

Lectures	Exercise	Laboratory	Field Trip
2			

**Course Description:**

The course will cover basic aspects of molecular biology from DNA to RNA and proteins with emphasis on molecular biology techniques. Epigenetics will be introduced in terms of chromatin structure. Lectures will detail the covalent modifications of DNA and core histone proteins, the techniques to determine epigenetic modifications and the applications of epigenetics to understanding gene regulation and development.

**Course Objectives:**

To provide students with basic knowledge, terms and methodologies commonly used in molecular biology and in the field of epigenetics.

**Course outline:**

- Week 1: Molecular biology: a historical perspective
- Week 2: Cell multiplication: Basic aspects of the cell division cycle
- Week 3: The chemical nature of DNA
- Week 4: DNA as carrier of the genetic information
- Week 5: DNA replication
- Week 6: Molecular cloning (Methods)
- Week 7: Molecular cloning (Methods)
- Week 8: Introduction to epigenetics
- Week 9: Regulation of chromatin structure
- Week 10: DNA methylation
- Week 11: Methylated DNA binding proteins and their action
- Week 12: Histone modifications: the histone code hypothesis
- Week 13: Epigenetic regulation of gene expression
- Week 14: Epigenetic regulation of gene expression

## **Exams & grading**

Every two or three lectures a short exam will be given. The average score of all short exams will constitute 50 points of your grade and the other 50 points by a final exam.

Structure of Final Course-Grade: Component	Weight
1. Class discussion	20%
2. Home work projects (two during the course)	20% each
3. Final project	40%
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Total	100%

**Lecturer:** Gideon Grafi

### **Textbook:**

This course will make use of Robert F. Weaver, Molecular Biology 3rd Edition, McGraw-Hill, 2005. Several books will be available at the Campus Library.