



# Pattern Recognition in Bioinformatics

AARHUS UNIVERSITET

## Level of course

Master course

## Program

Computer Science and IT

## Quarter

Q3 in 2012

## Hours per week

Lectures (2+1h/week)

## Name of lecturer(s)

Christian Nørgaard Storm Pedersen and Thomas Mailund

## Compulsory program

Two programming projects

## Objectives of the course

The participants will after the course have insight into algorithms for pattern recognition in biological sequences (DNA, RNA, and protein) and practical experience with implementation of these algorithms. The working method of the course will also train the participants to plan and complete projects and to communicate professional issues.

## Prerequisites

Introduktion til Programmering og Algoritmer og Datastrukturer 1, eller tilsvarende

## Learning outcomes and competences

The participants must at the end of the course be able to:

- **define** and **describe** basic problems in pattern recognition in biological sequences.
- **apply** and **explain** known techniques for design of algorithm for pattern recognition in biological sequences.
- **implement** and **evaluate** concrete algorithms based on known techniques for pattern recognition in biological sequences.

## Contents

Bioinformatics is about developing and applying algorithms for analysis of biological data. The amount of sequence data is growing fast, and many interesting problems are based on the analysis of large sets of sequence data. This class covers concrete algorithms for pattern recognition and discovery in sequence data based on hidden Markov models (HMMs) and stochastic context-free grammars (SCFGs), and examples of their application on biological sequences.

## Literature

Selected research papers and book chapters

## Course homepage

<http://www.cs.au.dk/~cstorm/courses/PriB>

## Type of course/teaching methods

Lectures and exercises

## Assessment methods

Oral exam, 20 minutes without preparation  
7-scale, internal examiner

## Credits

5 ECTS

## Language

English

## Provider

Department of Computer Science

## Course enrolment

<http://mit.au.dk>

## Special comments on this course

[Schedule for this course](#)

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cstorm@cs.au.dk