

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

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by:

Prof. Dr. Kay Nieselt (program coordinator, Bioinformatics)

Prof. Dr. Daniel Huson (chair of the board of examiners, Bioinformatics)

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 as of **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. For binding information please contact the examination board.

Detailed information regarding studies and exams can also be found in the exams regulations under **Downloads – Prüfungsordnungen** (<https://uni-tuebingen.de/fakultaeten/mathematisch-naturwissenschaftliche-fakultaet/fachbereiche/informatik/studium/studierende/downloads/pruefungsordnungen/>)

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

Module Sequence Bioinformatics	compulsory, 9 ECTS
Module Structure and Systems Bioinformatics	compulsory, 9 ECTS
Seminar Bioinformatics (BIO-SEM)	compulsory, 3 ECTS
Study area Practical Bioinformatics (BIO- PRAK)	2 courses, 3 ECTS each
Study area Bioinformatics (BIO-BIO), incl. Group Project (latter is compulsory)	in total 15 ECTS (ECTS can also be obtained by attending Bachelor courses from the 3rd year)
Study area Practical Computer Science (INFO-PRAK)	in total 6 ECTS
Study area Theoretical Computer Science (INFO-THEO)	in total 6 ECTS
Study area Advanced Computer Science (INFO-INFO)	In total 18 ECTS (ECTS can also be obtained by attending Bachelor courses from the 3rd year)
Study area Advanced Life Sciences (BIO-LIFE)	In total 18 ECTS
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 and second subject-specific semesters,

and to write the master thesis at the end of your studies during or after the 4th semester.

Important additional notes:

- Research Project in the study area BIO-BIO: for the regulations concerning the ResearchProject see the information in the module handbook at <https://uni-tuebingen.de/en/74348> (German only).
- Courses for BIO-PRAK: you can only take courses that are offered by the IBMI and shown under the respective entry in ALMA. Any practical courses from the life sciences are not eligible for this study area.
- Modules from the third year of the Bachelor start with the number “3”. You find the respective offer for each semester in ALMA under the Bachelor Bioinformatics listings.

Recommended course plan MSc Bioinformatics Variant A; start: WS24/25

<i>1st semester WS24/25</i>		
lecture + tutorials	Module Sequence Bioinformatics , Lectures Monday and Wednesday 10-12, Tutorials extra time	9 ECTS
Group project	Group project, study area BIO-BIO (parallel with Sequence Bioinformatics)	3 ECTS
lecture + tutorials	Study area <i>Theoretical Computer Science (INFO-THEO)</i> or, alternatively, study area <i>Advanced Computer Science (INFO-INFO)</i> or alternatively, study area <i>Advanced Bioinformatics (BIO-BIO)</i>	6 ECTS
lecture + tutorials	Study area <i>Practical Computer Science (INFO-PRAK)</i> , or alternatively, study area <i>Advanced Computer Science (INFO-INFO)</i>	6 ECTS
lecture / seminar	Study area <i>Advanced Life Sciences (BIO-LIFE, Biology / (Bio)Chemistry / Pharmacy MSc courses)</i>	6 ECTS
	Total	30 ECTS

Here are a few recommended (but not exclusive) courses from the study areas Computer Science (INFO-INFO, INFO-THEO, INFO-PRAK), Bioinformatics (BIO-BIO) and Life Sciences (BIO-LIFE) offered in the winter semester 2024/25 (English):

Study area Theoretical Computer Science (INFO-THEO):

- ML4320 Time Series, lecture+tutorials, 6 ECTS, lecture Wednesdays 8-10

Study area Practical Computer Science (INFO-PRAK):

- ML4102 Data Literacy, lecture+tutorials, 6 ECTS, lecture Fridays 10-12

Study area Advanced Computer Science (INFO-INFO):

- ML4103 Deep Learning, lecture+tutorials, 6 ECTS, lecture Wednesdays 14-16

Study area Advanced Bioinformatics (BIO-BIO):

- BIOINF4372 Cheminformatics, lecture+tutorials, 6 ECTS, lecture Wed. 12-14
- BIOINF3330 Expression Bioinformatics, lecture+tutorials, 6 ECTS, lecture Thur. 10-12
- BIOINF3310 Phylogeny and Evolution, lecture+tutorials, 6 ECTS, lecture Thur. 16-18

Study area 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 study area Life Sciences (**BIO-LIFE**).

- *Introduction to Computational Neuroscience (V+Ü)*,
- *Chronobiologie (V, 3ECTS) – in German*
- *Methods in Cellular and Immunological Biosciences*
- *Frontiers in Applied Drug Design*, (Pharmacy), Böckler et al., research practical course, 9 ECTS (very few places left, this course is offered every semester)

- *PHA-PMC5245 Drug Discovery Technologies (Seminar)*
- *Advanced Oncology (V)*
- *Einführung in die Immunologie (V (3 ECTS) + verschiedene Seminare (je 3 ECTS)) – in German*

<i>2nd semester (summer semester)</i>		
lecture + tutorials	Module Structure&Systems Bioinformatics	9 ECTS
lecture / seminar/	Study area <i>Advanced Life Sciences (BIO-LIFE, (Biology / Chemistry / Pharmacy MSc courses)</i>	6 ECTS
lecture / seminar	Study area <i>Advanced Computer Science (INFO-INFO) or, alternatively, INFO-THEO or INFO-PRAK</i>	6 ECTS
lecture / seminar	Study area <i>Bioinformatics (BIO-BIO)</i>	6 ECTS
practical course	Study area <i>Practical Bioinformatics (BIO-PRAK) (during the lecture-free period after the semester)</i>	3 ECTS
	Total	30 ECTS

<i>3rd semester (winter semester)</i>		
lecture / seminar/	Study area <i>Advanced Life Sciences (BIO-LIFE, Biology / Chemistry / Pharmacy MSc courses)</i>	6 ECTS
seminar	Bioinformatics, seminar (BIO-SEM)	3 ECTS
lecture + tutorials	Study area <i>Advanced Computer Science (INFO-INFO)</i>	6 ECTS
lecture + tutorials	Study area <i>Advanced Computer Science (INFO-INFO)</i>	6 ECTS
lecture / seminar/	Study area <i>Bioinformatics (BIO-BIO)</i>	6 ECTS
practical course	Study area <i>Practical Bioinformatics (BIO-PRAK) (during the lecture-free period after the semester)</i>	3 ECTS
	Total	30 ECTS

<i>4th semester (summer semester)</i>		
module	Master thesis	30 ECTS
	Total	30 ECTS