

emari ta zabaldu



Universidad
del País Vasco

Euskal Herriko
Unibertsitatea



GENOMIC
RESOURCES

Own Postgraduate
Degrees

MASTER IN BIOINFORMATICS FOR HIGH THROUGHPUT SEQUENCING

www.ehu.eus

INTRODUCTION & OBJECTIVES

This is a one-year International Master propio taught in collaboration between UPV/EHU and Bordeaux University (UBx). First semester is completed in Bordeaux and the second semester at the UPV/EHU.

The aim of the Master degree is to train researchers and professionals to meet and solve the challenges arising from the large amount of data generated by massive sequencing technologies (NGS).

CAREER OPPORTUNITIES

Students completing this Master propio will acquire a double competence in biology and computer science, and moreover, have an international experience. Thus, they are highly demanded in the academic sector and private companies.

In fact, several companies are currently collaborating in this master: EUROHELP

CONSULTING S.L. (<http://eurohelp.es/>); Progenika Biopharma, GRIFOLS; CIC-Biogune, Noray Bioinformatics, S.L.U.; Technical University of Denmark (DTU) etc. Additionally, students can continue on to a PhD programme by enrolling the second academic year of the Master "Bioinformatique" at Bordeaux University.

ENTRY PROFILE

Students and Professionals with bioscience background are encouraged to apply. Students should be fluent in English. Grants

will be provided to students through mobility programs to cover their stay in Bordeaux. (See <http://www.aquimob.fr>)

ABOUT THE COURSE

Teaching place:

Univ. 1: Department of Genetics in the Faculty of Science and Technology, UPV/EHU, Leioa- Bilbao (Biscay).

Univ. 2: Department of Biology of the University of Bordeaux, UBx (Bordeaux).

Teaching type:

Classroom teaching.

Teaching language:

English.

Approximate fees:

2.520 €.

Calendar:

Sep/04/2017 – June/29/2018.

TEACHING LOAD

Location	Compulsory Subject courses	Optional Subject courses	Master Thesis	Total
UBx First Semester	30 ECTS	-	-	30 ECTS
UPV/EHU Second Semester	14 ECTS	-	16 ECTS	30 ECTS

TRAINING SYLLABUS

1ST SEMESTER AT BORDEAUX UNIVERSITY: PRINCIPLES

Basics in Bioinformatics

- English
- Collection, processing and analysis of environmental data
- Algorithmics, programmation and computer-based systems
- The theory and application in the algorithmic field
- The basis in computer programming
- Shell environm
- Omics and Bioinformatics
- Classical algorithmic approaches in bioinformatics
- Pipeline Implementation using EMBOSS
- Initiation to the exploration of digital pictures
- Introduction to JavaScript programming
- Image processing

2ND SEMESTER AT UPV/EHU: APPLICATIONS

From genome to individual

Introduction to genomics and sequencing technologies

Bioinformatics for biomedicine

- NGS applied to biomedicine: Personalized medicine
- Introduction to NGS applied to transcriptome: Major steps in transcriptome analysis
- Different views of transcriptome: Co-expression and differential exon usage
- Introduction to Exome Sequencing
- Association analyses of complex diseases
- Introduction to genome-transcriptome interactions
- Introduction to Epigenomics
- Approaches to DNA methylation
- Approaches to chromatin and ChIP data
- Identification of cancer-causing variants
- Population Genomics in human

From Genomes to Ecosystems

Bioinformatics for Environment and Agriculture

- NGS applied to amplicon sequencing: concepts and applications
- Statistics: Diversity estimates and multivariate analysis
- Community analysis with different tools: Qiime, Uparse, Vegan (R package)
- Shotgun and metatranscriptomics: concepts and applications
- Assembling softwares: idba-ud, Celera, TIGR
- ORF Finders: Prokka, FragGeneScan, MetaGenemark
- Databases
- Functional annotation: algorithms and softwares
- Viromes Pangenome

Introduction to Scientific Communication

Career prospects

TFM (Master Thesis)

CONTACT

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PARTNER WITH A COOPERATION AGREEMENT

