## 1. GENERAL INFORMATION

<table>
<thead>
<tr>
<th>1.1 Course teacher</th>
<th>Assoc. Prof. Ivana Steinberg, PhD</th>
<th>1.6 Year of the study</th>
<th>2.(3rd semester)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 Name of the course</td>
<td>Technology Management and Innovation</td>
<td>1.7 ECTS credits</td>
<td>5</td>
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<tr>
<td>1.3 Associate teachers</td>
<td>Petar Kassal, PhD</td>
<td>1.8 Type of instruction (number of hours L + E + S + e-learning)</td>
<td>Total: 60 (L: 30, E:15, S:15)</td>
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<tr>
<td>1.4 Study programme (undergraduate, graduate, integrated)</td>
<td>graduate</td>
<td>1.9 Expected enrolment in the course</td>
<td>20</td>
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<tr>
<td>1.5 Status of the course</td>
<td>☑ mandatory ☐ elective</td>
<td>1.10 Level of application of e-learning (level 1, 2, 3), percentage of online instruction (max. 20%)</td>
<td>2nd</td>
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## 2. COURSE DESCRIPTION

### 2.1. Course objectives

To introduce master level students to the concepts of innovation in relation to commercialisation of novel technologies. Adopting basic ideas and conceptual approaches to development of innovative products or services including scientific, technological, organisational, financial and business aspects.

### 2.2. Enrolment requirements and/or entry competences required for the course

- Compile and apply advanced knowledge of natural and technical sciences, particularly chemical engineering and environmental engineering in solving scientific, professional and general social problems.
- Solve engineering problems using the scientific method combining expert knowledge from chemistry, environmental, and chemical engineering as well as material science and engineering.
- Correlate expert knowledge from chemistry, chemical engineering and material engineering with awareness of influence on society, economy and environment.
- Apply different analytical techniques, analytical and numerical methods, as well as software tools in creative problem solving of engineering challenges, proposing sustainable technological solutions.
- Independently organise and plan timelines, apply a general methodology for project planning and management in a business environment.
- Evaluate technological processes and products from the perspective of high functionality in different conditions and environmental effects.
- Create a critical analysis, evaluation and interpretation of personal results, and compare them with existing data in scientific and expert literature.
- Investigate and analyse implementation of innovative and incoming chemical technologies in multidisciplinary environment.
- Demonstrate independence and reliability in independent work, as well as effectiveness, reliability and adaptability in team work
- Outline results of independent and teamwork in a written and oral form to non-experts and experts in a clear and coherent way.
- Communicate with the scientific and professional community, as well as society in general in local and international surroundings
- Develop work ethic, personal responsibility and tendency for further skill and knowledge acquisition, according to standards of engineering practice

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<tr>
<th>2.4. Expected learning outcomes at the level of the course (3 to 10 learning outcomes)</th>
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<tr>
<td>• Explain the role of innovation in the context of research and development in public and private institutions</td>
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<tr>
<td>• Identify and distinguish: intellectual property (IP) and intellectual property rights (IPRs) and illustrate them by practical examples</td>
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<tr>
<td>• Explain <em>transfer of technology</em> and strategic exploitation of IPR</td>
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<td>• Define new product development process and identify its steps</td>
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<td>• Apply methodology of project management</td>
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<td>• Create and prepare a business plan for a new high-tech start-up company based on a chosen patent</td>
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<tr>
<th>2.5. Course content (syllabus)</th>
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<tbody>
<tr>
<td><strong>WEEK 1.</strong> Introduction to the TM&amp;I course</td>
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<td><strong>WEEK 2.</strong> Innovation and R&amp;D</td>
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<td><strong>WEEK 3.</strong> Intellectual Property</td>
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<td><strong>WEEK 4.</strong> Technology Transfer &amp; Strategic Exploitation of IP</td>
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<td><strong>WEEK 5.</strong> New product development (NPD)</td>
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<td><strong>WEEK 6.</strong> The Six Phases of NPD</td>
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<td><strong>WEEK 7.</strong> Partial exam</td>
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<tr>
<td><strong>WEEK 8.</strong> Introduction to Project Management I and II</td>
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<td><strong>WEEK 9.</strong> Introduction to Project Management III</td>
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<tr>
<td><strong>WEEK 10.</strong> Technology Start-Up Company Funding, Business Plans (BP)</td>
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<tr>
<td><strong>WEEK 11.</strong> Summary of TM&amp;I course</td>
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<tr>
<td><strong>WEEK 12.</strong> Final Revision/Instructions for student BP presentation</td>
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<tr>
<td><strong>WEEK 13.</strong> BP presentations I Q&amp;A session: Discussion</td>
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<tr>
<td><strong>WEEK 14.</strong> BP presentations II and III Q&amp;A session: Discussion</td>
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<tr>
<td><strong>WEEK 15.</strong> Partial exam</td>
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<tr>
<th>2.6. Format of instruction:</th>
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<tbody>
<tr>
<td>☒ lectures</td>
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<tr>
<td>☒ seminars and workshops</td>
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<tr>
<td>☒ exercises</td>
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<tr>
<td>☒ online in entirety</td>
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<tr>
<td>☒ partial e-learning</td>
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<td>☒ field work</td>
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<td>☒ independent assignments</td>
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<td>☒ multimedia and the internet</td>
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<td>☒ laboratory</td>
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<td>☒ work with mentor</td>
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<td>(other)</td>
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| 2.7. Comments: |
### 2.8. Student responsibilities

- Lectures, seminars and laboratory work - mandatory attendance; regular homework assignments and problem solving exercises, written and oral presentations; mandatory reading for seminar discussions; group presentation of a start-up business plan

### 2.9. Monitoring student work

<table>
<thead>
<tr>
<th>Activity</th>
<th>Class attendance</th>
<th>YES</th>
<th>Research</th>
<th>YES</th>
<th>Oral exam</th>
<th>NO</th>
<th>Experimental work</th>
<th>NO</th>
<th>Report</th>
<th>YES</th>
<th>(other)</th>
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<tbody>
<tr>
<td>Essay</td>
<td>NO</td>
<td></td>
<td>Seminar paper</td>
<td>YES</td>
<td>(other)</td>
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<tr>
<td>Preliminary exam</td>
<td>NO</td>
<td></td>
<td>Practical work</td>
<td>YES</td>
<td>(other)</td>
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<tr>
<td>Project</td>
<td>YES</td>
<td></td>
<td>Written exam</td>
<td>NO</td>
<td>ECTS credits (total)</td>
<td>5</td>
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### 2.10. Required literature (available in the library and/or via other media)

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<tr>
<th>Title</th>
<th>Number of copies in the library</th>
<th>Availability via other media</th>
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### 2.11. Optional literature


### 2.12. Other

(as the proposer wishes to add)