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 2016 (and new version Oct. 2019). 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 required elective module – compulsory, 9 ECTS
Structure Bioinformatics required elective module – compulsory, 9 ECTS
Bioinformatics seminar (BIO-SEM) – compulsory, 3 ECTS
Practical Bioinformatics required elective modules (BIO-PRAK) – 2 courses with 3 ECTS each
Bioinformatics required elective modules (BIO-BIO) – 15 ECTS in total
Practical Computer Science required elective modules (INFO-PRAK) – 6 ECTS in total
Theoretical Computer Science required 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)
Life Sciences elective required 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 or after the 4th semester.

Please read also the regulations for the *research project* of the BIO-BIO module in the module handbook. The application form can be found under: https://uni-tuebingen.de/fakultaeten/mathematisch-naturwissenschaftliche-fakultaet/fachbereiche/informatik/studium/downloads/informationen-und-formulare/
The document can be found under "Formulare" and is called "Template-Anmeldung-Forschungsprojekt.pdf "

Recommended course plan MSc Bioinformatics Variant A; start: SS2021

1st semester (summer semester 2021)

lecture + tutorials	**Structure Bioinformatics,** *Kohlbacher and Claassen,* required elective module	9 ECTS
lecture / seminar/	*Life Sciences* (**BIO-LIFE**), required elective modules (Biology / Chemistry /Pharmacy MSc courses)	6 ECTS
lecture / seminar	*Advanced Computer Science* required elective modules (**INFO-INFO**)	6 ECTS
lecture / seminar	*Bioinformatics,* required elective modules (**BIO-BIO**)	6 ECTS
practical course	*Practical Bioinformatics,* required elective modules (during the lecture-free period after the semester)	3 ECTS
	Total	30 ECTS

2nd semester (winter semester 2021/2022)

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

3rd semester (summer semester 2022)

lecture / seminar/	*Life Sciences* (**BIO-LIFE**), required elective modules (Biology / Chemistry /Pharmacy MSc courses)	6 ECTS
seminar	*Bioinformatics* seminar (**BIO-SEM**)	3 ECTS
lecture + tutorials	*Advanced Computer Science* required elective modules (**INFO-INFO**)	6 ECTS
lecture + tutorials	*Advanced Computer Science* required elective modules (**INFO-INFO**)	6 ECTS
lecture / seminar/	*Bioinformatics* required elective modules (**BIO-BIO**)	6+3 or 9 ECTS
	Total	30 ECTS

4th semester (winter semester 2022/2023)		
module	MSc thesis	30 ECTS
	Total	30 ECTS

Notes regarding the courses offered during the summer semester 2021. Note that currently and most likely the whole semester courses will be conducted online. If any practical courses where physical attendance is needed can take place is not known as of the day this document has been created.
Here are some recommended Computer Science, Bioinformatics and Life Sciences courses:

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):**

- INF4491 Statistical Machine Learning (9 ECTS!) (also INFO-THEO)
- ML4202 Probabilistic Machine Learning (also INFO-THEO)
- INF3145 Scientific Visualisation (also INFO-PRAK)
- MEDZ4620 Biorobotics (Lecture and Seminar), also INFO-PRAK
- GTCNEURO Neural Data Science (also INFO-THEO)

Advanced Bioinformatics (BIO-BIO):
All lectures listed in ALMA are taught in English

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 (BIO-LIFE).

- *Current Topics in Proteome Research*, Macek, Seminar, (grades will be awarded upon request only), English
- Lecture *Advanced Concepts in Cell Biology* (BIO-4076, 3 LP)
- Lecture *Advanced Immunology* (BIO-4002)
- Lecture *Introduction to Nanopore Sequencing*
- Lecture (plus Seminar) *Molecular Cell Biology* (3+3 LP)
- *Computational Methods in Drug Discovery*, Research practical course taught individually (6 LP) -PHA-PMC3050
- *Frontiers in Applied Drug Design* (Praktikum), Research practical course taught individually (6 LP) - PHA-PMC3070