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

kknio@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:

Week 1
Febr. 16: Safety Training Program- Module I..........................Dr. Raja Abdallah
Basics of biosafety and good lab practices
Short DVD on biosafety cabinets

Week 2
Febr.21: Safety Training Program- Module II..................Dr. Raja Abdallah
Safe chemical handling in labs. Short DVD on safe chemical handling.
Emergencies in lab and their responses. Short DVD on emergency response.

Febr. 23: Safety Training Program- Module III...............Dr. Raja Abdallah
Lab safety basic rules and regulations. Short DVD: lab safety checklist
Biosafety levels lab checklist. Hazardous wastes management at AUB.

Week 3
Febr. 28: Safe and proper use of lab equipments in Biology.........Miss Rania Osta

March 1 Principles and Uses of Light and Electron Microscopy...........K. Knio
Week 4
March 6, 8  High Pressure Liquid Chromatography.........................Y. Mouneimne

Week 5
March 13, 15:  Introduction to Microtechniques:
  Temporary and Permanent Whole Mount Preparations
  Preservation of Specimens; Histology; Methods of Fixation History
  Paraffin Sectioning ..........................................................K. Knio

Week 6
March 20, 22:  Systematics (overview, significance, functions)
  Voucher Specimens; Species Concepts................................. K.Knio

Week 7
March 27, 29:  Major Modes of Speciation
  Population Genetics; Test for Hardy-Weinberg Equilibrium
  Principles of Starch Gel Electrophoresis.............................. K. Knio

Week 8
  Practical: Micro-dissection/maceration/temporary whole mounts
  Scientific Drawing ..........................................................K. Knio

Week 9
Apr.10, 12.:  Confocal Microscopy; Flow Cytometry...............M. Sabban

Week 10
Apr. 17, 19:  Confocal Microscopy; Flow Cytometry (demonstration in DTS)...M. Sabban

Week 11
Apr. 24, 26:  Cell Culture..........................................................H. Muhtasib

Week 12
May 3:       MIDTERM (material of K. Knio and R. Osta)..............K. Knio

Week 13
May 8:       To be announced/or starch electrophoresis (practical) with K.Knio........?
  May 10.:   Microarray Technology........................................Z. Kambris

Week 14
May 15, 17   Techniques in Marine Biology.................................M. Bariche

Week 15
May 22, 24:  Immunohistochemistry........................................... N. Ghanem
Means of evaluation:
Midterm: 35%
Homework/lab report/lab work: 5%
Participation: 5%
Final: 55%