

BIO-689

**Nature, In Code - Biology in JavaScript**

Salathé Marcel

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

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

**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 principles in the programming language JavaScript. The course teaches both the biological principles and the programming 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.

**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>