GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Systems in Design, PG_00046536
Field of study	Ocean Engineering, Ocean Engineering

Date of commencement of studies	October 2020	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Karol Niklas
	Teachers	dr inż. Karol Niklas

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30	5.0	40.0	75

Subject objectives	Use of modern computer tools in design on selected examples.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U04] has self-education skills in order to improve professional qualifications, is ready to work in industrial environment, adheres to HSE rules and regulations	Student uses the basis of design, mechanics, strength material and technology to design selected product using modern CAD/CAM/FEA systems. Through practical exercises student obtains skills: - creative thinking with use of CAD systems, - considering technological aspects, - taking into consideration economical aspects, - inclusion of ergonomic aspects in the design, - performing simulation using Finite Element Method (FEM), - making technical documentation, - making marketing visualization (drawings, animations) Student through practical exercises and making project gain practical skills of usage the best CAD/CAM/FEA systems available on the market.	[SU1] Assessment of task fulfilment
	[K6_W06] has an organized knowledge on engineering methods and design tools allowing the conducting of projects within the construction and operation of ocean technology objects and systems	Student uses the basis of design, mechanics, strength material and technology to design selected product using modern CAD/CAM/FEA systems. Through practical exercises student obtains skills: - creative thinking with use of CAD systems, - considering technological aspects, - taking into consideration economical aspects, - inclusion of ergonomic aspects in the design, - performing simulation using Finite Element Method (FEM), - making technical documentation, - making marketing visualization (drawings, animations) Student through practical exercises and making project gain practical skills of usage the best CAD/CAM/FEA systems available on the market.	[SW3] Assessment of knowledge contained in written work and projects
	[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems	Student uses the basis of design, mechanics, strength material and technology to design selected product using modern CAD/CAM/FEA systems. Through practical exercises student obtains skills: - creative thinking with use of CAD systems, - considering technological aspects, - taking into consideration economical aspects, - inclusion of ergonomic aspects in the design, - performing simulation using Finite Element Method (FEM), - making technical documentation, - making marketing visualization (drawings, animations) Student through practical exercises and making project gain practical skills of usage the best CAD/CAM/FEA systems available on the market.	[SU1] Assessment of task fulfilment

	Course outcome	Subject outcome	Method of verification
	[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems	Student uses the basis of design, mechanics, strength material and technology to design selected product using modern CAD/CAM/FEA systems. Through practical exercises student obtains skills: - creative thinking with use of CAD systems, - considering technological aspects, - taking into consideration economical aspects, - inclusion of ergonomic aspects in the design, - performing simulation using Finite Element Method (FEM), - making technical documentation, - making marketing visualization (drawings, animations) Student through practical exercises and making project gain practical skills of usage the best CAD/CAM/FEA systems available on the market.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	
	Practical lab. exercises showing potential of novel CAD/CAM/FEA systems. Building parametric CAD geometry. Performing numerical simulations with use of Finite Element Method (FEM). Making technical documentation. Preparing marketing visualization (drawings, animations). Managing a family of products and CAD database. Usage computer-aided design to solve project tasks.

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	51.0%	100.0%

Recommended reading	Basic literature	1. Software documentation: Unigraphics NX, Solid Edge, Maxsurf, Nupas Cadmatic, Rhino 3D, ccm+, Finemarine 2. G. Farin, J. Hoschek, M. Kim: Handbook of computer aided geometric design, 2002 Elsevier,ISBN: 978-0-444-51104-1 3. J. Hoschek, D. Lasser: Fundamentals of Computer Aided Geometric Design,1993 A K Peters. Ltd. , ISBN 1-56881-007-5 4. Taylor, Dean: Computer-Aided Design. Reading, 1992 Addison-Wesley Publishing Company, ISBN: 020116891X
	Supplementary literature	1. P. Szalapaj: CAD Principles for Architectural Design, 2001 Elsevier, ISBN: 978-0-7506-4436-5 2. An International Journal: Computer Aided Geometric Design, 2010 Elsevier, ISSN: 0167-8396 3. An International Journal for Innovations in Computational Methodology and Application: Finite Elements in Analysis and Design, 2010 Elsevier, ISSN: 0168-874X
	eResources addresses	Adresy na platformie eNauczanie: Systemy komputerowe w projektowaniu (niest. zima 23/24) - Moodle ID: 26451 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26451

Example issues/ example questions/ tasks being completed	1. Design of a trailer frame for transporting kayaks.2. Conceptual design of floating house.3. Conceptual design of a boat/yacht.4. Technical project of yacht ballast fin foundation.5. Design of anchor winch foundation.6. Hull shape design of a motor/sailing yacht.7. Conceptual design of selected ship, yacht, equipment.8. Conceptual and technical design of floating platform for recreation on inland waters.9. other, defined by a student.

Work placement	Not applicable