

**4014 20 – Research Methods in Marine Biology B** (4 points, 2020-2021)

**Summer Semester**

**Time:** One weeks workshop including lectures, lab work and students' presentation.

**Course Schedule:**

4-11/7/2021

**Instructors:**

Tal Luzzatto [tluzzatto@univ.haifa.ac.il](mailto:tluzzatto@univ.haifa.ac.il)

Tali Mass [tmass@univ.haifa.ac.il](mailto:tmass@univ.haifa.ac.il)

**Office Hours:**

Tal: With advance coordination Multipurpose building.

Tali: Thursday 9:00-11:00 Multipurpose building room #269.

**Teaching Assistants & Office Hours (tentative):**

Tal Zvi Kedem [tal.zvi.kedem@gmail.com](mailto:tal.zvi.kedem@gmail.com) room hours

Omri Nahor, [nahoro27@gmail.com](mailto:nahoro27@gmail.com) room hours

**Course Type: Workshop**

**Course Level:** M.Sc.

**Pre-Requisites:** Research Methods in Marine Biology A should be taken at the same year. The definition of the research question and research design as well as the collection of the field samples will be conducted by the students during this pre-requisite course.

**Course Overview:**

In this course the students will learn to use advanced methods in genetics, genomics, quantitative molecular biology, biochemistry and microscopy to

address fundamental questions in marine biology and test their hypotheses. The students will conduct experiments in controlled environments, learn and apply molecular and imaging techniques including DNA and RNA extraction, PCR and quantitative PCR (QPCR), protein analysis, light and fluorescent microscopy, photosynthesis analysis and more, depending on the research question. The students will receive lectures on the theoretical background of all these methods and on writing a research paper. At the end of the course the students will submit a final report in the form of a research paper that includes an abstract, short introduction, description of the methods they used, results and conclusions.

### **Topics:**

1. Effect of changing environment on marine ecology and biology.
2. Effect of specific environmental changes (temperature, pH, salinity, etc.) on organismal fitness.
3. Genomics and genetics of marine organisms.
4. Quantitative molecular biology and microscopy.

### **At the end of the course students will be able to: [Learning Outcomes]**

1. Design and perform in-situ and in-vivo experiments.
2. Use current molecular biology, biochemical approaches.
3. Use quantitative molecular biology techniques.
4. Use statistic tools (learned in other courses) to assess the significance of their results.
5. Write a research paper.

### **Requirements**

100% Attendance

### **Grading:**

50% Design and execution of lab work



20% Presentation and discussion

30% Final report

**Website:** [Moodle](#)

