Universitat de les Illes Balears

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|---|---|
| Academic year | 2017-18 |
| Subject | 11261 - Bioinformatics |
| Group | Group 1, 2S |
| Syllabus | A |
| Language | English |

# Syllabus

## Subject

**Name** 11261 - Bioinformatics
**Credits** 0 in-class (0 hours) 3 distance (75 hours) 3 total (75 hours).
**Group** Group 1, 2S
**Period** Second semester
**Language** English

### Lecturers

| Lecturers | Office hours for students | | | | | |
|---|---|---|---|---|---|---|
| | Starting time | Finishing time | Day | Start date | End date | Office |
| Gerard Pujadas Anguiano | You need to book a date with the professor in order to attend a tutorial. | | | | | |
| Ana María Rodríguez Guerrero amrodriguez@uib.es | 15:00 | 16:00 | Monday | 01/09/2017 | 31/07/2018 | Office Q.11 (Mateu Orfila building, Campus UIB) |

## Context

The students of this course have different background and interests for bioinformatics. Therefore, we have designed the course with the goal on mind that you have to learn bioinformatics skills that can be useful for all of you. Following with this idea, the course have two chapters where you will learn how to search and how to analyze biologic information. In the first chapter, you will learn to use the SRS (Sequence Retrieval System). This is a web interface to a large number of biological databases and analysis tools. In the second chapter you will learn to search into microarray results databases.

## Requirements

No special skills

## Skills

The competences are:

### Specific

* G13 - Knowing the capabilities and potential of ICT (Information and Communication) in the bioinformatics area..



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## Generic

* Known the capabilities of the new technologies and their application to the nutrition and nutrigenomics fields.
* CB7 - That students can apply their knowledge and ability in problem solving environments new or unfamiliar within broader (or multidisciplinary) contexts related to their field of study.

## Basic

* You may consult the basic competencies students will have to achieve by the end of the Master's degree at the following address: http://estudis.uib.cat/master/comp_basiques/

# Content

The contents of the course is:

## Theme content

1.. Sequence analysis of proteins and nucleic acids
Sequence databases for proteins and nucleic acids.
Sequence searching in databases and analysis of the retrieved information.
Sequence comparison

2.. Analysis of protein structures and nuclicos acids
3D structural databases for proteins and nucleic acids
Looking for 3D structures of proteins and nucleic acids and visual analysis of their main features
Protein structure comparison

3.. Predicting bioactivity of ligands
3.1. Databases ligands nutritional interest
3.2. Fundamentals of virtual screening
3.3. Virtual screening in the absence of the 3D structure of the target
3.4. Virtual screening in the presence of the 3D structure of the target

# Teaching methodology

The methodology used will be:

## Workload

The activities of the course will be:

## In-class work activities

| Modality | Name | Typ. Grp. | Description | Hours |
|---|---|---|---|---|
| Other | There is no activity of this type | Large group (G) | a | 0 |



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At the beginning of the semester a schedule of the subject will be made available to students through the UIBdigital platform. The schedule shall at least include the dates when the continuing assessment tests will be conducted and the hand-in dates for the assignments. In addition, the lecturer shall inform students as to whether the subject work plan will be carried out through the schedule or through another way included in the Campus Extens platform.

## Distance education work activities

| Modality | Name | Description | Hours |
|---|---|---|---|
| Individual self-study | Exam | Exam | 2 |
| Individual self-study | Exercises | To analyze the sequences and structures of nucleic acids and proteins by using software and specialized databases in the field of Molecular Biology. Predict and analyze specific capabilities as bioactive ligands based on their structure and composition. | 73 |

## Specific risks and protective measures

The learning activities of this course do not entail specific health or safety risks for the students and therefore no special protective measures are needed.

# Student learning assessment

The evaluation will be done according to the following criteria:

### Exam

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|---|---|
| Modality | Individual self-study |
| Technique | Short-answer tests **(retrievable)** |
| Description | Exam |

Assessment criteria

Final grade percentage: 50%



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### Exercises

| | |
|---|---|
| Modality | Individual self-study |
| Technique | Student internship dissertation **(non-retrievable)** |
| Description | To analyze the sequences and structures of nucleic acids and proteins by using software and specialized databases in the field of Molecular Biology. Predict and analyze specific capabilities as bioactive ligands based on their structure and composition. |

Assessment criteria

Final grade percentage: 50%

## Resources, bibliography and additional documentation

The materials used (videos, web pages, etc..) will be available through the course moodle space