

# SES Microbial Methods

## Syllabus 2018

Module	Date	Topic	Instructor
1	Tue (4 Sep)	<b>1: Introduction</b> Lecture only	Vallino
	Thu (6 Sep)	Lab: Construct Winogradsky column. Field trip to Little Sippewisset Marsh. Wear shoes that can get wet and muddy.	
2		<b>2: Bacterial abundance</b>	Vallino
	Tue (11 Sep)	Lab: Prepare dilution and coliform plates. Fix samples for direct DAPI counts	
	Thu (13 Sep)	Lab: DAPI staining and counts Examine plates <i>Problem Set 1 due: Introduction</i>	
3		<b>3: Bacterial production</b>	Vallino
	Tue (18 Sep)	Lecture on bacterial production method Lab: Count dilution plates	
	Thu (20 Sep)	Lab: Measure bacterial production using C14. <i>Problem Set 2 due: Bacterial abundance</i>	
	Tue (25 Sep)	<sup>14</sup> C Activity Results Scintillation counter demonstration Explain calculations.	
4	Thu (27 Sep)	<b>4: Extracellular Enzyme Assays</b> Lecture on extracellular enzymes and fluorometry	Vallino
	Thu (4 Oct)	Lab: Measure enzyme activities	
5	Fri (5 Oct)	<b>5: Chemolithotrophy</b> Lecture on Winogradsky column Column Observations <i>Problem Set 3 due: Bacterial Production</i>	Vallino
	Tue (9 Oct)	Measure Hydrogen Sulfide profiles in columns	
	Thu (11 Oct)	Measure methane gradient in columns <i>Problem Set 4 due: Extracellular Enzyme Assays</i>	
6	Wed (17 Oct)	<b>6: Microbial food webs: Flagellate and ciliate grazing on bacteria</b> Lecture	Vallino
	Thu (18 Oct)	Lab on bacterial grazing w/ fluorescent beads. <i>Problem Set 5 due: Chemolithotrophy</i>	
7		<b>7: Molecular Techniques</b>	Gribble
	Tue (23 Oct)	Lab: DNA Extraction	
	Thu (25 Oct)	Lab: Electrophoresis and PCR <i>Problem Set 6 due: Microbial food webs</i>	
	Tue (30 Oct)	Lecture on Molecular methods Discuss results	
8		<b>8: Microbial food webs: bacteria phytoplankton competition</b>	Vallino
	Thu (1 Nov)	Lecture (short) Microcosm startup and sample	
	Fri (2 Nov)	Sample microcosm	

Sat (3 Nov) Sample microcosm  
Sun (4 Nov) Sample microcosm  
Mon (5 Nov) Sample microcosm  
Tue (6 Nov) Sample microcosm, analyze samples  
Wed (7 Nov) Analyze microcosm samples  
Thu (8 Nov) Present and discuss microcosm results and calculations

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***Problem Set 7 due: Molecular Techniques***

***Problem Set 8 due: Microbial food webs: bacteria***

Thu (15 Nov) ***phytoplankton competition***

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**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**