



Modelling Biological Systems BIOS13, 5 Nov., 2018 - 18 Jan., 2019

Department of Biology, Lund University

We focus on models of biological systems, how they work, where they come from, and how you can use them to gain insights of real systems. To this end we learn the basic tools of mathematics, programming and systems analysis.

Literature: Handouts delivered during the course

Course leader: Jörgen Ripa (ph 23770, jorgen.ripa@biol.lu.se)

Other Teachers: Jessica Abbott (JA), Per Lundberg (PL), Anders Brodin (AB), Henrik Sjödin (HS), Mikael Ljungholm (ML)

Location: see web schedule at L@L

[Learning platform: L@L](#)

Teaching activities: L (lecture), Sem (seminar), G (group exercise), Lab, 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. 5 Nov.	9.30-10.00	L	C	Introduction to course, compulsory	JKA, JR
	10.15-12.00	L		Introduction to R	JKA
	13.15-16.00	E		Introduction to R (exercise)	JKA
Tu. 6 Nov.					
We. 7 Nov.	10.00-11.00	L		Basic programming (in R)	JR
	11.00-12.00	E		Basic programming (in R)	JR
	13.00-14.00	L		Basic programming (in R)	JR
	14.00-15.00	E		Basic programming (in R)	JR, ML
Th. 8 Nov.					
	13.00-17.00	No classes			
Fr. 9 Nov.	10.00-11.00	L		Structured programming (in R)	JR
	11.00-12.00	E		Structured programming (in R)	JR
	13.00-14.00	L		Structured programming (in R)	JR
	14.00-16.00	E		Structured programming (in R)	JR, ML
Mo. 12 Nov.					
Tu. 13 Nov.	10.00-11.00	L		Plotting in R	JR
	11.00-12.00	E		Plotting in R	JR
We. 14 Nov.					
Th. 15 Nov.	10.00-12.00	L		On Models in Science	PL
	13.00-17.00	No classes			
Fr. 16 Nov.	10.00-12.00	L		Math 1	HS



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	13.00-16.00	E		Math 1	JR, HS
Mo. 19 Nov.					
Tu. 20 Nov.	10.00-12.00	L		Math 2	HS
	13.00-16.00	E		Math 2	JR, HS
We. 21 Nov.					
Th. 22 Nov.	10.00-12.00	L		Math 3	JR
	13.00-17.00	No classes			
Fr. 23 Nov.	9.00-12.00	E		Math 3	JR, HS
Mo. 26 Nov.					
Tu. 27 Nov.	10.00-12.00	exam	C	Math exam	JR, HS
We. 28 Nov.					
Th. 29 Nov.	13.00-15.00	L		One-dimensional Dynamic Systems	JR
	13.00-17.00	No classes			
Fr. 30 Nov.	9.00-12.00	E		One-dimensional Dynamic Systems	JR, ML
Mo. 3 Dec.					
Tu. 4 Dec.					
We. 5 Dec.					
Th. 6 Dec.	10.00-12.00	L		Multi-dimensional Dynamic Systems	JR
	13.00-17.00	many courses period 2			
Fr. 7 Dec.	9.00-12.00	E		Multi-dimensional Dynamic Systems	JR, ML
Mo. 10 Dec.					
Tu. 11 Dec.	9.00-10.00	L		Stochastic systems, diffusion	JR
	10.00-12.00	E		Stochastic systems, diffusion	JR, ML
We. 12 Dec.					
Th. 13 Dec.	10.00-12.00	L		Genetic Algorithms and Artificial Neural Networks	AB
	13.00-17.00	No classes			
Fr. 14 Dec.	9.00-12.00	E		Genetic Algorithms and Artificial Neural Networks	JR, ML
Mo. 17 Dec.					
Tu. 18 Dec.	10.00-12.00	L		Genetic Algorithms and Artificial Neural Networks	AB
	13.00-16.00	E		Genetic Algorithms and Artificial Neural Networks	JR, ML
We. 19 Dec.					
Th. 20 Dec.	10.00 - 12.00	L		Model fitting and stochastic simulations in R	JR
	13.00-17.00	No classes			
fr. 21 Dec.	9.00-12.00	E		Model fitting and stochastic simulations in R	JR, ML
Sa. 22 Dec		Winter Brake			
Su. 6 Jan		Winter Brake			
Mo. 7 Jan.					
	13.00-14.00	L		Modelling	JR
	14.00-16.00	S		Modelling	JR
Tu. 8 Jan.	10.00 - 12.00	S		Old exam	JR



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	12:00			Exam posted	
We. 9 Jan.					
Th. 10 Jan.					
	13.00-14.30			Information: Exchange studies (in English)	
Fr. 11 Jan.					
Mo. 14 Jan.	10.00-12.00	S		Exam discussion	JR
Tu. 15 Jan.					
We. 16 Jan.					
Th. 17 Jan.		Exam	C	Hand in exam	
	13.00-17.00	No classes			
Fr. 18 Jan.	13.00-15.00	Sem	C	Mandatory exam seminar	JR
Th. 28 Feb.	12:00			Re-exam is posted	