Leon H. Charney School of Marine Sciences
UNIVERSITY OF HAIFA

Special Topics in Ocean Optics- 229.4102
Advanced Course (2 credits)
Theme for 2024: Visibility in the Ocean

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2 hours/week* conducted on Zoom (in-person for students based in Eilat)
*Exact dates & times of course will be decided based on the schedules of registered students every year

Prerequisites: >=90% grade in Underwater Colorimetry, or consent of instructor

Grading structure:
- Attendance (50%)
- Effort and participation in paper presentations (25%)
- Effort and participation in project presentation (25%)

Course description:
This is an advanced course that is designed around independent study and projects. Starting week 2, students will read and present papers on historical and state-of-the-art topics around underwater visibility including but not limited to, ways to quantify visibility, instruments that measure visibility, in situ and remote sensing methods that indirectly estimate visibility, effects of visibility on ocean exploration, monitoring, visual ecology, economy, etc. The course will be guided by the instructor, but lectures will revolve around discussions of the papers presented by students. Each student will present in each lecture. Students will be encouraged to search for other resources not provided by the instructor. In grading the paper presentations, emphasis will also be given to the professionalism, clarity, and style of the presentation, in addition to content. In the last month of the course, students will work independently on a project that they will design. Depending on the course makeup, students may use existing datasets for their projects, or collect new datasets in Eilat or elsewhere.

Goals of the course:
- Provide knowledge regarding problems around underwater visibility, identify research gaps, and discuss/develop hardware/software solutions
- Help students build a systematic habit of reading, understanding, summarizing, and presenting scientific papers
- Gain hands-on experience developing solutions to improve aquatic visibility
- Guide students to prepare and present effectively

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Tentative schedule for semester of typical length (14 weeks):

Week 1: Introduction & Welcome. Refresher on fundamental ocean optics concepts.
Week 2: Students present/lead: Historical perspectives/research on aquatic visibility - I
Week 3: Students present/lead:: Historical perspectives/research on aquatic visibility - II
Week 4: Students present/lead:: State-of-the art research/tools on aquatic visibility - I
Week 5: Students present/lead:: State-of-the art research/tools on aquatic visibility - II
Week 6: Students present/lead:: Biological solutions for improved visibility
Week 7: Students present/lead:: Research gaps and opportunities
Week 8: Students present/lead:: Available data sources
Week 9: Project/dataset descriptions, assignments, logistics, timeline
Week 10: Students independently work on their projects discussing with each other/instructor
Week 11: Students independently work on their projects discussing with each other/instructor
Week 12: Students independently work on their projects discussing with each other/instructor
Week 13: Students independently work on their projects discussing with each other/instructor
Week 14: Project presentations & course conclusion