27.09.2022

Winter Semester, First   **30 credits**

Module 1   **Introduction to Computer Science (ICS)**

L+E	*Introduction to Computer Science*	Schultz	WiSe 1st Sem.	7 hrs.	11 credits

Module 2   **Introduction to Mathematics (IMA)**

L+E	*Introduction to Mathematics*	Vogt	WiSe 1st Sem.	2 hrs.	3 credits

Module 3   **Introduction to Chemistry and Biology (ICB)**

L+E	*Introduction to Chemistry and Biology*	Reitelmann	WiSe 1st Sem.	5 hrs.	7 credits

Module 4   **Biological Databases (BDB)**

L+E	*Biological Databases*	Hofmann-Apitius	WiSe 1st Sem.	4 hrs.	6 credits

Module 5   **Bioinformatics I (BI1)**

L+E	*Bioinformatics I*	Berlage	WiSe 1st Sem.	2 hrs.	3 credits

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Summer Semester, Second   **30 credits**

Module 6   **Molecular Modeling and Drug Design (MDL)**

L+E	*Molecular Modeling and Drug Design*	Bajorath	SuSe 2nd Sem.	5 hrs.	6 credits

Module 7   **Bioinformatics II (BI2)**

L+E	*Visual Computing in the Life Sciences (formerly Bioinformatics II)*	Schultz	SuSe 2nd Sem.	4 hrs.	6 credits
LC	*Programming Lab I*	Vogt, Bajorath	SuSe 2nd Sem.	4 hrs.	8 credits

Module 8   **Knowledge Discovery (KND)**

L+E	*Biomedical Data Science & AI (formerly Knowledge Discovery)*	Fröhlich	SuSe 2nd Sem.	4 hrs.	6 credits
S	*Scientific Presentation I*	Reitelmann	SuSe 2nd Sem.	2 hrs.	4 credits

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Winter Semester, Third   **30 credits (15 mandatory, 15 optional)**

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Module 9   Chemoinformatics (CHI)

L+E	*Chemoinformatics*	Vogt, Bajorath	WiSe 3rd Sem.	5 hrs.	7 credits
LC	*Programming Lab II*	Hofmann-Apitius	WiSe 3rd Sem.	4 hrs.	8 credits

Module 10   LSI Optional (LSI) Choice of optional courses must include one lecture course.

	Seminars and lab courses are not graded.				
S	*LSI Tutorial I*	Reitelmann,	WiSe 1st Sem.	4 hrs.	6 credits
S	*Introduction to Machine Learning Tutorial (formerly LSI Tutorial II)*	Reitelmann, Bajorath	SuSe 2nd Sem.	4 hrs.	6 credits
S	*Computational Systems Biology*	Hofmann-Apitius, Reitelmann	WiSe 3rd Sem.	2 hrs.	4 credits
LC	*Molecular Modeling and Drug Design*	Bajorath	WiSe 3rd Sem.	4 hrs.	8 credits
LC	*Chemoinformatics*	Bajorath	WiSe 3rd Sem.	4 hrs.	8 credits
L+E	*Data Mining and Machine Learning in the Life Sciences*	Fröhlich	WiSe 3rd Sem.	4 hrs.	6 credits
S	*Selected Chapters of Molecular Cell Biology*	Reitelmann	WiSe 3rd Sem.	2 hrs.	4 credits
S	*Scientific Presentation II*	Reitelmann	WiSe 3rd Sem.	2 hrs.	4 credits
S	*Visualistics*	Berlage	WiSe 3rd Sem.	2 hrs.	4 credits
LC	*High Content Screening*	Berlage	WiSe 3rd Sem.	2 hrs.	4 credits
LC	*Modeling and Simulation*	Weber	WiSe 3rd Sem.	4 hrs.	8 credits
LC	*Mechanism enrichment using NeuroMMSig*	Hofmann-Apitius	WiSe 3rd Sem.	2 hrs.	4 credits
L+E	*Medicinal Chemistry*	Imhof	WiSe 3rd Sem.	2 hrs.	3 credits
LC	*Role of data analysis in longitudinal and event based diesease modeling*	Hofmann-Apitius	WiSe 3rd Sem.	2 hrs.	4 credits
S	*Knowledge Assembly, Data Integration and Modeling in Systems and Networks Biology*	Hofmann-Apitius	WiSe 3rd Sem.	2 hrs.	4 credits
LC	*Biomedical Databases – Design, Implementation and Optimisation*	Hofmann-Apitius	WiSe 3rd Sem.	2 hrs.	4 credits

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S	*Current Trends in Applied Life Science Informatics*	Hofmann-Apitius	WiSe 3rd Sem.	2 hrs.	4 credits
S	*Visualization and Medical Image Analysis*	Schultz	WiSe 3rd Sem.	2 hrs.	4 credits
S	*Advanced Methods in Biomedical Data Science & AI*	Fröhlich	SuSe 3rd Sem.	2 hrs.	4 credits
LC	*Machine Learning Hands-on*	Fröhlich	SuSe 3rd Sem.	2 hrs.	4 credits
S	*Knowledge Graphs and their application in Life Sciences*	Dörpinghaus	SuSe 3rd Sem.	2 hrs.	4 credits
S	*Introduction to Theoretical Neuroscience*	Memmesheimer	WiSe 3rd Sem.	2 hrs.	4 credits
LC	*Visualization and Medical Image Analysis*	Schultz	WiSe 3rd Sem.	4 hrs.	8 credits
LC	*Mathematical modeling of immune cell dynamics*	Thurley	WiSe 3rd Sem.	2 hrs.	4 credits
S	*Back to biology from informatics*	Gu	WiSe 3rd Sem.	2 hrs.	4 credits
S	*Modeling of infectious diseases*	Kühn	WiSe 3rd Sem.	2 hrs.	4 credits
LC	*Miniproject Biomedical Data Science*	Fröhlich	WiSe 3rd Sem.	2 hrs.	4 credits
L	*Computational Systems Biology*	Hasenauer	WiSe 3rd Sem.	4 hrs.	7 credits
S	*Statistical Learning for Biomedical Data Analysis*	Hasenauer	SuSe 2nd Sem.	4 hrs.	8 credits
S	*Seminar on Numerical Simulation: Bridging the gap between mathematical modeling and machine learning*	Hasenauer	WiSe 3rd Sem.	2 hrs.	4 credits
S	*BioMedical Semantics and Knowledge Graphs*	Kodamullil	WiSe 3rd Sem.	2 hrs.	4 credits
L	*Mathematical Biology*	Hasenauer / Thurley	WiSe 3rd Sem.	4 hrs.	6 credits