STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Railway track structure construction**		Code **1010101171010124818**
Field of study **Civil Engineering First-cycle Studies**	Profile of study (general academic, practical) **general academic**	Year /Semester **4 / 7**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **elective**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **30** Classes: **-** Laboratory: **-** Project/seminars: **-**		No. of credits **4**
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** **Technical sciences**		ECTS distribution (number and %) **4 100%** **4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	K_W06. Has knowledge about rules governing design of railroads. K_W07. Knows rules for dimensioning railway superstructure elements. K_W10. Has basic knowledge about designing elements of railway superstructure
2	**Skills**	K_U01. Has an ability to classify railways. K_U07. Has an ability to design chosen railway?s superstructure elements
3	**Social competencies**	K_K01. Can work individually and in a group on a given task. K_K10. Behaves with regard to rules of ethics

Assumptions and objectives of the course:

1) Deliver engineering knowledge about railway superstructure construction.
2) The analysis of deflections and stress values in the railway superstructure elements.
3) Geometrical state assessment of railway track.
4) Strength of railway superstructure.
5) Stress distribution in the railway superstructure.
6) Diagnostics, maintenance and current repairs of the railway track

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Knows rules of the calculations of railway superstructure construction - [K_W05]
2. Knows rules of the dimensioning of railway superstructure elements - [K_W07]

Skills:

1. Has an ability to dimension basic elements of railway track - [K_U08]

Social competencies:

1. Is able to work independently - [K_K01]
2. Own complements and extends knowledge of the railway superstructure - [K_K03]
3. Is aware of the need of improving professional competences - [K_K06]

Assessment methods of study outcomes

Students? knowledge and abilities assessed on the basis of oral colloquium and written calculations. Examination consists of 2 theoretical questions and 1 computational task.Information about the form, term and duration of a test is given on the first lecture in the semester.

Course description

1. Influence of the temperature on the continuous welded track.
2. Stresses in the continuous welded rail.
3. Geometrical state assessment of railway track.
4. Strength of railway superstructure elements.
5. Transmitting the loads from the wheel on the railway subgrade.
6. Designing of the railway subgrade protection layer.
7. Diagnostics and current repairs of the railway track.

Basic bibliography:

1. Bałuch H.: Diagnostyka nawierzchni kolejowej. Wydawnictwa Komunikacji i Łączności, Warszawa, 1978
2. Bałuch M.: Podstawy dróg kolejowych. Politechnika Radomska, Radom, 2001
3. Bogdaniuk B., Towpik K.: Budowa, modernizacja i naprawy dróg kolejowych. PKP Polskie Linie Kolejowe S.A., Warszawa 2010
4. Czyczuła Wł: Tor bezstykowy. Wydawnictwo Politechniki Krakowskiej, Kraków 2002
5. Esveld C.: Modern railway track, Second Edition, Delft 2001
6. Łoś M.: Wpływ temperatury na pracę bezstykowego toru kolejowego. WKiŁ, Warszawa 1987

Additional bibliography:

1. 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

Result of average student's workload

Activity	Time (working hours)
1. Student?s attendance to lectures	29
2. Student?s preparation to colloquium	82
3. Colloquium	1

Student’s workload

Source of workload	hours	ECTS
Total workload	100	4
Contact hours	30	1
Practical activities	0	0