**BIOTECHNOLOGY STUDY PLAN**

**FIRST YEAR 60 ECTS**

**Annual**
- Basic Biochemistry Methodology (9 ECTS)
- Physics (EFC) (9 ECTS)

**1st semester (Sep-Jan)**
- Biochemistry I (6 ECTS)
- Cell Biology (6 ECTS)
- Chemistry (6 ECTS)
- Mathematics (6 ECTS)

**2nd semester (Jan-Jun)**
- Basics of Chemical Engineering and Biotechnology (ENG) (6 ECTS)
- Biochemistry II (6 ECTS)
- Biostatistics (6 ECTS)

**SECOND YEAR 60 ECTS**

**1st semester (Sep-Jan)**
- Fluid Mechanics (ENG) (6 ECTS)
- Genetics (6 ECTS)
- Microbiology (6 ECTS)
- Regulation and Biosynthesis of Macromolecules (6 ECTS)
- Thermodynamic and Chemical kinetics (6 ECTS)

**2nd semester (Jan-Jun)**
- Cell and Tissue Cultures (EFC) (6 ECTS)
- Immunology (6 ECTS)
- Instrumental Techniques (6 ECTS)
- Microorganisms and Industrial Production (6 ECTS)
- Molecular Biology and Genetic Engineering (6 ECTS)

**THIRD YEAR 60 ECTS**

**1st semester (Sep-Jan)**
- Animal Physiology (ENG) (6 ECTS)
- Chemical Reactor Design (ENG) (6 ECTS)
- Mass Transfer (ENG) (6 ECTS)
- Methods in Genetic Engineering (6 ECTS)
- Plant Metabolism and Physiology (6 ECTS)

**2nd semester (Jan-Jun)**
- Biocatalysis (6 ECTS)
- Integrated Laboratory in Biotechnology (6 ECTS)
- Law and Ethics in Biosciences (6 ECTS)
- Mathematical Modeling (EFC) (6 ECTS)
- Processes of Separation (ENG) (6 ECTS)

**FOURTH YEAR 60 ECTS**

**1st semester (Sep-Jan)**
- General Economy and Business Organisation (6 ECTS)

**Optional courses**
- Environmental Biotechnology (ENG) (4,5 ECTS)
- Extension of Molecular Biology (EFC) (4,5 ECTS)
- Microbial Physiology (4,5 ECTS)
- Nanobiotecnology (EFC) (4,5 ECTS)
- Quality Management (EFC) (4,5 ECTS)
- Risk and Safety Analysis in Industrial Plants (EFC) (4,5 ECTS)
- Systems Biology (ENG) (4,5 ECTS)
- Virology (4,5 ECTS)
- Scientific and Technical writing skills in Basque (6 ECTS)

**2nd semester (Jan-Jun)**
- Processes and Products in Biotechnology (6 ECTS)

**Optional courses**
- Genomics (4,5 ECTS)
- Microbial Biotechnology (4,5 ECTS)
- Organic Synthesis in Biosciences (4,5 ECTS)
- Plant Biotechnology (4,5 ECTS)
- Tissue Engineering (4,5 ECTS)
- Scientific and Technical oral skills in Basque (6 ECTS)

**FINAL YEAR PROJECT (ENG) (12 ECTS)**

ENG: Courses taught in English
EFC: English Friendly Courses, taught in Spanish or in Basque, but support, tutorials and student reporting and exams in English.