

**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)