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 3rd 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 3rd 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 (in particular when to take the courses for INFO-INFO, INFO-PRAK, INFO-THEO). We recommend to choose this depending on the semester specific offers.
However, we do recommend to attend the courses of the *Structure & Systems Bioinformatics* and *Sequence 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: SS2024

1st semester (summer semester 2024)		
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/	*Life Sciences* **(BIO-LIFE)** (Biology / Chemistry /Pharmacy MSc courses)	6 ECTS
lecture / seminar	*Advanced Computer Science* **(INFO-INFO)**	6 ECTS
lecture / seminar	*Bioinformatics* **(BIO-BIO)**	6 ECTS
	Total	30 ECTS

Here are some recommended Computer Science and Life Sciences courses for the summer semester 2024. In general, maximally 18 ECTS in sum for the study areas INFO-INFO and BIO-BIO can be filled with courses from the third Bachelor year. Note that courses from the Bachelor may be taught in German.

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!) (can also be taken as INFO-THEO, but the extra 3 ECTS cannot be transferred)
- ML4202 Probabilistic Machine Learning (9 ECTS!) (can also be taken as INFO-THEO, but the extra 3 ECTS cannot be transferred)
- MDZINF3310 Introduction to Statistical Machine Learning for Bioinformaticians and Medical Informaticians (also BIO-BIO)
- INFO4193 Natural Language Processing

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
- Autophagy & Longevity **|** Bio-4073
- *Frontiers in Applied Drug Design* (Praktikum), Research practical course taught individually (6 LP) - PHA-PMC3070 is offered every semester)
- Evolutionary Cognitive Neuroscience | BIO-4108, 6 ECTS
- Molekularphysiologie der Pflanzen, Bio-4018, probably in German

- Bakterielle Anpassungsmechanismen, Bio-3003, most likely taught in German
- Advances in Archaeo- and Paleogenetics (V), ASHE-6e-1, please ask the professor for number of ECTS (not stated in ALMA)

2nd semester (winter semester 2024/25)		
lecture + tutorials	**Sequence Bioinformatics**	9 ECTS
lecture + tutorials	*Theoretical Computer Science* **(INFO-THEO)**	6 ECTS
lecture + tutorials	*Practical Computer Science* **(INFO-PRAK)**	6 ECTS
lecture +/ seminar	*Life Sciences* (**BIO-LIFE**, Biology / Chemistry /Pharmacy MSc courses)	6 ECTS
practical course	*Practical Bioinformatics* (during the lecture-free period after the semester)	3 ECTS
	Total	30 ECTS

3rd semester (summer semester 2025)		
lecture / seminar/	*Life Sciences* **(BIO-LIFE,** Biology / Chemistry /Pharmacy MSc courses)	6 ECTS
seminar	*Bioinformatics* seminar (**BIO-SEM)**	3 ECTS
lecture + tutorials	*Advanced Computer Science* **(INFO-INFO)**	6 ECTS
lecture + tutorials	*Advanced Computer Science* **(INFO-INFO)**	6 ECTS
lecture / seminar/	*Bioinformatics* (**BIO-BIO**)	6 ECTS
practical course	*Practical Bioinformatics* (during the lecture-free period after the semester)	3 ECTS
	Total	30 ECTS

4th semester (winter semester 2025/2026)		
module	MSc thesis	30 ECTS
	Total	30 ECTS