

# Schedule for MCBI 7420 “Physiology and Ultrastructure of Microorganisms”

## Fall 2021

### Section 1 – The Cell Envelope & Signaling Systems

Mon, Aug 23	Pesci	Structure and Function I: Overview of the Cell Envelope
Tues, Aug 24	Pesci	Structure and Function II: Specific Cell Envelope Structures
Wed, Aug 25	Pesci	Export: Efflux Systems
Thurs, Aug 26	Pesci	Paper Discussion
Mon, Aug 30	Motaleb	Mechanisms of Genetic Switching
Tues, Aug 31	Martin	Transport I: Porins, Symport, Antiport, Group Translocation
Wed, Sept 01	Martin	Transport II: TonB-dependent, ABC-type transporters
Thurs, Sept 02	Martin	Export: Secretion Systems
Mon, Sept 06	No Class	State Holiday
Tues, Sept 07	Martin	Sigma Factors in Gene Regulation
Wed, Sept 08	Martin	Paper discussion
<b>Thurs, Sept 09</b>	<b>Exam 1</b>	
Mon, Sept 13	Motaleb	Motility and Chemotaxis: The Che System
Tues, Sept 14	Motaleb	Two-component Regulatory systems
Wed, Sept 15	Motaleb	Cyclic Nucleotide Signaling Systems
Thurs, Sept 16	Motaleb	Paper Discussion

## Section 2 – Catabolism and Energy Generation/Biosynthesis of Cellular Components

Mon, Sept 20	Coleman	Overview of Bacterial Nutrition
Tues, Sept 21	Coleman	Central Pathways I – Glycolytic pathways
Wed, Sept 22	Coleman	Central Pathways II – TCA and Anapleurotic Pathways
Thurs, Sept 23	Coleman	Central Pathways III – Fermentation Pathways
Mon, Sept 27	MAKE UP DAY	
Tues, Sept 28	Coleman	Bacterial Energetics – Overview
Wed, Sept 29	Coleman	Bacterial Energetics — Electron Transport Systems
Thurs, Sept 30	Coleman	Bacterial Energetics – ATP Synthesis
<b>Mon, Oct 4</b>	<b>Exam 2</b>	
Tues, Oct 5	Barton	Prokaryotic Genome Structure
Wed, Oct 6	Roop	Genetic Analysis of Bacteria
	Fall break	
Wed, Oct 13	Rocha	Control of Energy Generating Pathways; Choice of Electron Acceptor
Thurs, Oct 14	Rocha	Ammonia Assimilation: Glutamine Synthetase, Glutamate Dehydrogenase, Glutamate Synthase
Mon, Oct 18	Rocha	Paper Discussion
Tues, Oct 19	Rocha	Sulfate Assimilation and Cysteine Biosynthesis
Wed, Oct 20	Rocha	Aspects of molecular interactions in the human microbiome
Thurs, Oct 21	Rocha	Paper Discussion
Mon, Oct 25	Rocha	Redox Control and Oxidative Stress
Tues, Oct 26	Rocha	Paper Discussion
Wed, Oct 27	MAKE UP DAY	
<b>Thurs, Oct 28</b>	<b>Exam 3</b>	

### Section 3 – Growth and Global Regulatory Systems

Mon, Nov 01	Pesci	Quorum sensing: Who's Out There
Tues, Nov 02	Pesci	Paper Discussion
Wed, Nov 03	Garcia	The CRISPR/CAS system
Thurs, Nov 04	Garcia	Bacterial Immunity: Novel Antiphage Defense Systems
Mon, Nov 08	Garcia	Biofilms: Adhesion and Antimicrobial Tolerance
Tues, Nov 09	Garcia	Paper Discussion
Wed, Nov 10	Roop	Role of Small Regulatory RNAs in Microbial Physiology
Thurs, Nov 11	Roop	Generalized Cytoplasmic and Extracytoplasmic Stress Responses
Mon, Nov 15	Roop	Stringent Response/Stationary Phase
Tues, Nov 16	Roop	Bacterial Persistence and Dormancy
Wed, Nov 17	Roop	Iron Homeostasis
Thurs, Nov 18	MAKE UP DAY	
Mon, Nov 22	Exam 4	
Wed Dec 01	Grades Due	

#### Class:

The class will meet in the Biotechnology Building conference room 110 from 11 am -12 noon.

**Exams: All exams will be in Biotechnology Building Room 110 from 10 AM to Noon.**

Exam 1 covering lectures from August 23 to September 08

Exam 2 covering lectures from September 13 to September 30

Exam 3 covering lectures from October 05 to October 26

Exam 4 covering lectures from November 01 to November 17

#### Course grading policy:

The course grade will be calculated from the combined scores of the three exams, with each exam carrying equal weight. It is important to note that these exams will be based upon both materials covered in the lectures as well as any **additional material covered in your assigned readings.**

No specific text has been adopted for the course. Individual instructors will provide you with your assigned reading materials. Specific papers that will be discussed in class will be handed out at least 5 days prior to the discussion period.

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