EPFL

BIO-689	**Nature, In Code - Biology in JavaScript**
	Salathé Marcel

Cursus	Sem.	Type
Biotechnology and Bioengineering		Opt.
Computational and Quantitative Biology		Opt.

Language of teaching	English
Credits	3
Session	
Exam	Project report
Workload	90h
Hours	**90**
Courses	20
Exercises	20
TP	50
Number of positions	

Frequency

Every year

Remark

MOOC available as of May 1, 2017

Summary

Nature, In Code teaches basic biological principles - such as natural selection, epidemics, the evolution of cooperation - by implementing those priciples in the programming language JavaScript. The course teaches both the biological principles and the programing language at the same time.

Content

This course is based on a book "Nature, in Code" which has the following chapters, and which will be followed in the course:
1. Introduction
2. Hardy-Weinberg equilibrium – the null model of evolutionary biology
3. Stochastic drift
4. Mutation
5. Spatial models
6. Natural Selection
7. Infectious Disease Spread
8. Evolution of Cooperation

With the exception of chapter 8, all content is available as a MOOC on the EdX platform under the title "Nature, in Code".

This is an online course available as of May 1, 2017 which can be taken anytime throughout the year. Please get in touch with Prof. Salathé once you have finished all the material in the book and the course, in order to define a capstone project.

Note

Once you have successfully completed the final project, please contact the EDBB administrator at edbb@epfl.ch to ask for the attendance sheet to be sent to the teacher for the validation of the credits.

Keywords

Population Genetics
Computational Thinking
JavaScript

Learning Outcomes

By the end of the course, the student must be able to:
- Know how to code in JavaScript
- Know how to reason about scientific problems using code
- Understand the basic forces of evolution

Resources

Moodle Link

- https://www.edx.org/course/nature-code-biology-javascript-epflx-nic1-0x