Master's Degree Programme in
Bioinformatics

The Master's Degree Programme in Bioinformatics is a new programme offering interdisciplinary knowledge of bioinformatics. Education is given in English, and the students of this programme learn to work together with associates from different countries and scientific backgrounds. Applicable fields of prior studies are biosciences and information technology, or other relevant fields where sufficient knowledge of information technology and/or biosciences is achieved for studying in the Master's Degree Programme in Bioinformatics.

The programme covers different aspects of bioinformatics and is managed by two universities in Finland: the University of Tampere (Institute of Medical Technology) and the University of Turku (Department of Information Technology). As an equal cooperation of these participating units, the programme offers fundamental knowledge of :

- Algorithms in Bioinformatics
- Biological Databases and Tools
- Information Retrieval and Extraction
- Data Analysis and Machine Learning Methods
- Sequence Analysis, Protein structures, Phylogenetics
- Proteomics, Functional Genomics, Systems Biology

Programme outline

The MSc degree is normally attained in two years. All students are introduced to the multidisciplinary field of bioinformatics. The studies encompass different aspects of bioinformatics, computer science, information technology, statistics, mathematics, and biosciences, such as biochemistry, genetics, and molecular biology.

Major subject studies and other studies are arranged as courses, typically 3-5 ECTS credits each. A student attending to a course is expected to participate in classroom work such as lectures and exercises, work on group assignments or individual projects, present a seminar paper, or take an exam, depending on the course. The courses combine different modes of teaching, including distance learning. The study methods vary from course to course and are subject to change. The student is expected to take a majority of the courses in the first year, while the Master's Thesis is a personal scientific research project comprising the core of the second year studies.

Admission requirements

Academic requirements
A completed university level Bachelor's degree in biological sciences (especially biochemistry or molecular biology) and/or method sciences (computer science, mathematics, statistics) is required for admission.

Language requirements
Applicants to the Master's degree programmes taught in English must always prove their knowledge of the English language.

Application period
The application period starts in the beginning of December and ends in the beginning of February for studies starting in September.

For details, please see the admission pages at
http://bioinformatics.utu.fi/

University of Turku is an internationally acknowledged, multidisciplinary scientific university located on the Southwest coast of Finland, in the vivid city of Turku.

With its 18,000 students and 3,000 employees, it is the second largest university in Finland. Expertise within the University and its six faculties ranges from humanities to natural sciences

This programme is offered by the Department of Information Technology at University of Turku

Degree awarded
Master of Science

Duration
2 years (4 terms) 120 ECTS

Language of instruction
English

Location
University of Turku - Turku, Finland
www.utu.fi

Programme start
September

Course overview

Master's Degree Programme in Bioinformatics (120 ECTS)

Major subject 40 ECTS

Core courses in bioinformatics

        Introduction to Bioinformatics 4 ECTS
        Expression Data Analysis 4 ECTS
        Bioinformatics in Functional Genomics 4 ECTS
        Systems Biology I 4 ECTS
        Phylogenetics 4 ECTS
        Structural Bioinformatics 4 ECTS
        Biological Data Analysis Project 4 ECTS
        Bioinformatics, Programming Course 4 ECTS
        Algorithms in Bioinformatics 4 ECTS
        Tools for Intelligent Data Analysis 4 ECTS

Other recommended courses

        Introduction to Statistical Bioinformatics 4 ECTS
        Systems Biology II 4 ECTS
        Advanced Math and CS for Bioinformatics 3 ECTS
        Biological Database Systems 5 ECTS
        Text Mining in the Biomedical Domain 3 ECTS
        Protein Modelling 4 ECTS
        Bioinformatics Project 1-6 ECTS

Other studies 40 ECTS

Language studies (0-8 ECTS)

        Finnish for Foreigners 5 ECTS
        Basic Academic Writing Skills in English 3 ECTS

Compulsory minor subject studies (0-15 ECTS)

        Introduction to Molecular Biology 3 ECTS
        Introduction to Biochemistry 3 ECTS
        Introduction to Genetics 3 ECTS
        Introduction to Statistical Inference 3 ECTS
        Introduction to Programming 6 ECTS
        Introduction to Computer Science 3 ECTS
        Math and CS for Bioinformatics 3 ECTS

Optional studies (17-40 ECTS)

        Several optional courses are arranged jointly between Turku and Tampere, and many more are available locally. Bioinformatics courses from the major subjcts are highly recommended as optional studies, but the students may also choose to build up knowledge of methodological sciences (IT, CS, math etc.) or biological sciences

Master thesis 40 ECTS

The Master's Thesis (pro gradu) consists of a theoretical part based on scientific literature, an experimental or practical part (Master's project), and participation in the Seminar.

Career prospects

The specific need for bioinformatics professionals will be amongst biological and medical research and development groups in the industrial sector as well as in educational institutions. The Master of Science degree in bioinformatics gives eligibility for scientific postgraduate studies in bioinformatics, and also in biosciences or in information technology. This kind of multidisciplinary education opens up excellent employment opportunities.

Capacity for Innovation

1. Germany
2. Japan
3. Switzerland
4. Sweden
5. Finland
6. United States
7. Denmark
8. France

Source: The Global Information Technology Report 2008-2009

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