

Spring 2013: Industrial perspectives on systems biology and bioinformatics

Credits: 7.5hp (in special cases there is a possibility to take half of the course giving 3.5hp). For students outside Göteborg region there is an option of taking only one module (2.5hp). Please contact course responsible for more info.

Schedule: Period 4 (April-May):

Module on Innovation and Entrepreneurship will be in the week 20. For other modules exact times are yet to be decided.

Format: 2 sessions/week, 1.5 hours/session. Except for Module on Innovation and Entrepreneurship where 3 double lectures will be held during week 20.

Responsible:

Marija Cvijovic

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Registration:

Send an email to marija.cvijovic@chalmers.se no later than January 25, 2013 including following information:

Name:

Department:

PhD/MSc student: (if you are a phd student, state a year of your studies and title of your project)

Course Description and Objectives

One of the most challenging aspects of systems biology and bioinformatics is integration of diverse disciplines, ranging from mathematics to molecular biology. Partnership between academia and industry is essential for developing cutting-edge approaches and tools that will bridge the gap between experimental data and medical knowledge thus move us from 'guess and pray' to 'predict and test' method. This course offers a unique opportunity to learn how the latest techniques developed in the field are bringing us step closer to medical application and what are the potential bottlenecks that are preventing us to fully exploit research developed within academia and apply it in industry.

Course is designed for graduate students who have an interest in industrial perspective of systems biology and bioinformatics. By giving successful examples from both industry and academia students will be introduced to the field of systems medicine and single cell sequencing and its application in development of new therapeutics. Topics to be covered during the course are: Systems Medicine, Personalized Medicine, Pharmacokinetics/Pharmacodynamics (PK/PD), NGS and Single Cell Sequencing.

The course will include a number of visiting lectures, experts in the field from the industry located in Göteborg Area. This will give the opportunity for networking and exploring possibilities for the career outside academia. Lecturers will dedicate time to share their experiences and discuss and explore various career paths available for freshly baked PhDs. On the practical side, course will offer examples on how to utilize your own research and examples of successful grant applications with emphasis on key elements that help a grant proposal to be accepted.

By the end of the course students will:

- 1) Learn how systems biology can contribute in building 4Ps (predictive, personalized, preventive and participatory) of future medicine

- 2) Learn about medical genomics and how it is overriding current limitations of diseases complexity and drug discovery
- 3) Learn how NGS and single cell sequencing are opening possibilities for Personal Genome Project
- 4) Learn how to translate long term vision into a proposal that addresses the needs of the funding agency

Confirmed lecturers:

Martin Adiels (Mathematical Sciences)

Mats Jirstrand (FCC)

Peter Gennemark (AstraZeneca)

Alexander Eiler (Uppsala University)

Bo Norrman (Innovations kontor väst)

David Andersson/Mats Lundqvist (Director of Chalmers School of Entrepreneurship)

Aslak Felin (Department of Innovation and Entrepreneurship Sahlgrenska Academy)

Assignments: Two essays on any of the topic covered during the course.

Project: Students will be given a task that is mimicking a grant application for a position either in academia or industry. Students should write a small project proposal, specify budget and strategic plan reflecting long term direction and potential of their research.

Grading:

Assignments: 50% (2 x 25%)

Project: 50%

General information

The course will be given in English.