

Master's program in bioinformatics at Aarhus University

This document provides an overview of the key classes of the Master's program in bioinformatics at Aarhus University, and how to combine them into recommended study programs.

See <http://kandidat.au.dk/en/bioinformatics/> for overall info about the Master's program in bioinformatics at Aarhus University.

See <http://kursuskatalog.au.dk/en/> for course descriptions of individual classes offered at Aarhus University, including the classes in bioinformatics program.

Classes and areas of specialization

The main classes of in the bioinformatics program are organized into three areas that each consists of three classes of 10 ECTS. The areas reflect that bioinformatics is about developing and applying statistical models, algorithms, and computer programs for handling and analysis of biological and biomedical data.

Area	Class		
Algorithms and Programming	Alg1	Algorithms in Bioinformatics	AiB
	Alg2	Genome-Scale Algorithms	GsB
	Alg3	Advanced Programming in Bioinformatics	APIB
Statistics and Data	Data1	Data Science in Bioinformatics	DSiB
	Data2	Statistical & Machine Learning in Bioinformatics	SMLiB
	Data3	Advanced Statistical Learning & Methodology in Bioinformatics (offered in even years)	ASLiB
	Data3	Probabilistic Models for DNA Sequence Evolution (offered in odd years)	PMDNA
Biology and Genomes	Bio1	Tree of Life	ToL
	Bio2	Population Genomics	PG
	Bio3	Advanced Topics in Genomics	ATiG

The bioinformatics program also includes the classes:

Class		Comments
Computational Thinking in Bioinformatics	CTiB	
Projects in Bioinformatics	PiB	Individual 5 or 10 ECTS project.
Next-Generation Sequencing	NGS	5 ECTS class offered via AU Summer University.

Besides these classes, students are also allowed to follow relevant classes from other Master's programs at Aarhus University.

Recommended Study Programs

A student admitted into the bioinformatics program will have basic skills in (1) mathematics and statistics, and basic skills in either (2a) molecular biology, or (2b) computer science, reflecting that the student's Bachelor's degree can be in a biological, or computational/mathematical discipline.

A student in the bioinformatics program must:

- Follow the **first 20 ECTS of two areas of specialization** (currently either Alg, Data, or Bio cf. above). All students admitted into the bioinformatics program can follow the classes in the Data area, and depending on whether the student has a background in a biological or computational/mathematical discipline, the student can follow the classes in either the Bio or Alg area.
- Follow the class **Computational Thinking in Bioinformatics** (CTiB), if the student has a background in a biological discipline, or the class **Tree of Life** (ToL), if the student has a background in a computational/mathematical discipline.
- Follow **30 ECTS of elective classes**, e.g. the last in their areas of specialization, or the initial class in other areas of specialization.
- Make an individual **Project in Bioinformatics** (PiB), which can be either 5 or 10 ECTS depending on whether the student follows the class Next-Generation Sequencing.
- Make a **30 ECTS Master's thesis**.

This yields the following recommended study programs:

Study Program 1: For students with a Bachelor's degree in a computational or mathematical discipline:

Semester	Area / Alg	Area / Data	Other
1	AiB	DSiB	ToL
2	GsA	SMLiB	PiB
3	Elective / Alg3	Elective / Data3	Elective / Bio3
4	Thesis		

Study Program 2: For students with a Bachelor's degree in a biological discipline:

Semester	Area / Bio	Area / Data	Others
1	ToL	DSiB	CTiB
2	PG	SMLiB	PiB
3	Elective / Alg3	Elective / Data3	Elective / Bio3
4	Thesis		