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Nordplus Neighbour

NORDIC-BALTIC-RUSSIAN ACADEMIC
NETWORK IN BIOINFORMATICS

Biological Data Analysis

In University of Tartu, J. Liivi street 2, Tartu, ESTONIA.
Distance learning: 20 November, 2006 – 20 December, 2007;
Face-to-face meeting: 29 January – 3 February, 2007.

The field of bioinformatics is a highly interdisciplinary one. It relies heavily on other subject fields like biology, computer science and statistics. Within the framework of “NORDIC-BALTIC-RUSSIAN ACADEMIC NETWORK IN BIOINFORMATICS” three courses are planned to cover important aspects in Bioinformatics field:

Biology (Lithuania, 2006)

BIOLOGICAL DATA ANALYSIS (ESTONIA, 2006-2007)

Bioinformatics (Latvia, 2007)

The "Biological Data Analysis" course is the second of the 3 planned courses in Bioinformatics field. The students are strongly encouraged (but not obligatory) to plan to participate in all 3 courses.

The aim of the "Biological Data Analysis" course is to provide students with basic knowledge and elementary skills needed for the statistical analysis of biological data.

In the preparatory, distance-learning part of the course, students will be asked to download the freeware package R and to practice simple numerical and graphical tools for data description using this software. R is very flexible software for biological data analysis; the number of implemented methods is virtually unlimited (although only a small subset of them will be covered during this course). The same software and its extensions will also be used in the next, bioinformatics course.

The one-week face-to-face module will be held in Tartu, using the facilities of the Faculty of Mathematics and Computer Sciences, University of Tartu.

First, the concepts of randomness, random sampling and sampling variability will be introduced. Drawing conclusions from the data, while taking into account uncertainty, is based on confidence intervals and statistical hypothesis testing. Their general principles will be seen together with practical examples of data analysis in R.

Next, some methods for exploring and testing associations in the data will be considered: simple two-sample tests, basic statistical models, such as (simple and multivariate) linear regression and analysis of variance. Finally, some tools for dimensionality reduction and cluster analysis will be explored. The practical exercises sessions will be held in a computer lab.

The course will consist of

1. distance learning part - 1 month before the course students will get the prereading and some exercises;
2. face-to-face part, where lectures by the Estonian and Norwegian teachers are given as well as the practical sessions in computer lab are carried out.

General information

Number of credits in ECTS, can be differentiated from minimum to maximum obtainable number of credits.....6

Course period, dates of meeting in person,
yy.mm.dd – yy.mm.dd..... 29.01. - 03.02.2007

Course location:..... Tartu, Estonia, University of Tartu

Course webpage: <http://www.ms.ut.ee/BDA/>

Target group(s), tick off relevant box(es):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Bachelor students | <input checked="" type="checkbox"/> University staff (cont. education) |
| <input checked="" type="checkbox"/> MSc students | <input type="checkbox"/> Practitioners (cont. education) |
| <input checked="" type="checkbox"/> PhD students | <input type="checkbox"/> Other, specify: |

Entrance requirements for students: level of studies, amount of studies and/or specific courses passed, specific skills, etc:

1. Bachelor degree in informatics;
2. Bachelor degree in agriculture or biological sciences and basic knowledge in mathematics and informatics.

Deadline for student applications, yy.mm.dd..... 20.11.2006.

Distance learning starts, yy.mm.dd..... 20.11.2006.

Number of participants (max):..... 30

The criteria for admission to the course are:

1. The first priority is given to students, who have solved pre-course exercises;
2. The second priority is given to students who took part in the previous Biology course.

Admission decision will be made on January 2, 2007.

The participation in the course (travelling, accommodation, meal, course materials) will be covered from project money for applicants from Estonia, Latvia, Lithuania, Norway, Denmark and North-West Russia.

Send the Registration form to:

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