# Developmental Biology and Genetics for Non-Biologists

**Code** 8207971558  
**ECTS credits** 6  
**Attendance time** 4  
**Language of instruction** German  
**Duration** 1  
**Cycle** each Winter Semester  
**Coordinator** Prof. Dr. Nils Johnsson  
**Instructor(s)** Prof. Dr. Axel Brennicke, Prof. Dr. Nils Johnsson, Prof. Dr. Jan Tuckermann

**Allocation of study programmes**  
Computer Science BSc, application subject Biology;  
Computer Science MSc, application subject Biology;  
Mathematics BSc (subsidiary subject Biology);  
Mathematics MSc (subsidiary subject Biology);  
Psychology BSc, compulsory elective module

**Recommended prerequisites**  
Formally: Refer to the subject-specific examination regulations of the respective study course, in the version effective when taking up the study program.  
Contentually: None.

**Learning objectives**  
Students who have successfully completed this module  
- possess knowledge about fundamental processes (gene expressions, tissue- and organ differentiation) during ontogenesis of an organism.  
- are familiar with the basics of classic and molecular genetics.

**Syllabus**  
This module covers the following subject-specific contents:
Lecture Developmental Biology:

- Unicellularity – multicellularity
- Ovum and sperm, fertilization, cleavage, gastrulation, induction, differential gene expression, tissue formation, organogenesis, cell-cell identification
- Early embryonic development of C. elegans, urchin, newt and Drosophila
- Postembryonic development, metamorphosis, regeneration, age

Lecture Genetics:

- Molecular structure and construction of genetic information in prokaryotes and eukaryotes
- Transcription, translation, recombination, mutation, repair mechanisms
- Formal genetics
- Population genetics

Literature

- S.F. Gilbert: Developmental Biology, Sinauer Associates
- L. Wolpert: Entwicklungsbioologie, Spektrum Verlag

Teaching and learning methods

- Developmental Biology [Entwicklungsbiologie] (lecture), 2 credit hours [SWS], 3 credit points [LP]
- Genetics [Genetik] (lecture), 2 credit hours [SWS], 3 credit points [LP]

Workload

- Attendance: 60 h
- Private study: 120 h
- Sum: 180 h

Assessment

Credit points will be received by pass of written or oral (part) exams. The type of exams depends on the number of participants. Registration for these exams does not require evidence of course achievement.

Grading procedure

The grade is determined by the results of both module part exams, weighted according to the respective credit points.

Basis for

Further modules in biology