**Course number:** Biology 315 (3 credits)

**Meeting time and location:** T R 9:30-10:45 am, in Chemistry 101.

**Course coordinator:** Khouzama Knio, PhD  
knio@aub.edu.lb  
Room 215 Biology 2nd floor  
Phone: x 3886

**Course description:**  
This is a core course that provides practical experience in a variety of techniques currently employed in biological research, providing an understanding of their application and result interpretation.

**Learning objectives:**  
To become familiar with some major techniques used in Biology  
To learn the principles of micro- and molecular techniques  
To learn how to design experiments and when to use certain techniques  
To record and interpret data from laboratory experiments  
To learn how to work in a laboratory: safety and regulations

**Course content:**

**Febr. 17.:** Principles and Uses of Light and Electron Microscopy……………K. Knio

**Febr. 22, 24:** Introduction to Microtechniques:  
Temporary and Permanent Whole Mount Preparations  
Preservation of Specimens; Histology; Methods of Fixation  
Scientific Drawing…………………………………………………………..K. Knio

**Mar. 1, 3:** Histology Practical: Micro-dissection/maceration/temporary whole mounts  
Species Concepts; Voucher Specimens…………………………………K. Knio

**Mar. 8, 10:** Major Modes of Speciation  
Population Genetics; Test for Hardy-Weinberg Equilibrium………..K. Knio

**Mar. 15, 17.:** Starch Gel Electrophoresis: concepts.  
Paraffin Sectioning: Dehydration, Infiltration, Embedding (cont’d)…..K. Knio

**Mar. 22, 24:** Starch Gel Electrophoresis  
Paraffin Sectioning: Sectioning, Staining (cont’d)…………………..K. Knio
Mar. 29, 31:  Immunohistochemistry……………………………………………N. Ghanem

Apr. 5, 7:   High Pressure Liquid Chromatography…………………………Y. Mouneimne

Apr. 12, 14.: Confocal Microscopy; Flow Cytometry…………………………M. Sabban

Apr. 19: Confocal Microscopy; Flow Cytometry (demonstration in DTS)……M. Sabban

Apr. 21.: MIDTERM

Apr. 26, 28.: Bioinformatics………………………………………………………..C. Smith

May 3, 5.: Bioinformatics……………………………………………………….C. Smith

May 10, 12: Cell Culture……………………………………………………………R. Talhouk

May 17, 19: Concentrations, Dilutions and Titrations Methodologies in Aquatic Science Research……………………I. Saoud

May 24, 26 Concentrations, Dilutions and Titrations Methodologies in Aquatic Science Research……………………I. Saoud

Means of evaluation:
Midterm: 30%
Homework/lab report/lab work: 5%
Participation: 5%
Final: 60%