Molecular biotechnology - modelling A1F
7.5 credits

1 Name, Scope and Level of the Course
The course is provided by the University of Skövde and is named Molecular biotechnology - modelling A1F. It comprises 7.5 credits and is on advanced level. The level of progression of the course is A1F.

2 Objectives
After completed course the student should be able to:
- use publicly available databases with structural data,
- critically analyze and compare structural information,
- state and independently draw conclusions for differences and similarities with respect to protein structures and structural elements,
- apply and critically assess techniques for modeling and fold recognition, and techniques for structure prediction of membrane proteins,
- state underlying theory and applications for molecular dynamics,
- describe and use different methods for ligand docking, and
- independently draw conclusion with respect to different alternatives of solutions given a specific problem, and critically analyze and discuss the result of these.

3 Course Content
The course gives a theoretical knowledge with practical solutions in systems biology. The course include methods for searching, visualization, prediction, docking and assessing biological structures. The purpose of this course is to give a fundamental knowledge of some structural databases and techniques, and applying these on problems in molecular biology.

4 Forms of Teaching
The teaching comprises lectures, laboratory sessions, project work and presentations.

The teaching is conducted in English.

5 Examination
The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

The final grade of the course is determined by means of an average of the grades for the four assignments; A = 5, B = 4, C = 3, D = 2 and E = 1. The mean is rounded to the nearest integer (half rounded upwards) and translated into a final grade according to 5 = A, 4 = B, 3 = C, 2 = D and 1 = E.

Registration of examination results:

<table>
<thead>
<tr>
<th>Name of examination</th>
<th>Credits</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written assignment 1</td>
<td>1.5</td>
<td>A/B/C/D/E/F</td>
</tr>
<tr>
<td>Written assignment 2</td>
<td>1.5</td>
<td>A/B/C/D/E/F</td>
</tr>
<tr>
<td>Written assignment 3</td>
<td>1.5</td>
<td>A/B/C/D/E/F</td>
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<tr>
<td>Written assignment 4</td>
<td>1.5</td>
<td>A/B/C/D/E/F</td>
</tr>
<tr>
<td>Oral presentation</td>
<td>1.5</td>
<td>G/U</td>
</tr>
</tbody>
</table>
Students with a permanent disability who have been approved for special educational support may be offered adapted or alternative examinations.

6 Admission Requirements
Prerequisite courses for this course are: Passed courses: BI733A-Bioinformatics Concepts and Methods A1N (or the equivalent).

A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as English course 6/ English course B. This is normally demonstrated by means of an internationally recognized test, e.g. IELTS or TOEFL or the equivalent.

7 Subject, Main Field of Study and Disciplinary Domain
The course forms a part of the academic subject area of Bioinformatics. The course is a part of the main field of study in Bioinformatics at the University of Skövde. The course can also be a part of the main field of study in Systems Biology. The disciplinary domain of the course is Natural Sciences.

Every course at the University of Skövde belongs to a subject. The division of subjects is used for follow-up and quality assurance. A main field of study is an area in which a degree can be awarded. Disciplinary domain is a division which is used by the government for the allocation of resources for studies at basic level and advanced level.

8 Approval of Course and Course Syllabus
The course was approved by the Curriculum Committee for Bioscience on 24 May 2018. This course syllabus was approved by the Curriculum Committee for Bioscience on 27 August 2020. It is valid from 1 January 2021 and replaces the course syllabus approved 26 March 2020.

9 Overlapping with Another Course
This course cannot be accredited within a degree.

10 Additional Information
Further information will be available on the university’s website before a course is given.

National and local regulations for higher education are available on the university’s website.

Upon completion of the course there will be a follow-up. The main purpose of this follow-up is to contribute to improvements of the course. The students’ experiences and views constitute one of the criteria for the follow-up and are gathered by means of course evaluations. The students will be informed of the results of the follow-up and any decisions regarding actions that are to be taken.

11 Course Literature and Other Educational Materials
Scientific articles