

## MGY380H1F

Sept.- Dec. 2024

This lab course will take place on Monday (11:00-12:00 am) and Tuesday (9:00 am- 12:00 pm) of each week during the Fall semester, except the reading week.

The Monday classes will either be introductory lectures or short preparation experiments carried out in the labs. The Tuesday labs will be carried out in two rooms: MSB 3282 and 3381.

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<b>Week 1</b>	
Sept. 9, Monday (11-12)	<b>Lecture:</b> Introduction of the class, rules of conduct and general safety, lab report guidelines
Sept. 10, Tuesday (9-12) Lab 1	<b>Lab:</b> Basic techniques: streaking plates, colony morphology, spread plating. Sampling of environmental surfaces and plating on selective and differential media
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<b>Week 2</b>	
Sept. 16, Monday (11-12)	<b>Lab:</b> Observe results from last week, viable counting, plate streaking
Sept. 17, Tuesday (9-12) Lab 2	<b>Lab:</b> Staining and microscopy: Gram stain, capsule stain
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<b>Week 3</b>	
Sept. 23, Monday (11-12)	<b>Lecture:</b> Bacterial culture media, methods of identification
Sept. 24, Tuesday (9-12) Lab 3	<b>Lab*:</b> Identification of bacterial isolates - I: biochemical tube tests, API tests. *Read results 24-48 hrs later.
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<b>Week 4</b>	
Sept. 30, Monday (11-12)	<b>Lab:</b> Streak plates and Gram-staining
Oct. 1, Tuesday (9-12) Lab 4	<b>Lab:</b> Identification of bacterial isolates – II: 16S rRNA sequencing
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<b>Week 5</b>	
Oct. 7, Monday (11-12)	<b>Lab:</b> Set up cultures for biofilm formation
Oct. 8, Tuesday (9-12) Lab 5	<b>Lab:</b> Biofilm formation and dispersal (*reading results in the afternoon)
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<b>Week 6</b>	
Oct. 14, Monday (11-12)	<b>Thanksgiving Day, no class</b>
Oct. 15, Tuesday (9-12) Lab 6	<b>Lab:</b> Antibiotic sensitivity assay, P1 transduction
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<b>Week 7</b>	
Oct. 21, Monday (11-12)	<b>Term- test (labs 1-6), takes place in the class</b>

Oct. 22, Tuesday (9-12) Lab 7	<b>Lab:</b> CRISPR I – Infection of <i>Streptococcus thermophilus</i> with bacteriophage; P1 transduction patching
<b>Oct. 28-Nov.1</b>	<b>Reading week, no class</b>
<b>Week 8</b>	
Nov. 4, Monday (11-12)	<b>Lab:</b> Set up cultures for CRISPR II; Results from P1 transduction
Nov. 5, Tuesday (9-12) Lab 8	<b>Lab:</b> CRISPR II – Propagation of resistant <i>Streptococcus thermophilus</i> colonies and PCR amplification; Transposon I: Infection of <i>Escherichia coli</i> CC118 and CC245 with $\lambda$ TnlacZ
<b>Week 9</b>	
Nov. 11, Monday (11-12)	<b>Lecture:</b> Bacteriophage and P1 transduction
Nov. 12, Tuesday (9-12) Lab 9	<b>Lab:</b> CRISPR III: Analysis of amplicon by agarose gel electrophoresis and send amplicon for sequencing; Transposon II: replica plating
<b>Week 10</b>	
Nov. 18, Monday (11-12)	<b>Lecture:</b> CRISPR
Nov. 19, Tuesday (9-12) Lab 10	<b>Lab:</b> Conjugation I: Episome transfer; Results from transposon
<b>Week 11</b>	
Nov. 25, Monday (11-12)	<b>Lecture:</b> Transposon, conjugation
Nov. 26, Tuesday (9-12) Lab 11	<b>Lab:</b> Conjugation II: Hfr transfer; Results from episomal transfer
<b>Week 12</b>	
Dec. 2, Monday (11-12)	<b>Lecture:</b> Results from CRISPR
Dec. 3, Tuesday (9-12) Lab 12	<b>Lab:</b> Results from Hfr transfer

**Course Coordinator:**

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## Assessment

Term test	20%
Lab reports	40%
Lab performance	10%
Final exam (cumulative)	30%

Term test will be held in class on Monday Oct. 21 and will cover materials in Labs 1-6. Final exam (cumulative) will take place between Dec. 10 and Dec. 20. The Lab reports will constitute 40% of the final mark.

## Lab reports

Late penalty is 5% per working day that the report is late. Reports are not accepted 7 days past the due day.

## Due dates:

Topic	Final results	Report due
1. Basic techniques (Lab 1)	Sept. 17	Sept. 24
2. Staining and microscopy (Lab 2)	Sept. 24	Oct. 1
3. Identification of bacterial isolates (Labs 3 and 4)	Oct. 1	Oct. 7
4. Biofilms and antibiotic assays (Lab 5 & 6)	Oct. 15	Oct. 22
5. P1 transduction (Labs 6-8)	Nov. 4	Nov. 12
6. Transposon (Labs 8-10)	Nov. 19	Nov. 26
7. CRISPR (Labs 7-10)	Nov. 26	Dec. 3
8. Conjugation (Labs 10 -12)	Dec. 3	Dec. 10