

Recommended course plan for the MSc degree course Bioinformatics, variant A

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The MSc degree course Bioinformatics Variant A has been designed for students with a Bachelor's degree in Bioinformatics.

The present course plan is based on the exam regulations effective from 1 October 2021. Its sole function is to explain these regulations and to provide recommendations as to which courses may be taken in each respective semester. In case of further questions, please contact the study advisor, Prof. Nieselt. Detailed information regarding studies and exams can also be found in the exams and study regulations at <http://www.wsi.uni-tuebingen.de/studium>.

The MSc degree course Bioinformatics Variant A comprises the following modules:

Sequence Bioinformatics	compulsory, 9 ECTS
Structure Bioinformatics	compulsory, 9 ECTS
Bioinformatics seminar (BIO-SEM)	compulsory, 3 ECTS
Practical Bioinformatics (BIO-PRAK)	2 courses with 3 ECTS each
Bioinformatics elective modules (BIO-BIO), incl. compulsory group project	15 ECTS in total (ECTS can also be obtained by attending Bachelor courses of 3 rd year)
Practical Computer Science elective modules (INFO-PRAK)	6 ECTS in total
Theoretical Computer Science elective modules (INFO-THEO)	6 ECTS in total
Advanced Computer Science (INFO-INFO)	18 ECTS in total (ECTS can also be obtained by attending Bachelor courses of 3 rd year)
Life Sciences elective modules (BIO-LIFE)	18 ECTS in total
Master thesis	30 ECTS

The following course plan is a recommendation only – students are not required to follow this plan. We explicitly encourage students to design their own course of study within the provisions of the exam and study regulations.

However, we do recommend to attend the courses of the Sequence Bioinformatics and Structure Bioinformatics modules in the first two subject-specific semesters, and to write the master thesis at the end of your studies during the 4th semester.

Please note, in addition the regulations concerning the Research Project in the study area BIO-BIO; for this, see the information in the module handbook at <https://uni-tuebingen.de/en/74348>

Recommended course plan MSc Bioinformatics Variant A; start: SS2023

<i>1st semester (summer semester 2023)</i>		
lecture + tutorials	Structure&Systems Bioinformatics , Kohlbacher and Claassen	9 ECTS
Group proj	Group project (BIO-BIO) , attached to Structure&Systems Bioinformatics	3 ECTS
lecture / seminar/	<i>Life Sciences (BIO-LIFE)</i> (Biology / Chemistry /Pharmacy MSc courses)	6 ECTS
lecture / seminar	<i>Advanced Computer Science (INFO-INFO)</i>	6 ECTS
lecture / seminar	<i>Bioinformatics (BIO-BIO)</i>	6 ECTS
	Total	30 ECTS

Here are some recommended Computer Science, Bioinformatics and Life Sciences courses for the summer semester 2023:

Advanced Computer Science (INFO-INFO):

In general, all courses listed under INFO-INFO can be taken. The following **courses are offered in English (this list is not conclusive):**

- ML4201 Statistical Machine Learning (9 ECTS!) (also INFO-THEO)
- ML4202 Probabilistic Machine Learning (also INFO-THEO)
- GTCNEURO Neural Data Science (also INFO-THEO)
- MDZINF3310 Introduction to Statistical Machine Learning for Bioinformaticians and Medical Informaticians (also BIO-BIO)
- ML4350 Reinforcement Learning
- INFO4193 Natural Language Processing

Advanced Bioinformatics (BIO-BIO):

All lectures listed in ALMA under are taught in English. It is also possible to take courses from the “Wahlpflichtbereich Bioinformatik” of the Bachelor, these may however be taught in German.

Advanced Life Sciences (BIO-LIFE):

Please note that credit points obtained from courses offered by the Biology department that introduce math- or computer science-related topics or similar topics (e.g. Matlab for biologists) do not count towards the number of credits necessary for the Life Sciences required elective modules

- Lecture *Advanced Concepts in Cell Biology* (BIO-4076, 3 LP)
- Computational Ecology | Bio-4209
- Frontiers in Applied Drug Design (Praktikum) | PHA-PMC3070 |(Ist schon voll, wird aber wieder im WiSe angeboten)
- Autophagy & Longevity | Bio-4073

- *Computational Methods in Drug Discovery*, Research practical course taught individually (6 LP) -PHA-PMC3050 (is probably full but again offered in the winter semester, apply now)
- *Frontiers in Applied Drug Design* (Praktikum), Research practical course taught individually (6 LP) - PHA-PMC3070

Also offers by the Graduate School of Neurosciences may be taken, e.g.:

- - Developmental Neurobiology
- - Molecular Cell Biology of Neurons & Glia
- - Genetic and Molecular Basis of Neural Diseases I

<i>2nd semester (winter semester 2023/24)</i>		
lecture + tutorials	Sequence Bioinformatics	9 ECTS
lecture + tutorials	<i>Theoretical Computer Science (INFO-THEO)</i>	6 ECTS
lecture + tutorials	<i>Practical Computer Science (INFO-PRAK)</i>	6 ECTS
lecture +/ seminar	<i>Life Sciences (BIO-LIFE, Biology / Chemistry /Pharmacy MSc courses)</i>	6 ECTS
practical course	<i>Practical Bioinformatics</i> (during the lecture-free period after the semester)	3 ECTS
	Total	30 ECTS

<i>3rd semester (summer semester 2024)</i>		
lecture / seminar/ seminar	<i>Life Sciences (BIO-LIFE, Biology / Chemistry /Pharmacy MSc courses)</i>	6 ECTS
seminar	<i>Bioinformatics seminar (BIO-SEM)</i>	3 ECTS
lecture + tutorials	<i>Advanced Computer Science (INFO-INFO)</i>	6 ECTS
lecture + tutorials	<i>Advanced Computer Science (INFO-INFO)</i>	6 ECTS
lecture / seminar/ seminar	<i>Bioinformatics (BIO-BIO)</i>	6 ECTS
	Total	30 ECTS

<i>4th semester (winter semester 2024/2025)</i>		
module	MSc thesis	30 ECTS
	Total	30 ECTS