

Statistical and Biological Physics

Module No.: MN-P-SP-StatBio, MN-P-PN-StatBio, MN-P-WaMa

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Course: Evolutionary Biology and Genomics for Physicists

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Category	Type	Language	Teaching Hours	CP	Semester
Core Course	Lecture	English	3+1	6	SuSe
Core Course	Lecture + Seminar	English	4+1	7.5	SuSe

Requirements for participation:

Advanced Statistical Mechanics

Type of module examinations:

Oral Examination

Duration of the course:

1 semester

Aims of the course:

Acquaintance with basic concepts of molecular and evolutionary biology; understanding of statistical issues arising in the analysis of biological data, application of methods from statistical physics addressing them.

Contents of the course:

- Basic concepts of evolutionary theory
- Introduction to molecular evolution and genomics
- Theory of bio-molecular networks
- Concepts and methods of data analysis

Recommended literature:

J.H. Gillespie, Population Genetics: A concise guide (Johns Hopkins University Press, 2004)
R. Durbin, S.R. Eddy, A. Krogh, G. Mitchison, Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids (Cambridge University Press, 1998)
F. Kepes, Biological Networks (World Scientific, Singapore 2007)
D.J. Wilkinson, Stochastic Modelling for Systems Biology (Chapman&Hall, 2006)