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DESCRIPTION/Syllabi of Curricula/Module

Short Name of the University/Country code Date (Month / Year)	KU Leuven
TITLE OF THE MODULE	Code
Mechanical design methods for Biomedical Engineering	

Teacher(s)	Department
Coordinating: Dr ing Peter Arras Others: ing Chris Peeters, EWE	Faculty of engineering technology department of machine building

Study cycle (BA/MA)	Level of the module (Semester number)	Type of the module (compulsary/elective)
BA/MA	5/6	compulsary

Form of delivery (theory/lab/exercises)	Duration (weeks/months)	Language(s)
theory/lab	6/8	English

Prerequisites

Prerequisites:

For CAD:

- to know how to make a technical drawing
- to know how to annotate a technical drawing
- to know about geometric product specifications

For CAE:

- to know basics of mechanics: statics&dynamics
- to know basics of strength of materials
- to know basics of numerical calculation methods

Co-requisites (if necessary):

students need to be able to use a computer

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ECTS (Credits of the module)	Total student workload hours	Contact hours	Individual work hours
6	150	36	124
Aim of the module (course unit): competences foreseen by the study programme			
<p>Students are able to model a mechanical design using a 3D feature modelling software: use part modelling, assembly modelling.</p> <p>Students are able to annotate a mechanical design using a 3D feature modelling software: use drawing mode.</p> <p>Students are able to calculate strength of a mechanical design using a 3D feature modelling software: using Finite element analysis.</p>			
Learning outcomes of module (course unit)	Teaching/learning methods (theory, lab, exercises)	Assessment methods (written exam, oral exam, reports)	
<ul style="list-style-type: none"> - principles of CAD in a 3D feature modelling software -the difference between model oriented design and drawing oriented design - the principles of FEA - 3D feature modelling software for design - to make a virtual prototype of a design - FEA analysis to calculate strength of a structure 	<ul style="list-style-type: none"> theory theory lab 	<ul style="list-style-type: none"> written exam written exam assignment 	
<p>Posses:</p> <ul style="list-style-type: none"> - designing skills in a 3D-modelling software - calculation skills in a FEA-software 			

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Themes	Contact work hours						Time and tasks for individual work		
	Lectures	Consultations	Seminars	Practical work	Laboratory work	Placements	Total contact work	Individual work	Tasks
CAD-design with 3D feature modelling	2								
Solid modelling of 3D CAD models with a parametric 3D modeller			4	1 6					
Assembly modelling of virtual prototypes			4	1 6					
FEA theoretical background	1 0								
FEA typical structural calculations				1 6					
FEA advanced topics				1 0					
Total									

Assessment strategy	Weight in %	Deadlines	Assessment criteria
Final exam			

Author	Year of issue	Title	No of periodical or volume	Place of printing. Printing house or internet link
Compulsory literature				
C. E. Knight	1993	The finite Element Method in Mechanical Design		PWS Kent
Additional literature				
M. A. Boboulos	2014	CAD/CAM& Rapid prototyping Application Evaluation	ISBN: 978-87-7681-676-6	bookboon.com/en
B. Hucko, R. Janco	2017	Introduction to Mechanics of Materials: Part I	ISBN: 978-87-403-0364-3	bookboon.com/en

