

27.09.2022 UPDATED**LSI Modules valid as of Winter Semester 2019/2020****Winter Semester, First 28 credits****MANDATORY COURSES****All courses, i.e. lectures, seminars and lab courses are graded.****Module: M-LSI-P-001** (see below)**

L+E	<i>Computer Science for Life Scientists</i>	Schultz	WiSe 1 st Sem.	6 hrs.	9 credits
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Module: M-LSI-P-002 (see below)**

L+E	<i>Mathematics for Life Scientists</i>	Vogt	WiSe 1 st Sem.	2 hrs.	3 credits
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Module: M-LSI-P-003 (see below)**

L+E	<i>Chemistry and Biology for LSI</i>	Reitelmann	WiSe 1 st Sem.	5 hrs.	7 credits
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Module: M-LSI-P-004

L+E	<i>Biological Databases</i>	Hofmann-Apitius	WiSe 1 st Sem.	4 hrs.	6 credits
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Module: M-LSI-P-005

L+E	<i>Bioinformatics I</i>	Berlage	WiSe 1 st Sem.	2 hrs.	3 credits
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To ensure that students with different backgrounds in computer science or the life sciences have comparable interdisciplinary knowledge and skills, mandatory bridging courses in computer Science/mathematics (CSMA) and biology/chemistry (BIOCHEM) are offered during the first term. For students with a degree in computer science, BIOCHEM is mandatory and CSMA is optional. For students with a degree in the life sciences, CSMA is mandatory and BIOCHEM is optional. Within the first month of the semester, the head of the programme and the committee will assign each new student to and inform each student about the mandatory and optional introductory courses.

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Summer Semester, Second 30 credits**Module: M-LSI-P-006**

L+E	<i>Molecular Modeling and Drug Design</i>	Bajorath	SuSe 2 nd Sem.	5 hrs.	6 credits
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Module: M-LSI-P-007

L+E	<i>Visual Computing in the Life Sciences</i>	Schultz	SuSe 2 nd Sem.	4 hrs.	6 credits
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27.09.2022 UPDATED**Module: M-LSI-P-008**

LC	<i>Programming Lab I</i>	Vogt, Bajorath	SuSe 2 nd Sem.	4 hrs.	8 credits
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Module: M-LSI-P-009

L+E	<i>Knowledge Discovery (not offered at present)</i>	Hofmann-Apitius	SuSe 2 nd Sem.	4 hrs.	6 credits
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Module: M-LSI-P-010

S	<i>Scientific Presentation I</i>	Reitelmann	SuSe 2 nd Sem.	2 hrs.	4 credits
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Module: M-LSI-P-014

L+E	<i>Biomedical Data Science & AI</i>	Fröhlich	SuSe 2 nd Sem.	4 hrs.	6 credits
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Winter Semester, Third 15 credits**Module: M-LSI-P-011**

L+E	<i>Chemoinformatics</i>	Vogt, Bajorath	WiSe 3 rd Sem.	5 hrs.	7 credits
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Module: M-LSI-P-012

LC	<i>Programming Lab II</i>	Hofmann-Apitius	WiSe 3 rd Sem.	4 hrs.	8 credits
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Winter Semester, Fourth 30 credits**Module: M-LSI-P-013**

<i>Master thesis</i>			WiSe 4 th Sem.		30 credits
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**OPTIONAL COURSES
(Courses take place in all 4 semesters.)****Module: M-LSI-W-001**

LC	<i>LSI Tutorial I</i>	Reitelmann,	WiSe 1 st Sem.	4 hrs.	6 credits
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Module: M-LSI-W-002

LC	<i>Introduction to Machine Learning Tutorial (formerly LSI Tutorial II)</i>	Reitelmann, Bajorath	SuSe 2 nd Sem.	4 hrs.	6 credits
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Module: M-LSI-W-003

S	<i>Selected Chapters of</i>	Reitelmann	SuSe 2 nd Sem.	2 hrs.	3 credits
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*Molecular Cell Biology***Module: M-LSI-W-004**

S	<i>Scientific Presentation II</i>	Reitelmann	WiSe 3 rd Sem.	2 hrs.	6 credits
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Module: M-LSI-W-005

S	<i>Computational Systems Biology</i>	Hofmann-Apitius, Reitelmann	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-006

LC	<i>Chemoinformatics</i>	Bajorath	WiSe 3 rd Sem.	4 hrs.	8 credits
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Module: M-LSI-W-007

LC	<i>Molecular Modeling and Drug Design</i>	Bajorath	WiSe 3 rd Sem.	4 hrs.	8 credits
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Module: M-LSI-W-008

L+E	<i>Data Mining and Machine Learning in the Life Sciences</i>	Fröhlich	WiSe 3 rd Sem.	4 hrs.	6 credits
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Module: M-LSI-W-009

LC	<i>Biomedical Databases – Design, Implementation and Optimisation</i>	Ebeling, Hofmann-Apitius	WiSe 1 st Sem.	3 hrs.	6 credits
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Module: M-LSI-W-010

S	<i>Visualistics</i>	Berlage	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-011

LC	<i>High Content Screening</i>	Berlage	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-012

LC	<i>Modeling and Simulation</i>	Weber	WiSe 3 rd Sem.	4 hrs.	8 credits
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Module: M-LSI-W-013

LC	<i>Mechanism enrichment using NeuroMMSig</i>	Hofmann-Apitius	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-014

L+E	<i>Medicinal Chemistry</i>	Imhof	WiSe 3 rd Sem.	2 hrs.	3 credits
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Module: M-LSI-W-015

S	<i>Knowledge Assembly, Data Integration and Modeling in Systems and Network Biology</i>	Hofmann-Apitius	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-016

S	<i>Current Trends in Applied Life Science Informatics</i>	Hofmann-Apitius	WiSe 4 th Sem.	2 hrs.	3 credits
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Module: M-LSI-W-017

LC	<i>Longitudinal modeling of disease progression</i>	Hofmann-Apitius	WiSe 3 rd Sem.	2 hrs.	3 credits
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Module: M-LSI-W-018

S	<i>Visualization and Medical Image Analysis</i>	Schultz	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-019

S	<i>Advanced Methods in Biomedical Data Science & AI</i>	Fröhlich	SuSe 2 nd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-020

LC	<i>Machine Learning Hands-on</i>	Fröhlich	SuSe 2 nd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-021

S	<i>Knowledge Graphs and their Applications in Life Sciences</i>	Dörpinghaus	SuSe 2 nd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-022

S	<i>Introduction to Theoretical Neuroscience</i>	Memmesheimer	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-023

LC	<i>Visualization and Medical Image Analysis</i>	Schultz	WiSe 3 rd Sem.	4 hrs.	8 credits
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27.09.2022 UPDATED**Module: M-LSI-W-024**

LC	<i>Mathematical modeling of immune cell dynamics</i>	Thurley	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-025

S	<i>Back to biology from informatics</i>	Gu	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-026

S	<i>Modeling of infectious diseases</i>	Kühn	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-027

LC	<i>Miniproject Biomedical Data Science</i>	Fröhlich	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-028

L	<i>Computational Systems Biology</i>	Hasenauer	WiSe 3 rd Sem.	4 hrs.	7 credits
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Module: M-LSI-W-029

S	<i>Statistical Learning for Biomedical Data Analysis</i>	Hasenauer	SuSe 2 nd Sem.	4 hrs.	8 credits
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Module: M-LSI-W-030

S	<i>Seminar on Numerical Simulation: Bridging the gap between mathematical modelling and machine learning</i>	Hasenauer	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-031

S	<i>BioMedical Semantics and Knowledge Graphs</i>	Kodamullil	WiSe 3 rd Sem.	2 hrs.	4 credits
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Module: M-LSI-W-032

L	<i>Mathematical Biology</i>	Hasenauer, Thurley	WiSe 3 rd Sem.	4 hrs.	6 credits
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