

OCN 750 Marine Viral Ecology (1 Credit)

Instructors: Grieg Steward; Alexander Culley

Meeting time: Mondays 10:30-12:00

Prerequisites: Upper division biology or permission from instructor

Course Description

In this seminar course we will survey the scientific literature on the ecology of viruses infecting prokaryotic and eukaryotic marine plankton. We will cover the history of the field, methodological developments, and current views on the evolutionary, ecological and biogeochemical effects of viruses and viral infections.

Week 1 will be used to introduce the course and adjust the schedule, as needed, to a time and format convenient for all participants. Week 2 will consist of an introductory lecture on viruses and viral ecology. In subsequent weeks, students will present and critique original research articles. All students will be expected to read and participate in the discussion of two to four papers per week. Students will take turns summarizing papers and leading discussions of one to two papers every other week.

Course Schedule

Week 1	Aug 24	Introduction to the course/organizing the schedule
Week 2	Aug 31	Introduction to viruses and marine viral ecology (lecture)
Week 3	Sep 07	Holiday - Labor Day

Tentative discussion topic schedule:

Week 4	Sep 14	The nature of viruses
Week 5	Sep 21	Viral phylogeny and evolution
Week 6	Sep 28	Viral mortality of marine bacteria
Week 7	Oct 05	Viral mortality of phytoplankton
Week 8	Oct 12	Counting viruses in seawater and sediments
Week 9	Oct 19	Bacteriophage diversity
Week 10	Oct 26	Protistan viruses
Week 11	Nov 02	Rates and causes of viral decay
Week 12	Nov 09	Measuring virus production
Week 13	Nov 16	Lysogeny and lysogenic conversion
Week 14	Nov 23	Gene transfer agents
Week 15	Nov 30	Metagenomics of marine viruses
Week 16	Dec 07	Models and theory in marine viral ecology

Student Learning Outcomes

After completion of this seminar class students will be:

- able to describe how viruses differ from other forms of life
- familiar with some of the major technical and conceptual developments in the field of marine viral ecology
- able to give examples of ecological, evolutionary, and biogeochemical consequences of viral infections of marine plankton