SES Microbial Methods

Syllabus 2019

Module	Date	Topic	Instructor
1	Tue (3 Sep)	**1: Introduction**	Vallino
		Lecture only	
	Thu (5 Sep)	Lab: Construct Winogradsky column.	
		Field trip to Little Sippewisset Marsh.	
		Wear shoes that can get wet and muddy.	
2		**2: Bacterial abundance**	Vallino
	Tue (10 Sep)	Lab: Prepare dilution and coliform plates.	
		Fix samples for direct DAPI counts	
	Thu (12 Sep)	Lab: DAPI staining and counts	
		Examine plates	
		Problem Set 1 due: Introduction	
3		**3: Bacterial production**	Vallino
	Tue (17 Sep)	Lecture on bacterial production method	
		Lab: Count dilution plates	
	Thu (19 Sep)	Lab: Measure bacterial production using C14.	
		Problem Set 2 due: Bacterial abundance	
	Tue (24 Sep)	^{14}C Activity Results	
		Scintillation counter demonstration	
		Explain calculations.	
4	Thu (26 Sep)	**4: Extracellular Enzyme Assays**	Vallino
		Lecture on extracellular enzymes and fluorometry	
	Tue (1 Oct)	Lab: Measure enzyme activities	
5	Thu (3 Oct)	**5: Chemolithotrophy**	Vallino
		Lecture on Winogradsky column	
		Column Observations	
		Problem Set 3 due: Bacterial Production	
	Tue (8 Oct)	Measure Hydrogen Sulfide profiles in columns	
	Thu (10 Oct)	Measure methane gradient in columns	
		Problem Set 4 due: Extracellular Enzyme Assays	
6		**6: Microbial food webs: Flagellate and ciliate grazing on bacteria**	Vallino
	Tue (15 Oct)	Lecture	
	Thu (17 Oct)	Lab on bacterial grazing w/ fluorescent beads.	
		Problem Set 5 due: Chemolithotrophy	
7		**7: Molecular Techniques**	Gribble
	Tue (22 Oct)	Lab: DNA Extraction	
	Thu (24 Oct)	Lab: Electrophoresis and PCR	
		Problem Set 6 due: Microbial food webs	
	Tue (29 Oct)	Lecture on Molecular methods	
		Discuss results	
8		**8: Microbial food webs: bacteria phytoplankton competition**	Vallino
	Thu (31 Oct)	Lecture (short)	
		Microcosm startup and sample	
	Fri (1 Nov)	Sample microcosm	

Sat (2 Nov)	Sample microcosm
Sun (3 Nov)	Sample microcosm
Mon (4 Nov)	Sample microcosm
Tue (5 Nov)	Sample microcosm, analyze samples
Wed (6 Nov)	Analyze microcosm samples
Thu (7 Nov)	Present and discuss microcosm results and calculations
	Problem Set 7 due: Molecular Techniques
	Problem Set 8 due: Microbial food webs: bacteria phytoplankton competition
Thu (14 Nov)	

Grading:

Problem Sets	10% each, for a total of 80% of grade
Participation	20% of grade
Final	If problem sets are done independently, then there will not be a final exam.

All problem sets are due at the beginning of Thursday's class, as indicated by the syllabus