Course title:	Virtual Prototyping
Course title in Polish:	Prototypowanie wirtualne
Course for discipline:	Forestry

Semester:	3	**Status of course:**	faculty	**Language:**	english
Academic year:		**Catalog number:**			

Coordinator of course:	Marcin Zbiec
Lecturer od course:	Marcin Zbiec
Executing unit:	INDM
Ordering unit:	Doctoral School SGGW
Assumptions, goals and description of the course:	Course deals with preparation of PhD student to developing of virtual 3D models for initial prototyping of physical innovation. Classes will cover: Introduction to CAD environment, training on sketching, creating simple and advanced models of parts, creating assemblies and advanced modelling. It is assumed to perform also exercises on 3D printing of prototypes. Course will provide overview of prototyping experience to be implemented in any discipline requiring physical models for UX and usability evaluation.
Didactic form, number of hours:	10
Teaching methods:	Problem lecture, workshop
Limit of people in the group:	10

Learning outcomes

KNOWLEDGE - the graduate knows and understands:	**SKILLS - the graduate is able to:**	**COMPETENCES - the graduate is ready to:**
To the extent enabling to revise the existing pradigms in the field/discipline - the world achievments, gathering theoretical background as well as general and selected detailed issues	Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline	Critically evaluate the achievments in the field/discipline represented
Major general development trends in the field/discipline		Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect
		Support the ethos of scientific circles and conduct independent research

The method of verification of learning outcomes:	Tasks/exercises
Form of documentation of achieved learning outcomes:	Grading of consequent task on workshops
Elements and weights of the final grade:	daily tasks/exercises - 100%
Place of the course:	Building 34, computer lab or online

Basic and supplementary literature

Jan Auernhammer, B. R. (2021). The origin and evolution of Stanford University's design thinking: From product design to design thinking in innovation management. Journal of Product Innovation Management - Special Issue: Design Thinking and Innovation Management: Matches, Mismatches and Future Avenues (Part 1), Volume38, Issue6. Kerymova, N. (2016, 7 16). Design Thinking: From Service Prototypes To Service Roleplay. Retrieved from StartUs magazine, European Startup Daily: https://magazine.startus.cc/design-thinking-prototypes-to-roleplay/; Crawford, C. M. (2020). New Products Management. McGraw-Hill Education.; Matt Lombard, 2018: Mastering SolidWorks. Sybex ISBN-13: 978-1119300571 ISBN-10: 1119300576; Allview.eu - D3.5- New exercises using 3D printing (Including 3D Models)

Comments:	

Estimated number of hours of work of the doctoral student necessary to achieve the assumed learning outcomes:	30

Leraning outcomes reference to the second degree characteristics of the National Qualification Framework (level 8) covering doctoral competences:

Symbol:	**Learning outcomes:**	**8 level NQF**
SD1_KW01	To the extent enabling to revise the existing pradigms in the field/discipline - the world achievments, gathering theoretical background as well as general and selected detailed issues	P8S_WG
SD1_KW02	Major general development trends in the field/discipline	P8S_WG
SD1_KU05	Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline	P8S_UW
SD1_KK01	Critically evaluate the achievments in the field/discipline represented	P8S_KK
SD1_KK03	Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect	P8S_KK
SD1_KK08	Support the ethos of scientific circles and conduct independent research	P8S_KR