



Subject card

Subject name and code	Production and Erection of Metal Structures, PG_00044255						
Field of study	Civil Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group			Optional subject group		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Metal Structures -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Dariusz Kowalski				
	Teachers		dr inż. Dariusz Kowalski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	0.0	0.0	45
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	45		5.0		50.0	100
Subject objectives	The theme of the course is to present a typical methods of implementation of steel and aluminum structures, but some elements of this process, for example: assembly and transport are the same for wooden structures, precast concrete and for machinery and equipment. A look at the structure from the technology side is to teach the listeners a critical look at theoretical solutions and technical documentation, as well as learn the basics of structural design with the needs of assembly and workshop execution.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W13] Knows the most popular construction materials and basics of technology of its fabrication		Familiar with the technologies of machining and assembly equipment in the field of metal structures				
	[K6_U06] can design steel, concrete (including reinforced), wood and masonry constructions and its elements		Knows how to plan the assembly system of a prefabricated structure				
	[K6_W16] Has deeper and adequate knowledge of civil engineering, within offered specialization		The student knows the conditions and requirements for the design of metal structures in relation to the execution and assembly needs				
	[K6_U17] has specialized skills in civil engineering within offered specialization		He can design technological processes of manufacturing and assembly of metal structures				
Subject contents	Technological properties of steel and aluminum. The organization of a typical production plant of steel structures. Characteristics of basic technological processes. Documentation executive of structures. Transportation of structures. Site preparation for installation of the structure. Project of assembly and other documents related to the execution and reception of construction. Cranes, assembly tools, scaffoldings. Static analysis of the structure in the assembly phase. Installation of the basic structural elements (column, beam, truss, sheet metal, string). Assembly of the halls, buildings, towers, guyed masts). Mounting of sheet metal shell structures (tanks, storage tanks, silos).. Installation of engineering and industrial structures (chimneys, towers, pipelines, bridges, weirs). Safety regulations at the time of assembly works.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final test	60.0%	60.0%
	practicing design	60.0%	40.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. PN-EN 1993 Projektowanie konstrukcji stalowych (seria norm EC3)</li> <li>2. PN-EN 1090-1/2/3- Wykonanie konstrukcji stalowych i aluminiowych</li> <li>3. PN-90/B-03200 Konstrukcje stalowe. Obliczenia statyczne i projektowanie.</li> <li>4. PN-B-06200 Konstrukcje stalowe budowlane. Warunki wykonania i odbioru. Wymagania Podstawowe</li> <li>5. Odpowiednie przepisy prawa polskiego w formie ustaw i rozporządzeń Sejm RP</li> <li>6. Odpowiednie Polskie Normy Polskiego Komitetu Normalizacyjnego</li> <li>7. Urbańska-Galewska E., Kowalski D. Dokumentacja projektowa konstrukcji stalowych w budowlanych przedsięwzięciach inwestycyjnych. PWN Warszawa 2015</li> <li>8. Warunki techniczne wykonania i odbioru robót budowlano montażowych Konstrukcje stalowe tom. III Arkady, 1988</li> <li>9. Ziółko J., Orlik G.: Montaż konstrukcji stalowych, Arkady 1980</li> <li>10. Ziółko J.: Konstrukcje stalowe. Cz.2. Wytwarzanie i montaż WSiP, 1995</li> <li>11. Dyzewski A.: Technologia i organizacja budowy. Technologia i mechanizacja robót budowlanych, Arkady, 1990</li> <li>12. Augustyn J., Śledzieniewski E.: Technologiczność stalowych konstrukcji spawanych, Arkady, 1974</li> <li>13. Śledzieniewski E.: Konstrukcje spawane, WSiP,</li> <li>14. Ferenc K., Ferenc J.,: Konstrukcje spawane połączenia, WNT,</li> <li>15. Welded Profiles. Manual FCSA</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Design guide for fabricatio, assembly and erection of hollow section structuers TUV-Verlag no 7</li> <li>2. Stefański A., Walczak J.: Technologia robót budowlanych, Arkady, 1983</li> <li>3. Ciołek R.: Kompleksowa mechanizacja produkcji budowlanej. Arkady, 1985</li> <li>4. Banyś K: Maszynoznawstwo w prefabrykacji budowlanej, WSiP, 1981</li> <li>5. Sadowski Z.: Technologia montażu, Arkady</li> <li>6. Album rysunków konstrukcji stalowych, Arkady</li> <li>7. Katalogi producentów sprzętu budowlanego</li> </ol>	
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>2024/25 Wytwarzanie i Montaż Konstrukcji Metalowych - Moodle ID: 34289</p> <p><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34289">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=34289</a></p>	
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> <li>• Using the characteristics of cranes and other construction machinery;</li> <li>• Proper use of mounting;slings</li> <li>• The stability of elements with large spans in the assembly phase;</li> <li>• Methods for rectifying errors in metal structures;</li> </ul>		
Work placement	Not applicable		

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