**Course Code**: BIO412  
**Course Title**: Special Topics in Bioengineering  
**ECTS**: 6  
**Weekly Class Schedule**: Wednesday 14:00-16:50

**Prerequisite**:  
Senior Standing  
*It is a prerequisite to*  

**Lecturer**: Altijana Hromic-Jahjefendic  
**Office Hours Schedule**: Monday 08:00-11:00, Thursday 13:00-15:00

**E-mail**: ahromic@ius.edu.ba

**Phone**: 387 33 957 217  
**Office / Room No**: A F1.7  

**Course Objectives**:  
This course is designed to introduce various concepts and various subsets of bioengineering and virology. It aims to introduce students recent challenges and problems correlated to bioengineering of viruses and other related scientific areas.

**Textbook**: J.Enderle, J.Broznino: Introduction to Biomedical Engineering, 3rd edition, academic press; scientific publications

**Learning Outcomes**:  
After successful completion of the course, the student will be able to:  
1. Understanding and evaluating information and literature relevant to bioengineering problems  
2. Apply engineering ethical analysis and problem solving skills to design solutions to ethical problems  
3. Apply creative problem solving techniques to propose approaches that may solve real bioengineering problems  
4. Understand how different fields of bioengineering are correlated with each other  
5. Evaluate and refine proposals in light of new information and to work constructively in teams resolving problems through application of bioengineering techniques

**Teaching Methods**:  
Lecturing and active learning by project assignments to provide the opportunity for the students to develop their skills of analytical thinking and problem solving

**WEEK** | **TOPIC** | **REFERENCE**
---|---|---
**Week 1** | Introduction and syllabus |  
**Week 2** | What is Bioengineering as a subgroup of biomedical engineering? Introduction to viruses | To be determined
**Week 3** | Structure of the viruses | To be determined
**Week 4** | Classification of the viruses and their use in bioengineering | To be determined
**Week 5** | Varicella zoster vaccines | To be determined
**Week 6** | Oncolytic parovirus in Glioblastoma | To be determined
**Week 7** | Human rotavirus vaccine | To be determined
**Week 8** | MIDTERM exam! | To be determined
**Week 9** | Glioblastoma treatment with Poliovirus | To be determined
**Week 10** | PIKA rabies vaccine | To be determined
**Week 11** | Oncolytic viral strategy in HIV positive lymphomas | To be determined
**Week 12** | Oncolytic adenoviruses | To be determined
**Week 13** | Bacteriophage intake on gut microbiota | To be determined
**Week 14** | Hepatitis treatment with HB antigens | To be determined
**Week 15** | Review and future directions |  

**Assessment Methods and Criteria**

<table>
<thead>
<tr>
<th>Evaluation Tool</th>
<th>Quantity</th>
<th>Weight</th>
<th>Alignment with LOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam</td>
<td>1</td>
<td>40</td>
<td>1,2,3,4,5</td>
</tr>
<tr>
<td>Semester Evaluation Components</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentations</td>
<td>1</td>
<td>30</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>In-term exam</td>
<td>1</td>
<td>25</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td>Participation and attendance</td>
<td>1</td>
<td>5</td>
<td>1,2,3,4,5</td>
</tr>
</tbody>
</table>

*** ECTS Credit Calculation ***  

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
<th>Weeks</th>
<th>Student Workload Hours</th>
<th>Activity</th>
<th>Hours</th>
<th>Weeks</th>
<th>Student Workload Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture hours</td>
<td>3</td>
<td>14</td>
<td>42</td>
<td>In-term exam study</td>
<td>8</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Term paper</td>
<td>3</td>
<td>12</td>
<td>35</td>
<td>Final exam study</td>
<td>14</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Home study</td>
<td>3</td>
<td>14</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Workload Hours** = 150  
**ECTS Credit** = 6

Course Academic Quality Assurance: Semester Student Survey  
Last Update Date: 07/10/2019