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Name	Product design and development with CATIA
Code	**CTC-RI-03**
ECTS	2
Location	CTC – Centar za suradnju i edukaciju, Sveučilište u Rijeci Tehnički fakultet, Vukovarska 58, 51000 Rijeka, Hrvatska
Trainer/s	Doc. dr. sc. Basan Robert (CV in Appendix)
Purpose	CAD/CAE product models and related design and project documentation enable multiple, repeatable usage of informations contained therein. This effectivelly and significantly shortens the time needed for delivering of various design solutions and reduces expenses connected with modifications and changes which, inevitably, are part of the design process.
Recommended entry level	secondary professional qualifications with technical background
Special requirements	none
Duration	20 hours
General objectives	At the end of the course, attendants will be able: • to explain basic CAE terms and concepts and ways application of CAE techniques and tools in product design and development • to explain the term and meaning of product lifecycle management (PLM) as well as features and characteristics of software PLM tools • to define types and required characteristics of product model regarding its purpose and its design phase • to model 2D elements and 3D parts and assemblies by using CATIA software • generate technical drawings of the product developed and modelled by using CATIA software • to perform different functional analyses available in CATIA • to explain features and possibilities regarding advanced numerical and structural analyses (load carrying capacity, kinematic analysis of mechanisms,...) offered by CATIA software • to use options and features for exchanging (importing/exporting) the data, information and product models between CATIA and other CAE applications
Topics	**1.** CATIA as a CAE software tool for product lifecycle management **2.** Modelling and development of 2D sketches as basic alements for development of 3D parts (Sketcher) **3.** Modelling of 3D parts (Part Design) **4.** Modelling of curves and surfaces (Surface&Hybrid design) **5.** Modelling and creation of assemblies (Assembly Design) **6.** Creation and editing of drawings (Drafting) **7.** Functional analysis of parts and assemblies (determination of mass, center of mass, detection of clashes in assemblies) **8.** Possibilities of exchanging the informations and product models between CATIA and other CAE applications **9.** Advanced possibilites and options for numerical and structural analyses (load carrying capacity, kinematic analysis of mechanisms,...) available in CATIA software
Specific	**Topic 1:** **Number of hours** **2**
	Attendants will obtain basic knowledge on: • computer aided engineering (CAE) and representative related software packages • current situation and development trends in CAE • general options and possibilities offered by CATIA as an software tool for product modelling, analysis and product lifecycle management • features of digital product models and their creation by using CATIA
	Topic 2: **Number of hours** **3**
	Attendants will learn: • basics of working within CATIA software package • how to create sketches and 2D models using Sketcher module
	Topic 3: **Number of hours** **4**
	Attendants will learn how to create 3D models of parts by using Part Design module

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	Topic 4:	**Number of hours**	**2**
	Within module Surface Design, attendants will learn how to model curves and surfaces, use them to create objects and connect hem to object models created with other techniques.		
	Topic 5:	**Number of hours**	**3**
	Attendants will learn: • how to model complex products i.e. assemblies by using options available in module Assembly Design • how to model individual parts within module Assembly Design (context modelling)		
	Topic 6:	**Number of hours**	**2**
	Attendants will learn how to use Drafting workbench in order to: • create and automaticaly generate drawings and other related documentation • edit initially created documentation • connect end exchange created documentation with documentation created in other applications		
	Topic 7:	**Number of hours**	**2**
	Attendants will learn how to: • perform functional analyses of CATIA models of parts and assemblies • apply obtained results of functional analyses to improve initial product design		
	Topic 8:	**Number of hours**	**1**
	Attendants will learn how to connect CATIA with other CAE software applications and how to import/export created models.		
	Topic 9:	**Number of hours**	**1**
	Attendants will obtain information and knowledge on advanced possibilities and options regarding numerical and structural analyses offered by CATIA software (load carrying capacity, kinematic and dynamic analysis of mechanisms,...).		
Portfolio assessment	Lecturer will grade the level of adopted knowledge and developed skills for each attendant individually. For this purpose, written, and optionally, oral examinations are planned. **Exercise grading and evaluation:** Work on exercises will be graded on the basis of accuracy and speed with which tasks and assignments have been completed. **Tests:** Different tests will be compiled and prepared by the lecturer and will serve for checking the adoption level of knowledge and skills. Tests will be primarily written although if neccessary, they can be complemented with oral examination. **Grades:** Minimum requirements meet 50 - 64% Successful 65 - 79% Excellent 80 - 100% **Evaluation criteria will be defined in more detail subsequently.**		