

**Module: Elective Advanced Lectures:
BCGS Courses**

Module No.: physics70d

Course:



Physical biology (T/A)

Course No.:

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	4+2	8	ST

Requirements for Participation:

Preparation:

Advanced statistical mechanics

Form of Testing and Examination:

Oral examination

Length of 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 sequence data and the application of methods from statistical physics addressing them.

Contents of the Course:

Statistics of the genome
Sequence analysis and sequence alignment
Evolutionary theory and population genetics
Theory of bio-molecular networks

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)