Lecturers: Kristel Van Steen
: Franck Dequiedt

Language(s) of instruction:

English / French

Organisation and examination:

Teaching in the first semester. Written exam in January.

Course contents:

In this course genetic concepts are introduced that are necessary to understand a selection of bioinformatics related data analysis problems. To solve these problems a variety of analytic tools will be explained and exemplified. Different topics typically include:

- The genome and genetic markers [genetics]
- Genome-wide association studies [analytics]
- Sequence technologies [genetics]
- Sequence comparisons [analytics]
- The transcriptome and proteome [genetics]
- Random forests to uncover biological interactions [analytics]

Learning outcomes of the course:

At the end of the course, students have acquired knowledge about genetics (in particular genomics, transcriptomics, technology-related aspects) and about a selection of state-of-the-art, yet basic, analytic tools. Students will be evaluated about key concepts related to genetics and the analytic approaches presented during the course (incl. pros and cons, general contexts).

Prerequisites and co-requisites/ Recommended optional programme components:

A background in biomedicine or informatics are a pro, but not essential.

Planned learning activities and teaching methods:

The course is in part based on interactive ex-cathedra lectures and in part on interactive practical sessions. The exercise sessions allow students to become familiar with the theoretical concepts introduced during the theory classes. They prepare students to successfully carry out their 3 homework assignments. Regarding the homework assignments, two homework styles are presented: 1) literature-based (i.e., discussing a paper related to the class topic); 2) a classic style homework which may involve a mix of theoretical questions and data analysis assignments. Students can work in groups. At the end of the course, each group should have selected each homework style at least once. The literature-based homeworks will be discussed in class.
Mode of delivery (face-to-face; distance-learning):

    Face-to-face.

Recommended or required readings:

    There is no mandatory textbook. Useful references will be given as the course progresses.
    All course material is posted on the website
    http://www.montefiore.ulg.ac.be/~kbessonov/courses.html

Assessment methods and criteria:

    Students are assessed via homework assignments and on the basis of a written exam in the first session. In the second session, students will only be assessed via a written exam. The exam covers material from both the theoretical and practical sessions.

Work placement(s):

Organizational remarks:

    The course is organized in the first quadrimestre. The detailed calendar and announcements are available on the course website:
    http://www.montefiore.ulg.ac.be/~kbessonov/courses.html

Contacts:

    Kristel Van Steen - e-mail kristel.vansteen@ulg.ac.be
    Franck Dequiedt – e-mail fdequiedt@ulg.ac.be
    Assistant: Kyrylo Bessonov - e-mail kbessonov@ulg.ac.be
    Preferred contact mode: e-mail (include GBIO0002 in the subject title) or personal contact, after a lecture or by appointment