

## UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Industrijski seminar
<b>Course title:</b>	Industrial Seminar

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Nanoznanosti in nanotehnologije, Informacijske in komunikacijske tehnologije, Ekotehnologije, Senzorske tehnologije, 3. stopnja		1	1
Nanosciences and Nanotechnologies, Information and Communication Technologies, Ecotechnologies, Sensor Technologies, 3 <sup>rd</sup> cycle		1	1

### Vrsta predmeta / Course type

Praktično delo v industriji/Seminar  
Practical work in industry/Seminar

### Univerzitetna koda predmeta / University course code:

SPL-877

Delo v industriji Work at industry	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. Work	ECTS
125	1				24	5

### Nosilec predmeta / Lecturer:

Prof. dr. Spomenka Kobe

### Jeziki / Languages:

**Predavanja /**  
**Lectures:** Slovenščina, angleščina / Slovene, English  
**Vaje / Tutorial:**

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

Izpolnjeni pogoji za vpis na podiplomski študij.

### Prerequisites:

Fulfilled criteria for enrollment to postgraduate studies.

### Vsebina:

#### Področja:

Robotski sistemi in komponente  
Inteligentni sistemi vodenja  
Pametna mehatronska orodja  
Inteligentni laserski sistemi  
Napredni senzori  
Pametni plazemski sistemi  
Novi materiali  
Pametne tovarne  
Ekotehnologije

### Content (Syllabus outline):

#### Fields:

Robotics (systems and components)  
Intelligent management systems  
Smart mechatronics  
Intelligent laser systems  
Advanced sensors  
Smart plasma systems  
New materials  
Smart factories  
Eco technology

**Pripadajoče tehnologije:**

Robotika  
 Tehnologije vodenja  
 Tehnologije mehanike in elektrotehnike  
 Fotonika  
 Nanotehnologije  
 Plazemske tehnologije  
 Sodobne proizvodne tehnologije za materiale  
 Informacijske in komunikacijske tehnologije  
 Ravnanje z odpadki  
 Principi krožnega gospodarstva  
 Tehnike in nadzor kakovosti okolja

K tem področjem in pripadajočim tehnologijam se lahko dodajo še druga področja, glede na raziskovalno tematiko kandidatov.

**Related technologies:**

Robotics  
 Management Technologies  
 Mechanics and Electronics  
 Photonics  
 Nanotechnologies  
 Plasma technologies  
 Advanced production technologies for materials  
 Information and communication technologies  
 Waste management  
 Principles of circular economy  
 Techniques for environmental quality control.

Other field and related technologies can be added to the above listed, depending on the research subject of the candidate.

**Tehnološka usmeritev kot del študija / Technological practice as a part of the study:**

Izbirni predmet **Industrijski seminar** je predmet, ki je vključen v vseh štirih smereh študija:

- Nanoznanosti in nanotehnologije
- Informacijske in komunikacijske tehnologije
- Ekotehnologije
- Senzorske tehnologije

Pri izvedbi izbirnega predmeta **Industrijski seminar** so v sodelovanje vključena predvsem podjetja, ki so soustanovitelji in partnerji Mednarodne podiplomske šole Jožefa Stefana:

BSH, Nazarje; Domel, Železniki; ETI, Izlake; Gorenje, Velenje; HYB, Šentjernej; Kolektor Group, Idrija; LTH Ulitki, Škofja Loka; Premogovnik Velenje, Velenje; Salonit, Anhovo; Štore Steel, Štore; Talum, Kidričevo; Trimco, Trebnje; Unior, Zreče.

Našteta podjetja (partnerji MPŠ) imajo močno razvojno naravnost in so pripravljena za neposredno sodelovanje v načrtnem razvijanju kadrov v sklopu inovacijskih projektov, v katere je umeščen podiplomski študij. Že do sedaj so pokazala usmerjenost v skupne napore za neposredno vključevanje dosežkov temeljnih raziskav v inovacijske projekte.

Sodelovanje pri **Industrijskem seminarju** ne izključuje tudi drugih slovenskih podjetij z enako naravnostjo.

Študent opravi seminar, ki ga ocenijo trije člani komisije: vodja seminarja, mentor in industrijski mentor.

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 The **Industrial Seminar** is a course taken by choice; it is involved in all four programs:

- Nanoscience and Nanotechnologies
- Information and Communication Technologies
- Ecotechnologies
- Sensor Technologies

In this course the industrial partners who are also among the founders of Jožef Stefan International Postgraduate School will have the first priority.

These partners (companies) have:

- Strong developmental orientation of the enterprise,
- Readiness for direct cooperation in staff development planned inside innovation projects which are the basis for postgraduate studies,
- Preparedness for joint efforts in direct involvement of basic research in innovation projects.

BSH, Nazarje; Domel, Železniki; ETI, Izlake; Gorenje, Velenje; HYB, Šentjernej; Kolektor Group, Idrija; LTH Ulitki, Škofja Loka; Premogovnik Velenje, Velenje; Salonit, Anhovo; Štore Steel, Štore; Talum, Kidričevo; Trimco, Trebnje; Unior, Zreče.

The involvements of other companies, showing readiness for the same conditions, to the **Industrial seminar** are also welcome.

At the end of the Industrial seminar student presents a Seminar, which is evaluated by the three Members of the Committee:

The Leader of the Industrial Seminar

The supervisor at the IPS

The supervisor from the industrial partner

#### **Cilji in kompetence:**

Študentje v praksi spoznajo tehnologije z različnih področij svojega študija.

Delo študenta v industriji 2 do 3 mesece omogoči študentu pridobiti praktične izkušnje v industriji in razviti sposobnost, da samostojno (pod industrijskim mentorstvom) izpelje industrijsko nalogo in izdela poročilo.

#### **Objectives and competences:**

Students get practical knowledge of technology from the area of their study on industrial level.

The practical work in industry for 2 to 3 months gives the student hands-on experience in the industrial workplace, and measures his/her ability to complete a formal written engineering report (with the support of industrial supervisor).

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

Na koncu industrijske prakse študent komisiji odda seminar, ki ga zagovarja.

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

At the end of the practical work in the industry the student submit a written Seminar and defends it in front of the committee.

#### **Metode poučevanja in učenja:**

Študentje spoznajo tehnologije z različnih področij svojega študija v praksi.

a) Študentje iz industrije bi v okviru tega predmeta opravili praktično nalogo v podjetju, iz katerega izhajajo, kar bi obsegalo strokovno-raziskovalno predstavitev problema, predlog rešitve in končno izvedbo.

b) Študentje, ki v okviru svojega študija raziskujejo določeno aplikativno tematiko, bi opravili delovno prakso v industriji in na osnovi te prakse predstavili problem iz proizvodnje, predlog rešitve in praktične rezultate.

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

Students get practical knowledge in industry on different areas of their study.

a) Students from the industry can perform a task (practical exercise) in the company where they are employed. The task encompasses presentation of a R&D problem, the solution to the problem, and the final execution.

b) Students who are involved in an applied research problem connected to the industrial partner present the problem from the production, suggest the solution to the problem, perform the task, and give practical solution.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Seminar	50 %	Seminar
Zagovor seminarja	50 %	Oral exam

**Reference nosilca / Lecturer's references:**

- TOMŠE, Tomaž, JAČIMOVIĆ, Jaćim, HERRMANN, Loenz, GREUTER, Felix, REINHARD, Simon, TEKAVEC, Simona, DUBOIS, Jean-Marie, KOBE, Spomenka. Properties of SPS-processed permanent magnets prepared from gas-atomized Nd-Fe-B powders. Journal of alloys and compounds, ISSN 0925-8388. [Print ed.], [in press] 2018, 20 str., doi: [10.1016/j.jallcom.2018.01.411](https://doi.org/10.1016/j.jallcom.2018.01.411).
- KELHAR, Luka, BEZJAK, Jana, MAČEK, Marjeta, ZAVAŠNIK, Janez, ŠTURM, Sašo, KOŽELJ, Primož, KOBE, Spomenka, DUBOIS, Jean-Marie. The role of Fe and Cu additions on the structural, thermal and magnetic properties of amorphous Al-Ce-Fe-Cu alloys. Journal of non-crystalline solids, ISSN 0022-3093. [Print ed.], [in press] 2017, 9 str., doi: [10.1016/j.jnoncrysol.2018.01.003](https://doi.org/10.1016/j.jnoncrysol.2018.01.003).
- KOCJAN, Andraž, KELHAR, Luka, GRADIŠEK, Anton, LIKOZAR, Blaž, ŽAGAR, Kristina, GHANBAJA, Jaafar, KOBE, Spomenka, DUBOIS, Jean-Marie. Solid solubility in Cu<sub>5</sub>Gd<sub>1-x</sub>Cax system : structure, stability, and hydrogenation. Advances in Materials Science and Engineering, ISSN 1687-8434. [Print ed.], 2017, vol. 2017, str. 9203623-1-9203623-9, doi: [10.1155/2017/9203623](https://doi.org/10.1155/2017/9203623).
- NAGLIČ, Iztok, SAMARDŽIJA, Zoran, DELIJIĆ, Kemal, KOBE, Spomenka, DUBOIS, Jean-Marie, LESKOVAR, Blaž, MARKOLI, Boštjan. Metastable quasicrystals in Al-Mn alloys containing copper, magnesium and silicon. Journal of Materials Science, ISSN 0022-2461, 2017, vol. 52, no. 23, str. 13657-13668. <https://link.springer.com/article/10.1007%2Fs10853-017-1477-8>, doi: [10.1007/s10853-017-1477-8](https://doi.org/10.1007/s10853-017-1477-8).
- PEČKO, Darja, KOSTEVŠEK, Nina, PIHLAR, Boris, SAMARDŽIJA, Zoran, KOBE, Spomenka, ŽUŽEK ROŽMAN, Kristina. Electrochemical studies of Fe and Pd deposition and their influence on the co-deposition of the Fe-Pd alloy. Journal of electroanalytical chemistry, ISSN 1572-6657, 2015, vol. 738, str. 51-60