1. Annotation

Please see the course website for syllabus and other information: http://zhugayevych.me/edu/Materials/index.htm

The course teaches fundamentals of modern Materials Science (Part I of the course) and provides a survey of materials (Part II), covering all relevant Skoltech research areas and beyond, with brief explanation of structural, electronic, physical, chemical or other properties of materials relevant for their practical use, or from the point of view of utilizing their unique properties in applications. It is a core course in Materials Science educational track providing a reference knowledge base for the rest of material-specific courses as well for student research.

Course Prerequisites

The course relies on basic knowledge of theoretical physics or chemistry including quantum mechanics and statistical physics at undergraduate level, though most of the lectures should be understandable with only a general physics or chemistry background.

2. Structure and Content

Course Academic Level

Master-level course suitable for PhD students

Number of ECTS credits

6
<table>
<thead>
<tr>
<th>Topic</th>
<th>Summary of Topic</th>
<th>Lectures (# of hours)</th>
<th>Seminars (# of hours)</th>
<th>Labs (# of hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td>7</td>
<td>28</td>
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3. Assignments

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Assignment Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td></td>
</tr>
<tr>
<td>Team Project</td>
<td></td>
</tr>
<tr>
<td>Problem Set</td>
<td></td>
</tr>
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</table>

4. Grading

<table>
<thead>
<tr>
<th>Type of Assessment</th>
<th>Graded</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Grade Structure</th>
<th>Activity Type</th>
<th>Activity weight, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Homework Assignments</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Projects</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Final Project</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Class Participation</td>
<td>10</td>
</tr>
</tbody>
</table>

Grading Scale

A: 86
B: 76
C: 66
D: 56
E: 46
F: 0

5. Basic Information

<table>
<thead>
<tr>
<th>Attendance Requirements</th>
<th>Mandatory</th>
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</thead>
<tbody>
<tr>
<td>Course Stream</td>
<td>Science, Technology and Engineering (STE)</td>
</tr>
<tr>
<td>Course Term (in context of Academic Year)</td>
<td>Term 1B (last four weeks)</td>
</tr>
<tr>
<td>Course Delivery Frequency</td>
<td>Every year</td>
</tr>
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</table>
### 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>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Manufacturing and Materials Science</td>
<td>Materials Science and Engineering</td>
</tr>
<tr>
<td>Materials Science</td>
<td></td>
</tr>
<tr>
<td>Photonics and Quantum Materials</td>
<td></td>
</tr>
</tbody>
</table>

### Please List the Teaching Assistants (TAs) You Propose for Your Course

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andriy</td>
<td>Zhugayevych</td>
</tr>
<tr>
<td>Artem</td>
<td>Naumov</td>
</tr>
</tbody>
</table>

### Course Tags

- Physics
- Engineering
- Materials

### Textbooks and Internet Resources

<table>
<thead>
<tr>
<th>Web-resources (links)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://zhugayevych.me/edu/Materials/index.htm">http://zhugayevych.me/edu/Materials/index.htm</a></td>
<td>Knowledge-Skill-Experience is good enough</td>
</tr>
</tbody>
</table>

### Facilities

### Learning Outcomes

Do you want to specify outcomes in another framework?

- Knowledge-Skill-Experience is good enough

### Assessment Criteria

Select Assignment 1 Type

- Problem Set

Select Assignment 2 Type

- Project

### Additional Notes