<table>
<thead>
<tr>
<th>Course Title (in English)</th>
<th>Hack lab / Laboratory for ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Title (in Russian)</td>
<td>Лаборатория идей</td>
</tr>
<tr>
<td>Lead Instructor(s)</td>
<td>Tekic, Zeljko</td>
</tr>
</tbody>
</table>

Is this syllabus complete, or do you plan to edit it again before sending it to the Education Office?
The syllabus is a final draft waiting for approval (once approved the syllabus will be published on the public web-site and other systems)

<table>
<thead>
<tr>
<th>Contact Person</th>
<th>Zeljko Tekic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Person's E-mail</td>
<td><a href="mailto:z.tekic@skoltech.ru">z.tekic@skoltech.ru</a></td>
</tr>
</tbody>
</table>

1. Annotation

Course Description
This course is an immersive experience in innovative product development. Its aim is to provide students with the knowledge and skills required to develop innovative products (and services) at different stages of the development lifecycle (from ideation and prototyping to launch and incremental up-dates). During the course, students will learn an approach to innovation that combines best of design thinking, agile development and hacking.

Built on strong theoretical foundations, the course is practice-oriented. It is conceptualized as a sequence of four interactive, highly dynamic and deeply experiential innovation sprints (done in forms of hackathons when possible), with each having a goal to move product development to the next stage by the end of the bi-weekly activity.

The core idea behind the course is to provoke, stimulate and motivate students to actively use their intellectual and creative potentials and deep technical knowledge to generate innovative ideas challenged by concrete problems identified by industry/business partners or social challenges around us, and to move them forward to more tangible outcomes (depending on the stage of product development). Serving as a cross-disciplinary and multi-stakeholder platform for creativity development and hands-on problem-solving in collaboration with industry, the course will offer a unique environment for problem-based learning.

The course will open a new channel for Skoltech’s interaction with industry, offering assistance and contribution to our industry partners in new product development. Through the course, students will experience the challenges that companies, large and small, routinely face when developing products and help them to understand the best ways to approach the various types of challenges associated with bringing products to market.

<table>
<thead>
<tr>
<th>Course Prerequisites / Recommendations</th>
<th>No specific prerequisites.</th>
</tr>
</thead>
</table>

### 2. Structure and Content

<table>
<thead>
<tr>
<th>Course Academic Level</th>
<th>Master-level course suitable for PhD students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ECTS credits</td>
<td>6</td>
</tr>
<tr>
<td>Topic</td>
<td>Summary of Topic</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Creativity and creative problem solving</td>
<td>Sources of ideas, individual and group creativity, creative problem solving tools;</td>
</tr>
<tr>
<td>Problem identification</td>
<td>From description of circumstances to problem statement; understanding problem context;</td>
</tr>
<tr>
<td>Product development</td>
<td>Product life-cycle; product development process (lean vs. stage-gate); product portfolio; management of product development;</td>
</tr>
<tr>
<td>Communicating ideas and concepts</td>
<td>Different communication channels and tools. Oral presentation, pitch presentation, written presentation, communicating ideas through social medias, crowdsourcing platforms.</td>
</tr>
<tr>
<td>innovation sprints (four)</td>
<td>hands on work focused on generating innovative ideas challenged by concrete problems identified by industry/business partners or social issues around us (e.g. pandemic), and to move them forward to more tangible outcomes (depending on the stage of product development).</td>
</tr>
</tbody>
</table>

3. Assignments
### Assignment Summary

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team Project</strong></td>
<td>Students will work on four innovation sprints - agile product development exercises. These four sprints may be based on independent problem, or it may be one problem that is moved through four stages of development. Project results will be presented in variety of ways. Project are group activities. The sprints are focused on generating innovative ideas challenged by concrete problems identified by industry/business partners or social issues around us (e.g. pandemic), and to move them forward to more tangible outcomes (depending on the stage of product development).</td>
</tr>
<tr>
<td><strong>Report</strong></td>
<td>Students are expected to keep their Learning log. A Learning Log is a journal which evidences students’ learning and skills development. It is not just a diary or record of “What you have done” but a record of what you have learnt, tried and critically reflected upon. A Learning Log contains your record of your experiences, thoughts, feelings and reflections. One of the most important things it contains is your conclusions about how what you have learnt is relevant to you and how you will use the new information/knowledge/skill/technique in the future. Detailed guidelines how to “write” learning log will be provided in the Canvas. This is individual activity.</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Classroom intellectual engagement In-class exercises, discussion and response to presentations, including interaction with guest speakers, (evidence of reading suggested literature, smart comments, brave questions, timely, relevant, and linked to the previous lectures, comments / discussion to the point). Individual activity.</td>
</tr>
</tbody>
</table>

### 4. Grading

#### Type of Assessment

- Pass/Fail

#### Grade Structure

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Activity weight, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Project</td>
<td>80</td>
</tr>
<tr>
<td>Report</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
</tr>
</tbody>
</table>

#### Grading Scale

- **Pass:** 60

#### Attendance Requirements

- Mandatory
5. Basic Information

Maximum Number of Students

<table>
<thead>
<tr>
<th>Overall:</th>
<th>Maximum Number of Students</th>
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<tbody>
<tr>
<td>Per Group (for seminars and labs):</td>
<td>80</td>
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Course Stream: Entrepreneurship and Innovation (E&I)

Course Term (in context of Academic Year): Term 4

Course Delivery Frequency: Every year

Students of Which Programs do You Recommend to Consider this Course as an Elective?

<table>
<thead>
<tr>
<th>Masters Programs</th>
<th>PhD Programs</th>
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</thead>
<tbody>
<tr>
<td>All Master Programs</td>
<td>All PhD Programs</td>
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</table>

Course Tags: innovation, new product development

6. Textbooks and Internet Resources

Required Textbooks

<table>
<thead>
<tr>
<th>Required Textbooks</th>
<th>ISBN-13 (or ISBN-10)</th>
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Recommended Textbooks

<table>
<thead>
<tr>
<th>Recommended Textbooks</th>
<th>ISBN-13 (or ISBN-10)</th>
</tr>
</thead>
</table>


### 7. Facilities

<table>
<thead>
<tr>
<th>Equipment</th>
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<tbody>
<tr>
<td>no</td>
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<table>
<thead>
<tr>
<th>Software</th>
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<tbody>
<tr>
<td>no</td>
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</table>

### 8. Learning Outcomes

**Knowledge**
- Acceleration of new-product development projects by building prototypes and running experiments
- Organization and implementation of innovation sprint and agile development.
- Differentiation between stage-gate and agile product development

**Skill**
- Quickly validate (or invalidate) a prototype by testing and identify opportunities for improvement
- Build tangible prototypes through creative use of design and technology
- Forge technology-based ideas into workable business concepts and learn how to test them with customers.
- Make oral and written presentations.
Experience

The interaction (reporting, interviewing, following tasks, giving feedback) with users, collaborators, experts, and firms

Work in groups

Apply creative problem solving techniques, reflect upon appropriate methods for different stages of problem solving and explore the relationship between creative problem solving and technology-based ideas.

9. Assessment Criteria

Input or Upload Example(s) of Assignment 1:

Select Assignment 1 Type

Team Project

Input Example(s) of Assignment 1 (preferable)

Tasks in the course will have a variety of forms. As it is the first time to teach this course, there is no previous tasks, but good example of the task may be recently done ISP hackathon (Jan 2020):
Starting from customer-centric approach and using Sbermarket dataset, propose a solution (predictive model) that would allow you to predict products that will not be found
Evaluate the impact your model will make on Sbermarket’s business
Propose a way to implement the model in Sbermarket product

Or Upload Example(s) of Assignment 1

https://ucarecdn.com/d448bb25-9a52-4142-9638-f713941572e4/

Assessment Criteria for Assignment 1

Evaluation criteria for the presentation are:
1. Originality, quality, and comprehensiveness of content; technical and procedural excellence of presentation (20%)
2. Identification and characterization of key issues in the proposed solution (20%)
3. Evidence and analysis provided for proposed solution (30%) and
4. Some form of prototype (30%).

Input or Upload Example(s) of Assignment 2:

Select Assignment 2 Type

Report

Input Example(s) of Assignment 2 (preferable)

A Learning Log is a journal which evidences students' learning and skills development. It is not just a diary or record of “What you have done” but a record of what you have learnt, tried and critically reflected upon.

Assessment Criteria for Assignment 2
Assessment criteria for learning log
1. Depth and quality of thinking and reflections (30%)
2. Presentation of evidence about learning during the course (30%)
3. Conceptual structure of report; depth of arguments; rigor & elegance of logic (20%)
4. Overall quality of writing, construction and presentation of the document (20%)

Input or Upload Example(s) of Assignment 3:

Select Assignment 3 Type Other
Input Example(s) of Assignment 3 (preferable) In-class exercises, discussion, and response to presentations, including interaction with guest speakers, (evidence of reading suggested literature, smart comments, brave questions, timely, relevant, and linked to the previous lectures, comments/discussion to the point)

Assessment Criteria for Assignment 3 Individual, during the term, around 10 points – continuously assessed by TAs and me; we need your name in front of you!

Input or Upload Example(s) of Assignment 4:

Input or Upload Example(s) of Assignment 5:

10. Additional Notes

Free Style Comments (if any) LEARNING STRATEGY
This course involves a mix of interactive lectures, project work (innovation sprints) and home-works. The course is highly interactive and participants will be expected to come well-prepared to each session and to demonstrate their preparation via contribution to class discussion and in-class activities.

Teamwork will be the central means by which you’ll put to practice the content we discuss in the classroom sessions. We will work on a sequence of four interactive, highly dynamic and deeply experiential innovation sprints (hackathons).

Role of the Instructors
To achieve the learning objectives of the subject, the instructors will stimulate and guide discussion, ask questions that probe the depth of your understanding of issues, review theoretical concepts at the cutting-edge of innovation and entrepreneurship, encourage participants to present different points of view, and evaluate student contributions as individuals and in teams.

Role of Participants
To achieve the learning objectives of the subject, participants will thoroughly prepare and participate in all of the classes. Please note the following four points:
• Attendance: It is important that you attend every class. Especially, four 24-hour innovation sprints
• Preparation: It is essential that you read all assigned materials thoroughly enough to summarize and explain the main points when called upon in class.
• Participation: Effective participation in class involves using the knowledge and preparatory reading and exercises to constructively comment, question, argue and analyze points raised by the instructor and others in class. It also involves full engagement and commitment to in-class exercises, and responses to in-class and after-class evaluation queries.

• Project work: Project work is a critical vehicle for learning in this course. Project work will be your opportunity to fully develop your understanding of several of the concepts we will explore in the lectures. Some materials will be largely developed from the discussions arising in project report-out sessions and the assignments leading to them.

Learning activities
• Classroom lectures
• Project work
• In-class exercises and discussions
• Presentations and report writing
• Guest speakers

ASSESSMENTS AND GRADING
Pass / Fail grade will be assigned to each student, based upon individual and team performance measures.
• 4 x 20% presentations and report on each innovation sprint (team)
• 10% Learning log (individual)
• 10% Classroom intellectual engagement (individual)

Team Activities
Team-based activities will play a substantial role in learning for this course. During the first week of the term all students will be divided into teams. Wherever possible each team will consist of five members. An individual grade will be allocated to each student for each team project or activity based on an individual weight applied to the team grade derived from confidential peer reviews of each student’s contribution to the team’s work. This is intended to provide an incentive for all students to contribute responsibly and adequately to team activities; and it will assist in ensuring that all team members receive a fair grade. Each team member will be expected to contribute equitably to his or her team’s work. All students will be required to participate in the formal peer-assessment process that will take place at the end of the term.

All assessment items will be graded on a 100-point numerical scale and the total numerical score for the course will be calculated for each student based on the proportion of the total grade for the course allocated to each item. Each student’s numerical grade for the course will be converted to a pass / fail according to the following schema:

Grade Numerical Range
Pass ≥ 60

Explanation of Meaning: The work is of a high standard and provides evidence of comprehensive knowledge and good performance demonstrating a capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the subject. All learning outcomes are satisfied and a majority satisfied at a high level.

Grade Numerical Range
Fail < 60

Explanation of Meaning: The work examined is unacceptable and provides minimum (if any) evidence of knowledge and understanding of the subject matter. The evidence fails to show that any of the learning
Peer Evaluation of Individual Participation in Team Activities

Each individual student will receive a mark for team assessments based on the team grade, weighted by a confidential peer-review assessment of his or her individual contribution to the team’s work. A special form on which the confidential peer-review scores may be indicated will be distributed to each student by the Instructors. In other words, one single mark will be allocated to each team for its work in team activities, but the final mark that each individual team member will receive will be weighted according to peer evaluations from fellow team members. The information provided in the peer evaluations will be kept absolutely confidential. Each student in the course will be required to evaluate each of his or her fellow team members for their contribution to team activities. Failure to submit a peer evaluation will lead to an FX (“Incomplete”) grade for the course. The confidential peer evaluation scores, using the Peer Evaluation Form (soft copy to be provided by the Instructors), will need to be submitted to the Instructors by each student by the end of week eight.