

Introduction to bioinformatics · EEBE

Bioinformatics · Universitat Politècnica de Catalunya

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For starters

<https://tinyurl.com/bcbbeebe2026>

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- Use the current campus calendar for session dates, deadlines, and room information.
- Seminar sessions cover complex human genetic diseases.

1. Introduction
2. Introduction to Genetics and Molecular Biology.
3. Resources: Databases and Algorithms.
4. Sequence Analyses. Homology.
5. Introduction to Gene expression and RNA-seq technologies.
6. Heritability and Complex diseases in *Homo sapiens*.
7. Structure of Proteins and tools for structure prediction (opt)

Transferable skills

- Teamwork
- The R Software for Statistical Computing

Lab	Topic
L1	Introduction to R
L2	Ensembl and NCBI
L3	Sequence comparison and homology
L4	Introduction to Pattern recognition with R
L5	Differential Expression

Lab	Topic
L6	Functional Enrichment
L7	Genetic Association. QC and statistical stratification
L8	Genetic association. GWAS in thrombophilia

Genetic-association labs require a Unix-like environment.

Week	Day	Date	Time	Room	Prof	Type	Title
1	Wed	16/9/2026	14:30h-17:30h	A3.4 EEBE	AP	T	Introduction to Bioinformatics
2	Wed	23/9/2026	14:30h-17:30h	A3.4 EEBE	AP	T	Introduction to Bioinformatics
3	Wed	30/9/2026	14:30h-17:30h	A3.4 EEBE	FP	L1	L1 Introduction to R
4	Wed	7/10/2026	14:30h-17:30h	A3.4 EEBE	AP	T	Introduction to biology
5	Wed	14/10/2026	14:30h-17:30h	A3.4 EEBE	FP	L2	L2 Ensembl! And NCBI
6	Wed	21/10/2026	14:30h-17:30h	A3.4 EEBE	AP	T	Databases, online resources and languages for bio-computing, computing Homology
7	Wed	28/10/2026	14:30h-17:30h	A3.4 EEBE	FP	L3	L3 Computing Homology
8	Wed	4/11/2026	14:30h-17:30h	A3.4 EEBE	AP	T	Homology, gene expression analysis
9	Wed	11/11/2026	14:30h-17:30h	A3.4 EEBE	FP	L4	L4 Differential Expression
10	Wed	18/11/2026	14:30h-17:30h	A3.4 EEBE	AP	T	Gene Expression Analysis
11	Wed	25/11/2026	14:30h-17:30h	A3.4 EEBE	AP	T	Gene Expression Analysis/Functional Analysis
12	Wed	2/12/2026	14:30h-17:30h	A3.4 EEBE	FP	L5	L5 Functional Enrichment
13	Wed	9/12/2026	14:30h-17:30h	A3.4 EEBE	FP	PF	quiz/Final Project
14	Wed	16/12/2026	14:30h-17:30h	A3.4 EEBE	FP	PF	Project presentations

1. Laboratories and Reverse Class (RC) activities (33%)
2. 2 quizzes (33%)
3. A final Assignment (34%)

1. You will be offered several project topics.
2. Most goals will try to replicate partial results from a research paper.
3. You may also propose your own topic, dataset, or research question.

What would you like to investigate with biological data?