

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Virtualni prototipi
<b>Course title:</b>	Virtual prototyping

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Tehnologije in sistemi – prva stopnja	Tehnologije in sistemi	drugi ali tretji	četrti ali peti
Technologies and systems – 1st cycle	Technologies and systems	second or third	fourth or fifth

**Vrsta predmeta / Course type** Modularni/modular

**Univerzitetna koda predmeta / University course code:** TS M2 UN3

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Laboratorijske vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45		15	15		100	6

**Nosilec predmeta / Lecturer:** doc. dr. Elvis Hozdić

<b>Jeziki / Languages:</b>	<b>Predavanja / Lectures:</b>	slovenski/angleški
	<b>Vaje / Tutorial:</b>	slovenian/English

**Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:**

- poznavanje osnov CAD in geometrijskega modeliranja.

**Prerequisites:**

- knowledge of the basics of CAD and geometric modeling.

**Vsebina:**

- Virtualni prototipi (definicije, značilnosti),
- Kreiranje modela z orodji za modeliranje, prenos z grafičnimi standardi.
- Dodajanje in test funkcionalnosti VP v navideznem okolju.
- Integriran razvoj virtualnega izdelka.

**Content (Syllabus outline):**

- Virtual prototypes (definitions, characteristics),
- Model creation with modeling tools, transfer with graphic standards.
- Adding and testing VP functionality in a virtual environment.
- Integrated virtual product development.

## Temeljni literatura in viri / Readings:

Muhič, S. *Računalniško podprt inženiring v okolju ANSYS Workbench*.  
Diehl; S. (2001) »*Distributed Virtual Worlds*«. Springer.  
Chung, T. J. (2002) *Computational fluid dynamics*. Cambridge University Press,.  
Hirsch, C. (2007) *Numerical Computation of Internal and External Flows, Volume 1, Second Edition: The Fundamentals of Computational Fluid Dynamics*.  
Kenneth, H., Huebner, (Author), Donald, L., Dewhurst, (Author), Douglas, E., Smith (Author), T. G. Byrom (Author). (2001) *The Finite Element Method for Engineers (Hardcover)*.  
Zienkiewicz, O. C. (Author), Taylor, R. L. (Author), Zhu, J. Z. (Author) (2005) *The Finite Element Method: Its Basis and Fundamentals, Sixth Edition*.  
Diehl, S. (2001) *Distributed virtual worlds*. Springer.  
Shah, J. J., Mantila, M. (1999). *Parametric and feature-based CAD/CAM*. New York: John Wiley & Sons.  
Novejši članki v revijah ali na spletu.

## Cilji in kompetence:

*Učna enota prispeva predvsem k razvoju naslednjih splošnih in specifičnih kompetenc:*

- sposobnost evidentiranja problema in njegove analize ter predvidevanja operativnih rešitev v tehnološkem smislu,
- sposobnost obvladovanja standardnih razvojnih metod, postopkov in procesov,
- sposobnost uporabe pridobljenega teoretičnega znanja v praksi,
- sposobnost obvladovanja razvoja in napredka,
- avtonomnost v strokovnem delu s področja tehnologij in sistemov,
- uporaba strokovnega tujega jezika v ustni in pisni obliki,
- kooperativnost, usposobljenost za timsko delo,
- zavezanost profesionalni etiki,
- sposobnost razumevanja in uporabe sodobnih teorij s področja tehniških, tehnoloških in naravoslovnih ved,
- sposobnost interdisciplinarnega povezovanja znanja,
- sposobnost reševanja konkretnih delovnih problemov na področju tehnologij in sistemov z uporabo standardnih strokovnih metod in postopkov,
- razvoj strokovnih veščin in spretnosti na področju tehnologij in sistemov,

## Objectives and competences:

*The learning unit mainly contributes to the development of the following general and specific competences:*

- the ability to grasp and analyse a problem, as well as foresee operational solutions in the technological sense or in the process of organisation and management,
- the ability to master standard development methods, procedures and processes,
- the ability to use acquired theoretical knowledge in practice,
- the ability to manage development and progress,
- autonomy in professional work in the field of technologies and systems,
- use of a professional foreign language in oral and written form,
- willingness to cooperate and work in a team,
- commitment to professional ethics,
- the ability to understand and apply modern theories in the fields of technical, technological and natural sciences,
- the ability to integrate knowledge in an interdisciplinary manner,
- the ability to solve specific work problems in the field of technologies and systems using standard professional methods and procedures

- sposobnost stalne uporabe informacijske in komunikacijske tehnologije na svojem strokovnem področju
- usposobljenost za svetovalno delo (prenos znanja),
- aktivno kritično spremljanje razvoja novih metod uporabe materialov na področju tehnologij in sistemov s poudarkom na ekologiji.

- development of professional skills and abilities in the field of technologies and systems,
- qualification for consulting work (transfer of knowledge),
- active critical monitoring of the development of new methods of using materials in the field of technologies and systems with an emphasis on ecology and sustainable development.

#### **Predvideni študijski rezultati:**

Znanje in razumevanje:

*Študent/študentka:*

- utrdi predhodno pridobljena znanja in jih aplicira na realnih problemih,
- pozna in razume aktivnosti, orodja in odgovornost razvojnega inženirja,
- pozna in razume vlogo, možnosti in zanesljivost virtualnega inženirstva v virtualnem razvoju izdelka,
- izdelava primer virtualnega prototipa v enostavnem okolju.

#### **Intended learning outcomes:**

Knowledge and understanding:

*Student:*

- consolidates previously acquired knowledge and applies it to real-world problems,
- knows and understands the activities, tools and responsibilities of a development engineer,
- knows and understands the role, possibilities and reliability of virtual engineering in virtual product development,
- creates an example of a virtual prototype in a simple environment.

#### **Metode poučevanja in učenja:**

- frontalna *predavanja*,
- reševanje *domačih nalog*,
- *projektna naloga*.

#### **Learning and teaching methods:**

- *frontal lectures*,
- *solving homework*,
- *project work*.

<b>Načini ocenjevanja:</b>	Delež (v %) / Weight (in %)	<b>Assessment:</b>
<p>Način (pisni izpit, ustno izpraševanje, naloge, projekt):</p> <ul style="list-style-type: none"> <li>• opravljene domače naloge</li> <li>• opravljena seminarska naloga</li> <li>• pisni in ustni izpit</li> </ul> <p>Ocenjevalna lestvica: ECTS.</p>	<p>20% ocene</p> <p>50% ocene</p> <p>30% ocene</p>	<p>Type (examination, oral, coursework, project):</p> <ul style="list-style-type: none"> <li>• completed homework</li> <li>• completed seminar assignment</li> <li>• written and verbal exam</li> </ul> <p>Grading scale: ECTS.</p>