Virtual Exchange Program

Physics of Life (from DNA to protein)

Start date: 06/02/2020, End date: 30/06/2020
Platform: Blackboard

Leiden University

COURSE SYNOPSIS

Domain: Physics

Title(s) of the course(s) as it appears on the platform: -

Language (ISO-639-1 code): en

Short description of the course: This introductory lecture deals with the thermodynamic and molecular basis of modern biophysics. The emphasis will be on a quantitative description of topics from biology, such as the behavior of polymers (DNA and proteins), heredity or cellular transport processes.

Instructor(s): S. Semrau

Level: BA all years

ECTS: 3.0

Workload in student hours: 84.0

Semester: 1: jan-june

Full course description: Learning objectives You will be able to specify how the laws of physics constrain and shape living systems and how to apply a physics approach to fundamental problems in biology. After this class you will be able to: • name the most important components of a cell • apply the diffusion equation to transport processes in cells • apply basic probability theory to questions in heredity • calculate the change in disorder (entropy) for simple thermodynamic processes • describe biological systems in equilibrium using the Boltzmann distribution Generic skills (soft skills) • you prepare the lectures by studying the lecture material (book) and test your knowledge in online quizzes • you apply conceptual insights to concrete problem sets • you plan ahead and study continuously to spread the study load over the whole semester

Prerequisites: None. If this class is taken in the first ear, it can serve as a self-contained, informal introduction to statistical physics and thermodynamics. If this class is followed after a formal statistical physics class, it provides interesting applications to biological questions.

Link to course on platform: -

Link to course in University studyplan: https://studiegids.leidenuniv.nl/en/courses/show/81921/Physics-of-Life-from-DNA-to-protein

Course registration opening date: 01/10/2020

Course registration deadline: 08/01/2020

Course withdraw date: -

Midterm: No

Midterm details: -
Exam period start: -
Exam period end: -
Exam date: 29/04/2020
Exam timing: Synchronous (exam needs to take place at the same date and time everywhere)
Exam start time: -
Exam end time: -
Time zone (at the time of the exam, DST): UTC+1
Exam registration date: -
Exam resit available: Yes
Exam resit period start: 16/06/2019
Exam resit period end: -
Exam resit date: 16/06/2019
Exam resit time start: -
Exam resit time end: -
Time zone (at the time of the resit of the exam, DST): -
Final exam type: Written
Final exam details: -
Exam requirements for home university (computer, VOIP, recording materials): -
Cap (maximum number of exchange students): 20.0
Offered to which partners: -, All partners of the Alliance(s) selected above
Link to course image: https://drive.google.com/open?id=1pSSaynDtL4hVdEQuZF23z5jCi27EeMEG