

# 113 Curriculum Group

臺灣海洋大學

生命科學暨生物科技學系

- Required in undergraduate
- ◆ Optional in undergraduate

- Required in Master/PhD program
- Optional in Master/PhD program

## **Basic Biology**

- **Biology (Freshman)**
- **Cell Biology (Freshman)**
- ◆ **Lab Internship (Freshman)**
- ◆ **Marine Biology (Freshman)**
- **Biochemistry (Sophomore)**
- **Microbiology (Sophomore)**
- **Biology Lab (Freshman)**
- **Biochemistry Lab (Sophomore)**
- **General Microbiology Lab (Sophomore)**
- **Basic Molecular Biology Lab (Sophomore)**
- ◆ **Research Project (Junior)**

## **Advanced Biology**

- ◆ **Molecular Biology (Junior)**
- ◆ **Immunology (Junior)**
- ◆ **Virology (Junior)**
- ◆ **Physiology (Junior)**
- ◆ **Biotechnology (Junior)**
- ◆ **Molecular Diagnostics (Junior)**
- ◆ **Special Topics in Cell Biology (Junior)**
- ◆ **Pathogenic Mechanisms of Pathogenic Bacteria (Junior)**
- **Molecular Biology (Master/PhD)**
- **Special Topics in Microbiology (Master/PhD)**
- **Advanced Molecular Cloning Methods (Master/PhD)**

## **Marine Resources Development**

- **Natural Products Preparation and Application (Master/PhD)**
- **Efficacy Components and Biotechnology (Master/PhD)**
- **Algal Active Substances and Introduction to Biomedical Science (Master/PhD)**

## **Biomedical Materials and Material Chemistry**

- **Biomedical Materials (Master/PhD)**
- **Introduction to Material Chemistry (Master/PhD)**

## **Stem Cells and Therapy**

- **Developmental Biology (Master/PhD)**
- **Animal Regeneration and Developmental Biology with Laboratory (Master/PhD)**
- **Application of Gene Editing in Gene Therapy (Master/PhD)**
- **Cellular Signaling and Human Diseases (Master/PhD)**

## **Basic Chemistry**

- **General Chemistry (Freshman)**
- **Organic Chemistry (Sophomore)**
- **General Chemistry Lab (Freshman)**
- **Organic Chemistry Lab (Sophomore)**

## **Proteomics**

- **Mass Spectrometry Data Analysis (Master/PhD)**
- **Applications of Mass Spectrometry in Proteomics (Master/PhD)**

## **Advanced Chemistry**

- ◆ **Analytical Chemistry (Sophomore)**
- ◆ **Analytical Chemistry Lab (Sophomore)**
- ◆ **Instrumental Analysis (Junior)**
- **Special Topics in Analytical Chemistry (Master/PhD)**
- **Introduction to Inorganic Chemistry (Master/PhD)**

## **Basic Bioinformatics**

- **Programming (Freshman Year)**
- **Introduction to Artificial Intelligence (Freshman Year)**
- **Biostatistics (Junior Year)**

## **Artificial Intelligence and Precision Medicine**

- ◆ **Bioinformatics Research (Senior Year)**
- **Genomics and Machine Learning (Master's/Doctorate)**
- **Genomics and Deep Learning (Master's/Doctorate)**

## **Advanced BioInformation**

- ◆ **Protein Structure (Sophomore Year)**
- ◆ **Practical Application of Python, Biopython, and Galaxy in Genomics (Junior Year)**
- ◆ **Genomic Information Analysis in R Environment (Junior Year)**
- ◆ **Genomic Information Analysis Using Linux Commands (Junior Year)**
- ◆ **Bioinformatics (Junior Year)**
- **Phylogenetic Analysis (Master/PhD)**

## **Performance and Expression Skills Training**

- **Introduction to Life Sciences (Freshman)**
- ◆ **English Reading of Life Sciences Textbooks (Freshman)**
- **Life Science Research (Junior)**
- **Special Topic Discussion (Senior)**
- ◆ **Biotechnology English Presentation (Senior)**
- **Special Topic Discussion (Master/PhD)**
- **English Paper Writing (Master/PhD)**
- **English Grammar and Exercises (Master/PhD)**
- **English Conversation for Life Sciences (Master/PhD)**



# **Cultivation of Biotechnology Industry Development Capabilities**

## **Biotechnology Patents (Master/PhD)**

- **Patent Analysis and Technology Licensing Examples**
- **Intellectual Property Management and Patent Analysis**
- **Digital Operations and Intellectual Property Strategy**

## **Emerging Biotechnology Industry (Master/PhD)**

- **Leisure Sports and Nutrition for the Elderly Nutrition and Human Efficacy**
- **Artificial Intelligence in Multidisciplinary Health**
- **Emerging Animal Disease Defense Technologies**
- **Multidimensional Health Biotechnology Practicum**
- **Agricultural Big Data and Genetic Testing**
- **Industry-Academia Collaboration and Internships**

# 實踐夢想基地

基因工程(唐世杰) 免疫腫瘤病毒學(陳秀儀)

海洋天然活性物質(黃培安)

蛋白質體與代謝體(許邦弘)

微生物與轉譯醫學(許淳茹)

心血管生物醫學(李定宇)

跨領域創新實驗室(林翰佳)

轉譯基因體醫學(鄒文雄)

多功能智慧型奈米材料(林秀美)

生醫材料暨組織工程(許富銀)

自主裝材料於奈米生醫應用(黃志清)

新型結晶材料合成設計與應用(王志銘)



# LAB

**Genetic Engineering (Shye-Jye Tang)**

**Immuno-OncoVirology (Shiow-Yi Chen)**

**Marine Natural Active Substance (Pai-An Hwang)**

**Microbiology and Translational Medicine (Chun-Ru Hsu)**

**Cardiovascular Biomedical Research (Ding-Yu Lee)**

**Proteomics and Metabolomics (Pang-Hung Hsu)**

**Interdisciplinary Innovation Laboratory (Han-Jia Lin)**

**Translational Genomics Medicine (Wen-Shyong Tzou)**

**Multifunctional Intelligent Nanomaterials (Hsiu-Mei Lin)**

**Biomedical Materials and Tissue Engineering (Fu-Yin Hsu)**

**Self-assembled materials for nanomedicine applications**

**(Chih-Ching Huang)**

**New Crystalline Materials Synthesis Design and Application**

**(Chih-Min Wang)**