



## MSC 332 - Planetary Science, the Search for Life, & Oceans across the Solar System



*Take a ride on a flying electric boat, swim a coral reef, watch drones see through waves, and discover the history of life in the universe as we know it. Discover the cutting-edge tools being developed by NASA to explore Oceans across the solar system and what it means for the search for life. Join Professor Ved Chirayath, a National Geographic Explorer and NASA Scientist, for **MSC332**, a new 4-unit research experiential course. Enrolment limited to 15 students, but all interested students encouraged to attend and signup for waitlist. Graduate students and others welcome to audit course.*

**Spring 2024 Tuesdays and Thursdays**, Gables Campus, **Fridays**, Rosenstiel Marine Campus, in concert with shuttle service from main campus.



**Professor:** Dr. Ved Chirayath, [ved@miami.edu](mailto:ved@miami.edu), <http://aces.earth.miami.edu>

**Course Description:** This course is intended to provide undergraduate students an exciting introduction to the search for life in the universe, with an emphasis on contemporary planetary science methods, astrobiology, oceans across the solar system, and lessons from Earth as an analog environment. Students will gain hands-on experience through interactive optical laboratory experiments and an optional field trip to a local reef as an analog planetary ocean environment on the Aircraft Center for Earth Studies' electric flying research vessel.

**Learning Objectives:** Students will gain an overview of the fundamentals of the history of the universe, the formation of the solar system, planetary science, electromagnetic theory, remote sensing physics, spectroscopy, astrobiology, and the search for extraoceanic and intelligent life. Students will be able to articulate the major drivers of the search for life in extreme environments and debate the provenance of life on ocean worlds. Students will be familiar with the astronomical time scale and the major events that define its history. Students will be practiced in optics-based laboratory demonstrations, basic spectroscopy, and presenting to an audience. By participating on a field trip to a local reef, students will become competent in further exploring an analog environment and detecting multiple signs of life within a relevant environment. Students will be divided in groups and will take turns going on a field trip to a coral reef. Students not participating in a trip will do lab exercises. All students will cover the same material.

