak: Drogi Kolejowe. PWN, Warszawa 1986 3. Podstawy dróg kolejowych, J. Sysak, WKiŁ, Warszawa 1982 4. Stacje kolejowe, S. Cieślakowski, WKiŁ, Warszawa, 1992 5. Budowa i utrzymanie dróg kolejowych, M. Batko, WKiŁ, Warszawa, 1985 6. Budowa i utrzymanie dróg kolejowych, tom II, Semrau, H. Zamięcki, WKiŁ, Warszawa, 1975 7. Utrzymanie nawierzchni kolejowej, K. Towpik, WKiŁ, Warszawa, 1990 8. Wpływ temperatury na pracę toru kolejowego, M. Łoś, WKiŁ, Warszawa 1974

Additional bibliography:
<ol style="list-style-type: none"> 1. Linie kolejowe, T. Basiewicz, L. Rudziński, M. Jacyna, Oficyna Wyd. Politechniki Warszawskiej, Warszawa 1994 2. Modern Railway Track, C. Esveld, Delft, 2001 3. Stability of continuous welded rail track, M. A. Van, Delft, 1995 4. Dziennik Ustaw Rzeczypospolitej Polskiej, Warszawa, dnia 15 grudnia 1998 r., Nr 151, Poz. 987: Rozporządzenie Ministra Transportu i Gospodarki Morskiej z dnia 10 września 1998 r. w sprawie warunków technicznych, jakim powinny odpowiadać budowle kolejowe i ich usytuowanie 5. Przepisy Id-1 (D-1) Warunki techniczne utrzymania nawierzchni na liniach kolejowych, Warszawa, 2005 6. Przepisy Id-3 (D-4), Warunki techniczne utrzymania podtorza kolejowego, Warszawa, 2004

Result of average student's workload		
Activity	Time (working hours)	
1. Attendance to seminars	30	
2. Current preparation for the seminars (repetition of knowledge concerning given topic)	20	
3. Preparation for final assessment and presence at the assessment	20	
Student's workload		
Source of workload	hours	ECTS
Total workload	175	7
Contact hours	25	1
Practical activities	75	3