



TEL AVIV אוניברסיטת
UNIVERSITY תל אביב

Full Syllabus



Course Syllabus

Marine systems of the Mediterranean Region: Environmental challenges

Instructors: Prof. Yehuda (Hudi) Benayahu and Dr. Zafrir Kuplik

Academic year: 2021/22

Semester: Spring

Course number: 0920.6300.01

Credit hours: 2

Lecture times: Monday, 10:15-11:45

Classroom: Porter building, Room 101

Lecturer information

Office hours: by appointment

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Course policies

Requirements: Attendance is required in **all** classes and field trip.

A 10-12 min presentation on topics related to the respective class will be led by the students during designated classes. Students should assign themselves to topics mentioned in the course outline. Reading material is provided for each topic in the course outline. It is expected that each student will search for an additional relevant peer reviewed article to be included in the presentation. The web has very useful instructions how to prepare a scientific presentation e.g. https://dornsife.usc.edu/assets/sites/605/docs/Tips_10_minute_Scientific_PowerPoint_Presentation

Grading: Final exam 70%, oral presentation during designated classes 15%, 3 quizzes - 5% each.

Course description

Over 70% of the earth is covered with seas and oceans at an average depth of over 2,000 m. The oceans thus offer a much larger habitable area, both in terms of surface area and volume, than



all continents put together. The Mediterranean Sea, covering an approximate area of 2.5 million km² (965,000 sq mi), although technically a part of the Atlantic Ocean, is usually identified as a completely separate body of water. The Mediterranean basin covers portions of three continents, Europe, Asia, and Africa, and includes several seas such as the Ligurian Sea, the Tyrrhenian Sea, the Ionian Sea, the Adriatic Sea, and it is also linked to other seas such as the Black Sea and the northern Red Sea. As indicated by its name, derived from the Latin *mediterraneus*, meaning "in the middle of the earth" (from *medius*, "middle" and *terra*, "earth"), the Mediterranean Sea is almost completely enclosed by land: on the north by Anatolia and Europe, on the south by North Africa, and on the east by the Levant. As such, it constituted an important route for merchants and travelers of ancient times that allowed for trade and cultural exchange between various communities of the region (e.g., Phoenicians, Greek, Roman, Egyptian, Levantine, Muslim, and Jewish cultures). The immense cultural, social and economic value of the Mediterranean Sea, it directly linked to its environmental, ecological, hydrological and geomorphologic traits.

The course will provide a short introduction dealing with the above mentioned fields, giving a whole perspective of the Mediterranean basin, including the Gulf of Aqaba (northern Red Sea). Then, students will get to know the various habitats present in the area (such as rocky bottom, sandy bottom, coral reefs, seagrass beds, mangroves, etc.), as well as their biological inhabitants. Moreover, the course will provide students with current issues related to global human impacts on the marine environment, including overexploitation of natural resources in the area, effects of climate change and sea level rise, ocean acidification, as well as coastal management and marine conservation issues.

The course will include a field trip to the Mediterranean coast of Israel.



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Course outline**

* Classes where students need to sign up for a 10-12 minutes presentation on the relevant subject.
Papers for presentations are added in Reading material as internet links.

#	Date	Topic	Lecturer	Reading material
1	11/10/2021	World Oceans and an overview of the Mediterranean Sea	H. Benayahu	Lalli & Parsons: 8.1, 8.2
2	18/10/2021	The abiotic and biotic features in marine environment*	H. Benayahu	Lalli & Parsons: 1.2: p. 2-3, 2.1- 2.4, 2.6 https://www.frontiersin.org/articles/10.3389/fmars.2015.00056/full https://royalsocietypublishing.org/doi/pdf/10.1098/rspb.2020.2469
3	25/10/2021	Corals and coral reefs*	H. Benayahu	Lalli & Parsons: 8.4 Delineating priority areas for marine biodiversity conservation in the Coral Triangle - ScienceDirect Apparent recruitment failure for the vast majority of coral species at Eilat, Red Sea SpringerLink
4	1/11/2021	Marine invertebrates and their role in ecosystems* Quiz 1	H. Benayahu	https://www.nature.com/articles/s41598-020-75585-6 https://www.nature.com/articles/524390c
5	8/11/2021	Zooplankton, phytoplankton and jellies*	Z. Kuplik	Lalli & Parsons: 3.1, 3.2, 3.6, 4.1-4.3, 5.2.1 http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0140690 https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2003gb002034 https://hrcak.srce.hr/file/138945/ https://www.researchgate.net/profile/Isabella-Dambra/publication/274091708_Scyphomedusae_of_the_Mediterranean_State_of_the_Art_and_Future_Perspectives/links/5ff5ea3745851553a023422d/Scyphomedusae-of-the-Mediterranean-State-of-the-Art-and-Future-Perspectives.pdf



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6	15/11/2021	Fisheries*	Z. Kuplik	<p>Lalli & Parsons: 6.6, 6.7, 6.8, 9.1 https://www.researchgate.net/publication/236006250 Spatiotemporal patterns of catch and discards of the Israeli Mediterranean trawl fishery in the early 1990s Ecological and conservation perspectives</p> <p>https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0121188</p> <p>https://www.frontiersin.org/articles/10.3389/fmars.2017.00244/full</p>
7	21 or 28/11 instead of class on 22/11/2021	Field trip (07:45-14:00)		
8	29/11/2021	<p>Marine invasive species *</p> <p>Quiz 2</p>	Z. Kuplik	<p>Lalli & Parsons: 9.3 https://www.researchgate.net/publication/271371256 Pathways of introduction of marine alien species in Europe and the Mediterranean - a possible undermined role of marine litter/link/54c639fc0cf256ed5a9d2aca/download</p> <p>https://www.academia.edu/23064326/Loss_or_gain_Invasive_alien_species_and_biodiversity_in_the_Mediterranean_Sea</p>
9	6/12/2021	Marine pollution*	Z. Kuplik	<p>Lalli & Parsons: 9.2</p> <p>http://wp.auburn.edu/chadlab/wp-content/uploads/2015/10/Zakai-and-Chad-Fur_2002_Diving-impacts-Eilat.pdf</p> <p>https://www.researchgate.net/publication/234340898 The impact of thermal pollution on benthic foraminiferal assemblages in the SE Mediterranean shore Israel as an analog to global warming</p> <p>https://setac.onlinelibrary.wiley.com/doi/pdf/10.1002/etc.3131</p>
10	13/12/2021	Sea grass beds, sea weeds, mangroves, *	H. Benayahu	<p>Lalli & Parsons, 8.6 https://onlinelibrary.wiley.com/doi/epdf/10.1111/jbi.12631</p>



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				Decadal stability of Red Sea mangroves - ScienceDirect h
11	20/12/2021	Mesophotic reefs, deep ocean, hydrothermal vents* Quiz 3	H. Benayahu	Lalli & Parsons 8.3, 8.7 http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0179302&type=printable Upper mesophotic depths in the coral reefs of Eilat, Red Sea, offer suitable refuge grounds for coral settlement (nature.com)
12	27/12/2021	Global change and its impact of marine ecosystems	Z. Kuplik	Hoegh-Guldberg et al. 2007 https://skolas.lu.lv/pluginfile.php/150703/mod_resource/content/1/Global Marine Biodiversity and climate change.pdf https://www.academia.edu/12845111/Climate change effects on a miniature ocean the highly diverse highly impacted Mediterranean Sea
13	3/1/2022	Marine conservation. Concepts, current issues of sustainable management of resources, international conventions*	Z. Kuplik	Crain et al. 2009 http://karkgroup.org/wp-content/uploads/Mazor-et-al-2013-sea-turtles.pdf https://www.researchgate.net/publication/283503821 A small fishery with a high impact on sea turtle populations in the eastern Mediterranean

**Lectures listed by date are subject to change throughout the semester

Final Exam:

Date A: January 24, 2022, 09:00 AM

Date B: February 10, 2022, 09:00 AM

Course book:

Lalli CM, Parsons TR, editors (2002) Biological Oceanography: An Introduction. 2 ed. Vancouver, Canada: Butterworth Heinemann. 314 p (internet edition).



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Additional reading:

Crain CM, Halpern BS, Beck MW, Kappel CV (2009) Understanding and Managing Human Threats to the Coastal Marine Environment. Year in Ecology and Conservation Biology 2009. pp. 39-62.

Plagiarism Policy:

The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Plagiarism is the use of someone else's work, words, or ideas as if they were your own. Here are three reasons not to do it: 1. By far the deepest consequence to plagiarizing is the detriment to your intellectual and moral development: you won't learn anything, and your ethics will be corrupted. 2. Giving credit where it's due but adding your own reflection will get you higher grades than putting your name on someone else's work. In an academic context, it counts more to show your ideas in conversation than to try to present them as sui generis. 3. Finally, Tel Aviv University punishes academic dishonesty severely. The most common penalty is suspension from the university, but students caught plagiarizing are also subject to lowered or failing grades as well as the possibility of expulsion.

Source: <http://writing.yalecollege.yale.edu/example-plagiarism-warning-might-appear-syllabus>.