

**227.4015 –Rocky shore ecology**

**Semester B, 2020-21**

**Time:** Times for 3-4 frontal/zoon lectures will be determined at the start of the course.  
Intensive course days: 21-25.03.21 or 04-08.04.21 or 18-22.04.21 depending on sea conditions (if non are good, new dates will be determined).

**Instructor:** Dr. Gil Rilov

**Communication:**

Via email ([rilovg@ocean.org.il](mailto:rilovg@ocean.org.il)) or by appointment at the office in IOLR

**Course Type:** Lectures and intensive lab and field days

**Course Level:** MA, MSc, PhD

**Pre-Requisites:** background in ecology is preferred

**Course Overview:**

The rocky shore is a dominant coastal ecosystem globally. It is situated on the margin between land and sea, and the organisms living in this narrow zone have adopted to the extremely variable and harsh conditions that dominate it. For decades, the rocky shore has also served as field laboratory for ecological research that helped develop important general ecological theories.



This course will combine frontal lectures with hands-on lab and field work. We will examine the processes that shape ecological communities looking through the lens of an experimental ecologist. In the lectures, we will specifically discuss how intertidal organisms deal with the harsh conditions, what controls the dynamics of the ecological communities living on the rocks including species interactions (competition, predations etc.) and benthic pelagic coupling. We will also discuss how humans interfere with these processes through the introduction of new species (**bioinvasions**) and changing the physico-chemical conditions in the ocean (focusing on the current major driver – **climate change**). Much focus will be placed on the methods ecologists use for studying this unique environment. We will use some of these methods during the intensive days at the National Institute of Oceanography of IOLR in Shikmona (on the Haifa coast). This will include deploying temperature loggers, using IR cameras to produce heat-maps, measuring physico-chemical conditions in tidepools and sampling the biodiversity in different parts of the reef. We will also aim to conduct short-term experiments in the field and/or lab as part of student projects . Much attention will be given to the unique, biogenic, rocky shore

habitat of the Israeli Mediterranean coast, the **vermetid reefs**, which are facing many threats and experience fundamental ecological changes over the past few decades.

Introductory lectures will be given at the University or by Zoom early in semester B, and then a 4 days intensive section will be conducted at IOLR that will include more lectures and much field and lab work. Students will also be introduced to the many lab facilities at IOLR developed to test relevant ecological questions. During the course, several **scientific papers** will be provided for deeper learning of key topics and understanding ecological approaches and methodologies. The intensive days will be conducted sometime between the end of March and May, depending mainly on the sea conditions. During the intensive days, students will develop a project, individually or in small groups, which will be focused on relevant ecological questions and will use field or lab work to test them. A final report will be written on this project which will be scored as part of the overall course mark.

**Topics:**

1. The history of rocky shore research
2. The unique features of the Israeli Mediterranean rocky shore
3. Experimental approaches
4. How organisms cope with the extreme environmental conditions of the intertidal
5. Benthic-pelagic coupling
6. Ecological interactions
7. Biodiversity measurement and trends
8. Impacts of climate change and bioinvasions, and how to test them

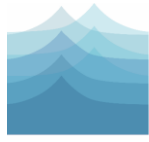
**At the end of the course students will:**

1. Be familiar with basic ecological experimental approaches and design
2. Have ecological thinking relevant to marine environments
3. Have familiarity with the Israeli rocky shores and vermetid reefs
4. Acquire understanding of the stressors and solutions of living in the rocky shores
5. Gain understanding of approaches to study marine biodiversity
6. Have the ability to develop simple ecological surveys and experiments
7. Develop critical thinking about the challenges facing the southeastern ecosystems being a hotspot of both climate change and bioinvasions

**Requirements:** Attendance, active participation in discussion, reading of literature, written project

**Grading:**

Active participation 10-20%, maybe a short squeeze (10%), Written projects 80%



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