

Marine Microbial Ecology (287A)
(Farooq Azam; fazam@ucsd.edu; 4105 HH; x46850)
4 units; letter grade

Schedule: Two lectures per week; days/time to be decided. I will try to accommodate all interested, but prefer Tuesdays/Fridays after 11 AM

Course description: In this course we will discuss major concepts in the study of microbes in the ocean, how the microbes function in their natural environments/microenvironments, and how their activities influence the grand cycles of elements, marine ecosystems, global climate and the Earth as human habitat.

Lecture 1	Introduction, goals and history of the ecological study of marine microbes
Lecture 2	Ocean as a microbial habitat I
Lecture 3	Ocean as a microbial habitat II
Lecture 4	<i>LAB: Epifluorescence, laser confocal and Atomic Force microscopy</i>
Lecture 5	Prokaryote structure/function in ecosystem context -I
Lecture 6	Prokaryote structure/function in ecosystem context-II
Lecture 7	Phylogenetic diversity; genomics; proteomics (Eric Allen)
Lecture 8	Microbial phototrophy (Brian Palenik)
Lecture 9	Physiological diversity; energy & C sources; elemental cycles in the ocean
Lecture 10	Microbial behavior and nutrient uptake strategies in the sea
Lecture 11	<i>Discussion</i>
Lecture 12	Microbial distribution and growth of Bacteria and Archaea in the sea
Lecture 13	Fate of prokaryote production: implications for elemental dynamics
Lecture 14	Ecosystem roles of marine viruses (Forest)
Lecture 15	<i>Discussion</i> (give out <i>exam questions</i>)
Lecture 16	Deep-sea microbiology (Bartlett)
Lecture 17	Integration of microbial processes into marine ecosystem function
Lecture 18	Marine microbes' structuring of oceanic biogeochemistry
Lecture 19	Microbes and marine pollutants; Ecology of marine pathogenic bacteria
Lecture 20	Marine microbes and Earth's habitability (<i>Exams back</i>)
"Lecture 21"	Individual discussions of the exams: Please arrange ½ h appointments
Lecture 22	<i>Final Discussion</i>

Please note:

- 1) 1-2 papers will be assigned for each lecture
- 2) Discussion will cover the assigned papers as well as the material covered in the class
- 3) "Lecture 21: Over a three day period, individual ~1/2h sessions with the instructor for feedback on the take-home exam as well as general discussion of the course material
- 4) Guest lectures' schedule to be confirmed