Bioinformatics and sequence analysis, BINP11, 3 Sept. - 2 Nov., 2018

Department of Biology, Lund University

Short information about the course: Bioinformatics, the application of computational methods to biological and biomedical problems, is a rapidly growing field. Modern biochemists and biologists need to have a basic knowledge of bioinformatics. This course provides both a practical and a theoretical overview of database searching, sequence alignment, phylogenetic analysis, gene prediction and genome analysis. BINP11 can be taken either on a stand-alone basis or as part of the Master Programme in Bioinformatics

Literature:Bioinformatics and Functional Genomics, J. Pevsner, 3rd edition. ISBN: 978-1-118-58178-0 (http://eu.wiley.com/WileyCDA/WileyTitle/productCd-1118581784.html) and Handouts.

Course leader: Claes von Wachenfeldt, Department of Biology, 046 2223456, Claes.von_wachenfeldt@biol.lu.se
Other Teachers: Dag Ahren, Staffan.Bensch, Markus Ringnér, Torbjörn Säll

Location: see web schedule at L@L

Learning platform: L@L

Teaching activities: L (lecture), E (Exercise), Sem (seminar), G (group exercise), Proj (Project), Ind (Independent studies)

Compulsory activities are marked with C. If you are absent from a compulsory activity without a valid reason you are not guaranteed to complete this part until the next time the course is offered. A valid reason is e.g. that you are ill, but not that you are travelling!

Before the start of the course you must read the documents General Information and Plagiarism and Cheating

General Information

Plagiarism and Cheating

Additional information for students can be found at

Current student at LU

Current student at Dept. of Biol.

Students rights and guidelines

Date	Time	Activity	Compulsory (mark w. **C!**)	Description	Teacher
Mo. 3 Sept.	10.00-11.00	L	C	Introduction, Compulsory	CvW
	11.15-12.00	L		Bioinformatics - an overview	CvW
Tu. 4 Sept.	08.15-10.00	L		Nucleic acid and protein sequence databases.	CvW
	13.00-15.00	E	C	Biological databases	CvW
We. 5 Sept.	08.15-10.00	L		Structural bioinformatics.	CvW
	13.00-15.00	E	C	Structural bioinformatics.	CvW
Th. 6 Sept.	08.15-10.00	L	C	Introduction to probability and statistical analysis.	TS
	11.15-12.00	E	C	Probability and statistical analysis	TS
	13.00-13.50		C	General information, compulsory for all new students	
	14.00-15.30		C	Meet your programme coordinator, compulsory for all new Master's students	
Fr. 7 Sept.	08.15-10.00	L		Sequence analysis (Part I).	CvW
	11.15-12.00	E	C	Practical sequence analysis (I)	CvW
Mo. 10 Sept.	10.00-12.00	L		Sequence analysis (Part IIa)	CvW
	13.00-15.00	E	C	Practical sequence analysis (II)	CvW
Tu. 11 Sept.	09.00-12.00	L		Hidden Markov models (HMM)	MR
	13.00-16.00	E	C	HMM	MR
We. 12 Sept.	09.00-12.00	L		Artificial Neural Networks (ANN)	MR
	13.00-16.00	E	C	ANN	MR
Th. 13 Sept.	09.00-10.00	L		Sequence analysis (Part IIb)	CvW
	10.15-12.00	E	C	Practical sequence analysis (II)	CvW

	13.00-13.50		C	Lecture: Safety, Cheating and plagiarism compulsory for all new students	Jep Agrell
	14.00-14.45		C	Lecture: Library information, compulsory for all new students except for BIOR65 and BIOR69	Kristina Arnebrant
Fr. 14 Sept.	08.15-10.00	L		Sequence analysis (Part III)	CvW
	11.15-12.00	E	C	Exercise: Practical sequence analysis (III). Group assignments	CvW
Mo. 17 Sept.	09.00-12.00	L, E	C	Next-generation sequencing (NGS) applications.	HP
Tu. 18 Sept.	10.00-12.00	L		Bacterial genome analysis.	CvW
	13.00-15.00	E	C	Genome analysis. Group assignments	CvW
We. 19 Sept.	10.00-15.00	E	C	Group assignments. Extra time to complete exercises.	CvW
Th. 20 Sept.	10.00-12.00	L		Phylogenetic analysis (I and II).	SB
	13.00-15.00		C	Lecture: Scientific Writing, compulsory for all new students	Emma Kritzberg
Fr. 21 Sept.	09.00-12.00	L,Sem	C	Phylogenetic analysis (III and seminar)	SB
	13.00-16.00	E	C	Phylogenetic analysis using MEGA	SB
Mo. 24 Sept.	09.00-12.00	E	C	Project: Phylogenetics.	SB
	13.00-16.00	E	C	Project: Phylogenetics.	SB
Tu. 25 Sept.	09.00-11.00	E	C	Project (phylogentic) presentation	SB
We. 26 Sept.	10.00-12.00	L		Eukaryotic genome analysis (I).	DA
	13.00-16.00	E	C	Gene annotation methods.	DA
Th. 27 Sept.	10.00-12.00	L		Eukaryotic genome analysis (II).	DA
	13.00-14.30			Information: Exchange studies (in Swedish)	Tina Ledje
Fr. 28 Sept.	09.00-12.00	E	C	Gene annotation methods	DA
Mo. 1 Oct.				Time for individual studies	
Tu. 2 Oct.				EXAM	