### Advanced Genomics and Proteomics 2016/2017

**Code:** 43473  
**ECTS Credits:** 9

<table>
<thead>
<tr>
<th>Degree</th>
<th>Type</th>
<th>Year</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>4313794 Biochemistry, Molecular Biology and Biomedicine</td>
<td>OT</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

### Contact

**Name:** Francesc Xavier Avilés Puigvert  
**Email:** FrancescXavier.Aviles@uab.cat

### Use of languages

**Principal working language:** catalan (cat)

### Other comments on languages

approx 50% of the lectures

### Teachers

Antoni Barbadilla Prados  
Enric Querol Murillo  
Alfredo Ruiz Panadero  
Julia Lorenzo Rivera  
Barbara Negre de Bofarull  
Silvia Bronsoms Fabrellas  
Sònia Casillas Viladerrams

### Prerequisites

Languages: Lectures will be mainly in Spanish and English  
Postgraduates in Biochemistry, Biotechnology, Biology, Biomedicine, Genetics, Microbiology, Chemistry, Informatics/Bioinformatics, Pharmacy, Medicine and Veterinary Medicine

### Objectives and Contextualisation

The overall aim of the subject is to provide students an overview of Genomics and Proteomics including fundamentals, current techniques and applications. The specific objectives of Genómica include understanding the following aspects: the diversity and complexity of eukaryotic genomes, the historical and evolutionary perspective of genomic content, the meaning and consequences of intraspecific variability, techniques commonly employed in studies of genomics and transcriptomics and applications derived from the knowledge provided by this science. The aim of the Poteomics lectures is to provide students an overview of the advanced methods of Proteomics and Interactomics (Proteogenomics annotation, MS Imaging...) and applications (biomarkers in biomedicine, differential proteomics for drug and vaccine target identification, network pharmacology and toxicology...). And the first draft of the human Proteome and the Proteome Atlas

### Skills
**Learning outcomes**

1. Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
2. Continue the learning process, to a large extent autonomously.
3. Develop critical reasoning within the subject area and in relation to the scientific or business context.
4. Identify and describe the different components in prokaryotic and eukaryotic genomes and proteomes.
5. Identify molecular mechanisms responsible for diseases.
6. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
7. Use and manage bibliography and IT resources related to biochemistry, molecular biology or biomedicine.
8. Use scientific terminology to account for research results and present these orally and in writing.
9. Use the different methodologies, techniques and tools commonly used in genome sequencing, assembly and annotation.
10. Use the different methodologies, techniques and tools commonly used in proteomics and interactomics and metabolomics.

**Content**


**Methodology**

Subject teaching includes three types of activities:
- Lectures. Spoken explanations of the subject that is to be learned accompanied by powerpoint presentations to help students visualize questions and answers.
- Reading and discussion. Students are expected to read a number of research papers during the course and participate in the critical discussion of the papers in the class room.
- Oral presentations. Students will prepare a subject and make an oral and powerpoint presentation of the subject to their peers.

### Activities

<table>
<thead>
<tr>
<th>Title</th>
<th>Hours</th>
<th>ECTS</th>
<th>Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type: Directed</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>45</td>
<td>1.8</td>
<td>5, 6, 8</td>
</tr>
<tr>
<td><strong>Type: Supervised</strong></td>
<td></td>
<td></td>
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<tr>
<td>Oral presentations</td>
<td>40</td>
<td>1.6</td>
<td>1, 7, 8</td>
</tr>
<tr>
<td><strong>Type: Autonomous</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student work and learning</td>
<td>137</td>
<td>5.48</td>
<td>3, 5, 6, 2, 7, 8</td>
</tr>
</tbody>
</table>

### Evaluation

Final grades are a weighed average of items:

- Attendance and participation in the classroom (20%)
- Oral presentation and defense (40%)
- Exam (40%)

The student will be "not qualifiable" when the number of evaluable tests/tasks/activities done by the student do not reach to a global minimal qualification of 5.0

Important: If plagiarism is detected in any of the works submitted, the student will fail the whole module.

### Evaluation activities

<table>
<thead>
<tr>
<th>Title</th>
<th>Weighting</th>
<th>Hours</th>
<th>ECTS</th>
<th>Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam</td>
<td>40%</td>
<td>2</td>
<td>0.08</td>
<td>4, 3, 5, 6, 1, 2, 9, 10, 8</td>
</tr>
<tr>
<td>Lecture attendance</td>
<td>20%</td>
<td>0</td>
<td>0</td>
<td>6, 1</td>
</tr>
<tr>
<td>Oral presentation</td>
<td>40%</td>
<td>1</td>
<td>0.04</td>
<td>6, 1, 7</td>
</tr>
</tbody>
</table>

### Bibliography
Basic books
Additional journal references will be commented in the lectures

Useful links
UAB Virtual Campus: https://cv2008.uab.cat/
Human Proteome Map: http://www.humanproteomemaps.org/
ProteomicsDB: http://www.proteomicsdb.org/