

# Biology + Business

In the Biology+Business Program, students earn simultaneous degrees in Molecular and Cell Biology (in one of five emphases) and in Business Administration. The Biology+Business Program aims to prepare students to be leaders and innovators by bridging scientific inquiry and research with entrepreneurship and commercial application.

Admission to the program is highly competitive and open only to students who enter UC Berkeley as freshmen. Students must complete all prerequisite requirements to apply to Haas alongside the requirements to declare MCB. Students apply to Haas during their sophomore year, and there is a brief admissions process for the Biology+Business Program in the same year. Additional information will be available once the program website launches in Spring 2019.

Biology+Business students must complete prerequisite and major requirements for *both* Business Administration and Molecular and Cell Biology in addition to the university and campus requirements. Additional program requirements include a freshman gateway course (UGBA C95B/MCELLBI C95B) and a senior capstone course.

Lower division and upper division Business Administration requirements can be found on the Business Administration program page (<http://guide.berkeley.edu/archive/2018-19/undergraduate/degree-programs/business-administration/#majorrequirements>).

Students have a choice between five emphases within Molecular and Cell Biology. Those emphases and their requirements can be found below:

- Biochemistry and Molecular Biology (<http://guide.berkeley.edu/archive/2018-19/undergraduate/degree-programs/molecular-cell-biology-biochemistry/#majorrequirements>)
- Cell and Developmental Biology (<http://guide.berkeley.edu/archive/2018-19/undergraduate/degree-programs/molecular-cell-biology-developmental/#majorrequirements>)
- Genetics, Genomics, and Development (<http://guide.berkeley.edu/archive/2018-19/undergraduate/degree-programs/molecular-cell-biology-genetics/#majorrequirements>)
- Immunology and Pathogenesis (<http://guide.berkeley.edu/archive/2018-19/undergraduate/degree-programs/molecular-cell-biology-immunology/#majorrequirements>)
- Neurobiology (<http://guide.berkeley.edu/archive/2018-19/undergraduate/degree-programs/molecular-cell-biology-neurobiology/#majorrequirements>)

The sample plan below shows a four-year plan for completing both majors, taking classes only during fall and spring semesters. Many courses are offered during the summer, as well. Please note that the MCB degree can be completed in 9 different ways, so the plan below indicates "MCB UD" for an MCB upper-division course that will depend on the emphasis you choose to pursue. You should meet with the Biology+Business Program academic advisor to discuss your options in detail.

First Year				
	Fall	Units	Spring	Units
MATH 1A		4	MATH 1B	4
CHEM 1A		3	CHEM 3A	3
CHEM 1AL		1	CHEM 3AL	2
ENGLISH R1B		4	Breadth	3-4
Breadth		3-4	Breadth/AC	3-4
			UGBA C95B/	

MCELLBI C95B				
15-16				
17-19				
Second Year				
	Fall	Units	Spring	Units
UGBA 10		3	STAT 20	4
ECON 1		4	BIOLOGY 1A	3
CHEM 3B		3	BIOLOGY 1AL	2
CHEM 3BL		2	PHYSICS 8B	4
PHYSICS 8A		4	Breadth	3-4
Apply to Haas			Declare MCB	
16				
16-17				
Third Year				
	Fall	Units	Spring	Units
UGBA 100		2	UGBA 101B	3
UGBA 101A		3	UGBA 102B	3
UGBA 102A		3	UGBA 103	4
BIOLOGY 1B		4	MCB UD	4
MCB UD		4	MCB UD	4
16				
18				
Fourth Year				
	Fall	Units	Spring	Units
UGBA 104		3	UGBA 106	3
UGBA 105		3	UGBA 107	3
UGBA Elective		4	UGBA Elective	4
MCB UD		4	Breadth	3-4
MCB Elective		4	MCB UD	4
18				
17-18				

Total Units: 133-138

## Plan Notes:

- This plan assumes one Breadth course will also be an AC course.
- This plan assumes the student has completed the Entry Level Writing, American History and Institutions, and Foreign Language requirement prior to admissions.
- This plan assumes the student does not require CHEM 32 or MATH 32.
- This plan assumes exam score or prior course works will fulfill R&C A.
- BIOLOGY 1A, BIOLOGY 1B, MCELLBI 102, or MCELLBI C100A will fulfill Biological Sciences Breadth
- CHEM 1A, CHEM 3A, or CHEM 3B will fulfill Physical Sciences Breadth
- Molecular Cell Biology accepts AP for BIOLOGY 1A/BIOLOGY 1AL, BIOLOGY 1B and CHEM 1A/CHEM 1AL if not planning post-BA health-related programs.
- Haas accepts AP for Economics

The Biology+Business Program advisor is available in the Valley Life Sciences Building, suite 3060. Advising hours are Monday - Thursday 9:00 - 4:00 and Friday 9:00 - 3:00. The office closes for lunch from 12:00 - 1:00. To schedule an appointment, email [biologybusiness@berkeley.edu](mailto:biologybusiness@berkeley.edu).

Expand all course descriptions [+] Collapse all course descriptions [-]

## MCELLBI 15 Current Topics in the Biological Sciences 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Students in this course will critically examine modern methods of biological investigations and their social implications. Relevant literature will be used to present basic biological concepts that address the cultural, technological and health aspects of current topics in the biological sciences. Designing and evaluating scientific questions will be stressed. Current Topics in the Biological Sciences: Read More [+]

### Rules & Requirements

**Prerequisites:** Suitable for freshmen who plan to major in a biological science

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructor:** Matsui

Current Topics in the Biological Sciences: Read Less [-]

## MCELLBI C31 Big Ideas in Cell Biology 3 Units

Terms offered: Spring 2014, Spring 2012

An introduction for students who do not intend to major in biology but who wish to satisfy their breadth requirement in Biological Sciences. Some major concepts of modern biology, ranging from the role of DNA and the way cells communicate, to interactions of cells and creatures with their environment, will be discussed without jargon and with attention to their relevance in contemporary life and culture.

Big Ideas in Cell Biology: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Wilt

**Also listed as:** L & S C30X

Big Ideas in Cell Biology: Read Less [-]

## MCELLBI 32 Introduction to Human Physiology 3 Units

Terms offered: Summer 2020 8 Week Session, Fall 2019, Summer 2019 8 Week Session

A comprehensive introduction to human biology. The course will concentrate on basic mechanisms underlying human life processes, including cells and membranes; nerve and muscle function; cardiovascular, respiratory, renal, and gastrointestinal physiology; metabolism, endocrinology, and reproduction.

Introduction to Human Physiology: Read More [+]

### Rules & Requirements

**Prerequisites:** One year high school or college chemistry

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 8 weeks - 6 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Ball

Introduction to Human Physiology: Read Less [-]

## MCELLBI 32L Introduction to Human Physiology Laboratory 2 Units

Terms offered: Summer 2020 Second 6 Week Session, Fall 2019, Summer 2019 Second 6 Week Session

Experiments and demonstrations are designed to amplify and reinforce information presented in 32. Exercises include investigations into the structure and function of muscle, nerve, cardiovascular, renal, respiratory, endocrine, and blood systems.

Introduction to Human Physiology Laboratory: Read More [+]

### Rules & Requirements

**Prerequisites:** 32 or may be taken concurrently

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 3 hours of laboratory per week

**Summer:**

6 weeks - 2 hours of lecture and 8 hours of laboratory per week

8 weeks - 2 hours of lecture and 6 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructor:** Ball

Introduction to Human Physiology Laboratory: Read Less [-]

## MCELLBI 38 Stem Cell Biology, Ethics and Societal Impact 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Innovations in bioengineering and use of stem cells will significantly impact our ability to combat human disease, genetic disorders and physiological dysfunction. An understanding of human stem cell biology will be critical to make informed decisions on our health and public policy. Stem Cell Biology, Ethics and Societal Impact: [Read More](#) [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit with instructor consent.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Firestone, Ball

Stem Cell Biology, Ethics and Societal Impact: [Read Less](#) [-]

## MCELLBI 41 Genetics and Society 3 Units

Terms offered: Spring 2016, Spring 2013, Summer 2012 8 Week Session  
Basic communication of inheritance; gene mapping; gene expression and genetic disease in animals and humans; social inheritance of genetics.

Genetics and Society: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Primarily for students not specializing in biology

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 41 after completing Biology 1A, Biology 1B, or Letters and Science 18.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

### Summer:

6 weeks - 7.5 hours of lecture per week

8 weeks - 6 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Genetics and Society: [Read Less](#) [-]

## MCELLBI C44 Biology for Voters 3 Units

Terms offered: Spring 2017, Spring 2015, Spring 2014

This is a Discovery Course for non-Biology majors designed to introduce lower-division college students to biology through the lens of the contemporary problems facing people, the planet and the species of the planet. Modern genetic contributions will be presented on such issues as genetic engineering of plants and animals, the emergence of new pathogens, the role of genetic variation among individuals, and the extent to which DNA is and isn't destiny. Each week will close with the presentation and discussion of a defining biological challenge facing the world.

Biology for Voters: [Read More](#) [+]

### Objectives Outcomes

**Student Learning Outcomes:** The learning objectives will be, at one end, to understand what an experiment is, how is it controlled and what does one need to know about an experiment to be able to rely upon any conclusion. That is the fundamental issue in all science, and is frequently overlooked in many media accounts of science. A second objective is to learn enough of the language of biology to be able to ask the kind of informed questions that we would want all elected representatives to pay attention to. A third objective is for students to cultivate confidence that through non-specialized information sources they can become informed consumers of contemporary scientific thought, and to develop those habits of intellect to think about evidence in a scientific manner. A fourth objective is for students to enjoy the abundance of high quality books, articles and multimedia that will enable a lifetime of discovery outside the structure of a college course.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Rine, Urnov

**Also listed as:** L & S C30Y

Biology for Voters: [Read Less](#) [-]

## MCELLBI 50 The Immune System and Disease 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Course will discuss how the immune system resolves, prevents, or causes disease. A general overview of the immune system will be covered in the first five weeks followed by five weeks discussing infectious diseases including anthrax, mad cow, herpes, malaria, tuberculosis, and HIV. In addition, other lectures will focus on current immunology topics including vaccines, autoimmunity, allergy, transplantation, and cancer.

The Immune System and Disease: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** High school chemistry or Chemistry 1A and high school biology or Biology 1A. Biology 1AL is not required

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 50 after completing Molecular and Cell Biology 102, C100A/Chemistry C130, or Chemistry 135.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Beatty

The Immune System and Disease: [Read Less](#) [-]

## MCELLBI 55 Plagues and Pandemics 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Discussion of how infectious agents cause disease and impact society at large. We will examine historical and current examples of plagues and pandemics and consider the question of what we should do to ameliorate the impact of infectious disease in the future. The course is intended for non-majors and will begin by briefly providing necessary background in microbiology and immunology. The primary focus in each subsequent week, however, will be on discussing a particular infectious disease. The course will be broad in scope covering biological, historical, ethical and social implications of each disease.

Plagues and Pandemics: [Read More](#) [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 55 after completing Molecular and Cell Biology 100, C100A/Chemistry C130,, 100B, 102, 103, C103/Plant and Microbial Biology C103/Public Health C102, 150, or Chemistry 135.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Beatty, Vance

Plagues and Pandemics: [Read Less](#) [-]

## MCELLBI C61 Brain, Mind, and Behavior 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Introduction to human brain mechanisms of sensation, movement, perception, thinking, learning, memory, and emotion in terms of anatomy, physiology, and chemistry of the nervous system in health and disease. Intended for students in the humanities and social sciences and others not majoring in the biological sciences.

Brain, Mind, and Behavior: [Read More](#) [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology/Psychology C61 after taking Molecular and Cell Biology 61, N61, W61, Molecular and Cell Biology 104, C100A/Chemistry C130, Molecular and Cell Biology 110, 130A, 136, 160, C160/Neuroscience C160 or Integrative Biology 132. A deficient grade in Molecular and Cell Biology 61, N61, or W61 can be removed with Molecular and Cell Biology C61. Students cannot credit for both MCELLBI/PSYCH C61 AND Psych 110.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Presti

**Also listed as:** PSYCH C61

Brain, Mind, and Behavior: [Read Less](#) [-]

## MCELLBI W61 Brain, Mind, and Behavior 3 Units

Terms offered: Summer 2020 First 6 Week Session, Summer 2019 First 6 Week Session, Summer 2018 First 6 Week Session

This course deals with the structure and function of the human nervous system, with an emphasis on how brain physiology and chemistry are related to human behavior. This is a comprehensive introduction to the exciting field of contemporary neuroscience for students of all backgrounds and interests, including those from the humanities and social sciences, as well as physical and biological sciences. The Final Examination will be administered in a proctored setting. See Schedule of Classes for meeting information. This course is web-based.

Brain, Mind, and Behavior: [Read More](#) [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for MCELLBI/PSYCH W61 after taking MCELLBI 61, N61, C61, MCELLBI 104, C100A/Chemistry C130, MCELLBI 110, 130A, 136, 160, C160/Neuroscience C160 or Integrative Biology 132. A deficient grade in MCELLBI 61, N61, OR C61 can be removed with W61. Students cannot credit for both MCELLBI/PSYCH C61 AND Psych 110.

### Hours & Format

**Summer:** 6 weeks - 7 hours of web-based lecture and 2.5 hours of web-based discussion per week

**Online:** This is an online course.

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Presti

Brain, Mind, and Behavior: [Read Less](#) [-]

## MCELLBI C62 Drugs and the Brain 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

The history, chemical nature, botanical origins, and effects on the human brain and behavior of drugs such as stimulants, depressants, psychedelics, analgesics, antidepressants, antipsychotics, steroids, and other psychoactive substances of both natural and synthetic origin. The necessary biological, chemical, and psychological background material for understanding the content of this course will be contained within the course itself.

Drugs and the Brain: [Read More](#) [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology C62/Letters and Science C30T after completing Molecular and Cell Biology C100A/Chemistry C130, 104, 110, 130, 136, 160 Integrative Biology 132.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 8 weeks - 4.5 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructor:** Presti

**Also listed as:** L & S C30T

Drugs and the Brain: [Read Less](#) [-]

## MCELLBI 63 Introduction to Functional Neuroanatomy 3 Units

Terms offered: Summer 2020 Second 6 Week Session, Summer 2019 Second 6 Week Session, Summer 2018 Second 6 Week Session

This course emphasizes beginning anatomy of the brain and spinal cord to individuals interested in understanding the dynamics of motor and sensory functions in the human body. Students in the Departments of Education, Psychology, and Integrative Biology, as well as students interested in medicine and the life sciences, are especially encouraged to attend.

Introduction to Functional Neuroanatomy: [Read More](#) [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 63 after completing Molecular and Cell Biology 104, C100A/Chemistry C130, Molecular and Cell Biology 110, 130A, 136, 160, 161, C160/Neuroscience C160 or Integrative Biology 132.

### Hours & Format

#### Summer:

4 weeks - 12 hours of lecture per week

6 weeks - 7.5 hours of lecture per week

8 weeks - 6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Introduction to Functional Neuroanatomy: [Read Less](#) [-]

## MCELLBI 63L Introduction to Neuroanatomy Lab 2 Units

Terms offered: Summer 2020 Second 6 Week Session, Summer 2019 Second 6 Week Session

This lab course is an introduction to mammalian neuroanatomy for non-MCB majors. We will do dissections, explore physical anatomical models, and observe microscopic structures within preserved brain slices from a variety of mammalian species. The hands-on exploration of anatomy is key to understanding how the different functional regions of the nervous system are interconnected. Besides gaining a better understanding of anatomy, you will gain important scientific skills such as conducting parts of a neurological exam, fluorescent and light microscopy, reading MRI scans and conducting fine dissections. The course will culminate with a group project using the online Allen Brain Atlas to investigate a novel scientific question.

Introduction to Neuroanatomy Lab: Read More [ + ]

### Rules & Requirements

**Prerequisites:** MCELLBI 63 (may be taken concurrently) or equivalent

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 63L after taking Molecular and Cell Biology 160L or 163L

### Hours & Format

**Summer:** 6 weeks - 8 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Ball

Introduction to Neuroanatomy Lab: Read Less [ - ]

## MCELLBI C64 Exploring the Brain: Introduction to Neuroscience 3 Units

Terms offered: Summer 2020 8 Week Session, Summer 2019 8 Week Session, Summer 2018 8 Week Session

This course will introduce lower division undergraduates to the fundamentals of neuroscience. The first part of the course covers basic membrane properties, synapses, action potentials, chemical and electrical synaptic interactions, receptor potentials, and receptor proteins. The second part of the course covers networks in invertebrates, memory and learning behavior, modulation, vertebrate brain and spinal cord, retina, visual cortex architecture, hierarchy, development, and higher cortical centers.

Exploring the Brain: Introduction to Neuroscience: Read More [ + ]

### Rules & Requirements

**Prerequisites:** High school chemistry or Chemistry 1A; high school biology or Biology 1A. Biology 1AL is not required

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology/Psychology C64 after taking Molecular and Cell Biology C61/ Letters and Science C30W, Molecular and Cell Biology C104, 100A/ Chemistry C130, Molecular and Cell Biology 110, 130A, 136, 160, C160/ Neuroscience C160, or Integrative Biology 132. Students may remove a deficient grade in Molecular and Cell Biology C64/Psychology C64 after Molecular and Cell Biology 64.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Summer:** 8 weeks - 4 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Caporale

**Also listed as:** PSYCH C64

Exploring the Brain: Introduction to Neuroscience: Read Less [ - ]



## MCELLBI 84B Sophomore Seminar 1 or 2 Units

Terms offered: Fall 2013, Spring 2013, Fall 2012

Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

Sophomore Seminar: Read More [+]

### Rules & Requirements

**Prerequisites:** At discretion of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### Summer:

6 weeks - 4-6 hours of seminar per week

8 weeks - 3-4 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Final exam required.

Sophomore Seminar: Read Less [-]

## MCELLBI 88 Immunotherapy of Cancer: Success and Failures 2 Units

Terms offered: Spring 2018, Spring 2017

We will work with a variety of datasets that describe a molecular view of cells and how they divide. We will learn about the processes that cause cells to become specialized (differentiate) and to give rise to cancer (transform). We will analyze data on genetic mutations in cancer that distinguish tumor cells from normal cells. We will learn how mutations are detected by the immune system and the basis of cancer immunotherapy. Finally we will analyze data on clinical trials of cancer immunotherapy to define the correlates of success in curing the disease. The students are expected to gain an understanding of data that reveals the basics of cell physiology and cancer, how immunotherapies of cancer work and their current limitations.

Immunotherapy of Cancer: Success and Failures: Read More [+]

### Rules & Requirements

**Prerequisites:** Foundations of Data Science: COMPSCI C8, DATASCI C8, INFO C8 or STAT C8

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 1 hour of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Shastri

Immunotherapy of Cancer: Success and Failures: Read Less [-]

## MCELLBI 90A Freshman Seminars: Biochemistry and Molecular Biology 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2017

The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.

Freshman Seminars: Biochemistry and Molecular Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** Open to freshmen only

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Alternative to final exam.

Freshman Seminars: Biochemistry and Molecular Biology: Read Less [-]



## MCELLBI 90B Freshman Seminars: Cell and Developmental Biology 1 Unit

Terms offered: Spring 2018, Fall 2017, Fall 2016

The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.

Freshman Seminars: Cell and Developmental Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** Open to freshmen only

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Alternative to final exam.

Freshman Seminars: Cell and Developmental Biology: Read Less [-]

## MCELLBI 90C Freshman Seminars: Genetics and Development 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2016

The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.

Freshman Seminars: Genetics and Development: Read More [+]

### Rules & Requirements

**Prerequisites:** Open to freshmen only

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Alternative to final exam.

Freshman Seminars: Genetics and Development: Read Less [-]

## MCELLBI 90D Freshman Seminars: Immunology 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2017

The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.

Freshman Seminars: Immunology: Read More [+]

### Rules & Requirements

**Prerequisites:** Open to freshmen only

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Alternative to final exam.

Freshman Seminars: Immunology: Read Less [-]

## MCELLBI 90E Freshman Seminars: Neurobiology 1 Unit

Terms offered: Spring 2020, Fall 2019, Spring 2019

The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.

Freshman Seminars: Neurobiology: Read More [+]

### Rules & Requirements

**Prerequisites:** Open to freshmen only

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Alternative to final exam.

Freshman Seminars: Neurobiology: Read Less [-]

## **MCELLBI C95B Introduction to the Biotechnology Field and Industry: Impact, History, Therapeutics R&D, Entrepreneurship and Careers 2 Units**

Terms offered: Spring 2019

This course offers an introduction to the field of biotechnology and will cover the history of the field, its impact on medicine and society, key methodologies, important therapeutic areas, and the range of career options available in the biopharmaceutical industry. In addition to lectures on innovation and entrepreneurship, students will hear from lecturers with expertise ranging from molecular biology to clinical trial design and interpretation. Several case studies of historically impactful scientists, entrepreneurs, and biotherapeutic companies will be presented. Students will work in teams to create and develop novel biotechnology company ideas to present in class. Intended for students interested in the Biology +Business program.

Introduction to the Biotechnology Field and Industry: Impact, History, Therapeutics R&D, Entrepreneurship and Careers: Read More [+]

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Alternative to final exam.

**Instructors:** Kirn, Lasky

**Also listed as:** UGBA C95B

Introduction to the Biotechnology Field and Industry: Impact, History, Therapeutics R&D, Entrepreneurship and Careers: Read Less [-]

## **MCELLBI C96 Studying the Biological Sciences 1 Unit**

Terms offered: Fall 2019, Fall 2018, Fall 2017

Freshmen will be introduced to the "culture" of the biological sciences, along with an in-depth orientation to the academic life and the culture of the university as they relate to majoring in biology. Students will learn concepts, skills, and information that they can use in their major course, and as future science professionals. Restricted to freshmen in the biology scholars program.

Studying the Biological Sciences: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Consent of instructor

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam required.

**Instructor:** Matsui

**Also listed as:** INTEGBI C96/PLANTBI C96

Studying the Biological Sciences: Read Less [-]

## **MCELLBI 98 Directed Group Study 1 - 4 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Lectures and small group discussions focusing on topics of interest, varying from semester to semester.

Directed Group Study: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Freshmen and sophomores only

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

Directed Group Study: Read Less [-]

## MCELLBI 99 Supervised Independent Study 1 - 4 Units

Terms offered: Spring 2012, Fall 2009, Spring 2009

Supervised Independent Study: Read More [ + ]

### Rules & Requirements

**Prerequisites:** 3.3 GPA and consent of instructor

**Credit Restrictions:** One unit of credit is given for every three hours of work in the lab per week to a maximum of 4 units.

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

### Summer:

8 weeks - 1.5-7.5 hours of independent study per week

10 weeks - 1.5-6 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

Supervised Independent Study: Read Less [ - ]

## MCELLBI 100B Biochemistry: Pathways, Mechanisms, and Regulation 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course surveys cellular metabolism with a focus on the underlying bioenergetics, mechanisms, and chemistry. Lectures will cover major principles in the biochemistry of metabolism and also highlight selected topics including signaling, transport, metabolic engineering, and human diseases related to metabolic dysfunction. The course is designed for majors in the biochemistry and molecular biology, genetics and development, or immunology emphases.

Biochemistry: Pathways, Mechanisms, and Regulation: Read More [ + ]

### Rules & Requirements

**Prerequisites:** C100A/Chemistry C130

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Savage, Zoncu, Marletta

Biochemistry: Pathways, Mechanisms, and Regulation: Read Less [ - ]

## MCELLBI C100A Biophysical Chemistry: Physical Principles and the Molecules of Life 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Thermodynamic and kinetic concepts applied to understanding the chemistry and structure of biomolecules (proteins, DNA, and RNA). Molecular distributions, reaction kinetics, enzyme kinetics. Bioenergetics, energy transduction, and motor proteins. Electrochemical potential, membranes, and ion channels.

Biophysical Chemistry: Physical Principles and the Molecules of Life: Read More [ + ]

### Rules & Requirements

**Prerequisites:** Chemistry 3A or 112A, Mathematics 1A, Biology 1A and 1AL; Chemistry 3B or 112B recommended

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 8 weeks - 5.5 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Also listed as:** CHEM C130

Biophysical Chemistry: Physical Principles and the Molecules of Life: Read Less [ - ]

## MCELLBI 102 Survey of the Principles of Biochemistry and Molecular Biology 4 Units

Terms offered: Summer 2020 8 Week Session, Spring 2020, Fall 2019

A comprehensive survey of the fundamentals of biological chemistry, including the properties of intermediary metabolites, the structure and function of biological macromolecules, the logic of metabolic pathways (both degradative and biosynthetic) and the molecular basis of genetics and gene expression.

Survey of the Principles of Biochemistry and Molecular Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Biology 1A, 1AL, and Chemistry 3B (or equivalent courses). Recommended: a course in physical chemistry

**Credit Restrictions:** Students will receive no credit for 102 after taking 100B or C100A/Chemistry C130 or Chemistry 135.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Summer:

8 weeks - 6 hours of lecture and 2 hours of discussion per week  
10 weeks - 4 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Survey of the Principles of Biochemistry and Molecular Biology: Read Less [\[-\]](#)

## MCELLBI C103 Bacterial Pathogenesis 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course for upper division and graduate students will explore the molecular and cellular basis of microbial pathogenesis. The course will focus on model microbial systems which illustrate mechanisms of pathogenesis. Most of the emphasis will be on bacterial pathogens of mammals, but there will be some discussion of viral and protozoan pathogens. There will be an emphasis on experimental approaches. The course will also include some aspects of bacterial genetics and physiology, immune response to infection, and the cell biology of host-parasite interactions.

Bacterial Pathogenesis: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** MCELLBI 100, 102 or consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Portnoy

**Also listed as:** PLANTBI C103

Bacterial Pathogenesis: Read Less [\[-\]](#)

## MCELLBI 104 Genetics, Genomics, and Cell Biology 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

This course will introduce students to key concepts in genetic analysis, eukaryotic cell biology, and state-of-the-art approaches in genomic medicine. Lectures will highlight basic knowledge of cellular processes with the basis for human diseases, particularly cancer. Prerequisite courses will have introduced students to the concepts of cells, the central dogma of molecular biology, and gene regulation. Emphasis in this course will be on eukaryotic cell processes, including cellular organization, dynamics, and signaling.

Genetics, Genomics, and Cell Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 102

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 8 weeks - 6 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Genetics, Genomics, and Cell Biology: Read Less [\[-\]](#)

## MCELLBI 110 Molecular Biology: Macromolecular Synthesis and Cellular Function 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Molecular biology of prokaryotic and eukaryotic cells and their viruses. Mechanisms of DNA replication, transcription, translation. Structure of genes and chromosomes. Regulation of gene expression. Biochemical processes and principles in membrane structure and function, intracellular trafficking and subcellular compartmentation, cytoskeletal architecture, nucleocytoplasmic transport, signal transduction mechanisms, and cell cycle control.

Molecular Biology: Macromolecular Synthesis and Cellular Function:

[Read More](#) [+]

### Rules & Requirements

**Prerequisites:** C100A (may not be taken concurrently); Plan 1 Emphasis 1 (BMB) majors should take 100B prior to 110

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Molecular Biology: Macromolecular Synthesis and Cellular Function: [Read Less](#) [-]

## MCELLBI C110L General Biochemistry and Molecular Biology Laboratory 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Experimental techniques of biochemistry and molecular biology, designed to accompany the lectures in Molecular and Cell Biology 100B and 110. General Biochemistry and Molecular Biology Laboratory: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** 110 (may be taken concurrently)

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-2 hours of lecture and 6-8 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Also listed as:** CHEM C110L

General Biochemistry and Molecular Biology Laboratory: [Read Less](#) [-]

## MCELLBI C112 General Microbiology 4 Units

Terms offered: Fall 2019, Fall 2018, Summer 2018 10 Week Session

This course will explore the molecular bases for physiological and biochemical diversity among members of the two major domains, Bacteria and Archaea. The ecological significance and evolutionary origins of this diversity will be discussed. Molecular, genetic, and structure-function analyses of microbial cell cycles, adaptive responses, metabolic capability, and macromolecular syntheses will be emphasized. General Microbiology: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Biology 1A and 1B

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 10 weeks - 5 hours of lecture and 1.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Ryan

**Also listed as:** PLANTBI C112

General Microbiology: [Read Less](#) [-]

## MCELLBI C112L General Microbiology Laboratory 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Experimental techniques of microbiology designed to accompany the lecture in C112 and C148. The primary emphasis in the laboratory will be on the cultivation and physiological and genetic characterization of bacteria. Laboratory exercises will include the observation, enrichment, and isolation of bacteria from selected environments. General Microbiology Laboratory: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** C112 (may be taken concurrently)

### Hours & Format

**Fall and/or spring:** 15 weeks - 4 hours of laboratory and 1 hour of discussion per week

**Summer:** 10 weeks - 6 hours of laboratory and 1.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructors:** Komeili, Traxler

**Also listed as:** PLANTBI C112L

General Microbiology Laboratory: [Read Less](#) [-]

## MCELLBI C114 Introduction to Comparative Virology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course will provide a comparative overview of virus life cycles and strategies viruses use to infect and replicate in hosts. We will discuss virus structure and classification and the molecular basis of viral reproduction, evolution, assembly, and virus-host interactions. Common features used during virus replication and host cellular responses to infection will be covered. Topics also included are common and emerging virus diseases, their control, and factors affecting their spread.

Introduction to Comparative Virology: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Introductory chemistry (Chemistry 1A or 3A-3B or equivalent) and introductory biology (Biology 1A, 1AL, and 1B or equivalent) and general biochemistry (Molecular and Cell Biology C100A or equivalent--preferably completed but may be taken concurrently)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Glaunsinger

**Also listed as:** ESPM C138/PLANTBI C114

Introduction to Comparative Virology: [Read Less](#) [-]

## MCELLBI C116 Microbial Diversity 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

This course for upper-division and graduate students will broadly survey myriad types of microbial organisms, both procaryote and eucaryote, using a phylogenetic framework to organize the concept of "biodiversity." Emphasis will be on the evolutionary development of the many biochemical themes, how they mold our biosphere, and the organisms that affect the global biochemistry. Molecular mechanisms that occur in different lineages will be compared and contrasted to illustrate fundamental biological strategies. Graduate students additionally should enroll in C216, Microbial Diversity Workshop.

Microbial Diversity: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Upper-division standing. C112 or consent of instructor and organic chemistry (may be taken concurrently)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Coates

**Formerly known as:** 116

**Also listed as:** PLANTBI C116

Microbial Diversity: [Read Less](#) [-]

## MCELLBI 118 The Cancer Karyotype: What it is and What it Does 1 Unit

Terms offered: Spring 2020, Fall 2019, Spring 2019

The prevailing mutation theory holds that 3-6 gene mutations convert normal to cancer cells. But, this theory does not explain why cancers:

1) are autonomous and immortal – unlike any conventional mutations; 2) have individual clonal karyotypes and parallel clonal transcriptomes – much like conventional species; 3) Carcinogens generate cancer only after conspicuous latent periods of years to decades – but mutations change phenotypes immediately; 4) are at once clonal and heterogeneous within clonal margins; and 5) form metastatic and drug-resistant subspecies with variant karyotypes. To explain these unexplained characteristics, this course tests a new theory that carcinogenesis is a form of speciation.

The Cancer Karyotype: What it is and What it Does: Read More [+]

### Rules & Requirements

**Prerequisites:** 102, 104 recommended

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Duesberg

The Cancer Karyotype: What it is and What it Does: Read Less [-]

## MCELLBI 130 Cell and Systems Biology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course will provide a detailed discussion of a wide range of topics in cell biology emphasizing experimental approaches and key experiments that have provided important insights. The course is aimed at conveying an understanding of how cellular structure and function arise as a result of the properties of cellular macromolecules. An emphasis will be placed on the dynamic nature of cellular organization and will include a description of physical properties of cells (dimensions, concepts of free energy, diffusion, biophysical properties). Students will be introduced to quantitative aspects of cell biology and a view of cellular function that is based on integrating multiple pathways and modes of regulation (systems biology).

Cell and Systems Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** 102 and 104. Instructors may waive 104 prerequisite for non-Molecular and Cell Biology majors

**Credit Restrictions:** Students will receive no credit for 130A after taking 130.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Molecular and Cell Biology 130A

Cell and Systems Biology: Read Less [-]



## MCELLBI 132 Biology of Human Cancer 4 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

The course is designed for students interested in learning about the molecular and cell biology of cancer and how this knowledge is being applied to the prevention, diagnosis and therapy of cancer. Topics covered include tumor pathology and epidemiology; tumor viruses and oncogenes; intracellular signaling; tumor suppressors; multi-step carcinogenesis and tumor progression; genetic instability in cancer; tumor-host interactions; invasion and metastasis; tumor immunology; cancer therapy.

Biology of Human Cancer: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Biology 1A, 1AL, 1B and MCELLBI 102; MCELLBI 110 or 104 (may be taken concurrently)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** 135G

Biology of Human Cancer: Read Less [\[-\]](#)

## MCELLBI 133L Physiology and Cell Biology Laboratory 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Experimental analyses of central problems in cell biology and physiology using modern techniques, including DNA cloning and protein biochemistry, fluorescence microscopy of the cytoskeleton and organelles, DNA transfection and cell cycle analysis of cultured mammalian cells, RNA interference and drug treatments to analyze ion channel function in cell contractility and intracellular signaling, and somatosensation.

Physiology and Cell Biology Laboratory: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** MCELLBI 104 recommended (may be taken concurrently)

**Credit Restrictions:** Students will receive no credit for 133L after taking 130L.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 7 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Physiology and Cell Biology Laboratory: Read Less [\[-\]](#)

## MCELLBI C134 Chromosome Biology/Cytogenetics 3 Units

Terms offered: Spring 2019, Spring 2018, Spring 2016

Survey of behavior, structure, and function of chromosomes with emphasis on behavior in model organisms. Topics include mitosis, meiosis, chromosome aberrations, genome function, dosage compensation, transposons, repetitive DNA, and modern cytological imaging.

Chromosome Biology/Cytogenetics: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Dernburg, Karpen

**Also listed as:** PLANTBI C134

Chromosome Biology/Cytogenetics: Read Less [\[-\]](#)

## MCELLBI 135A Topics in Cell and Developmental Biology: Molecular Endocrinology 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Molecular mechanisms by which hormones elicit specific responses and regulate gene expression; hormone-receptor interaction; synthesis, transport and targeting of hormones, growth factors and receptors. Topics in Cell and Developmental Biology: Molecular Endocrinology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Molecular and Cell Biology 102, Biology 1A, 1AL, 1B, Chemistry 3A-3B or equivalent, or consent of instructor

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 135A after taking Physiology 142.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Firestone

Topics in Cell and Developmental Biology: Molecular Endocrinology: Read Less [\[-\]](#)

## MCELLBI 136 Physiology 4 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Principles of mammalian (primarily human) physiology emphasizing physical, chemical, molecular and cellular bases of functional biology. The following topics will be covered: cellular and membrane ion and nonelectrolyte transport; cell and endocrine regulation; autonomic nervous system regulation; skeletal, smooth and cardiac muscle; cardiovascular physiology; respiration; renal physiology; gastrointestinal physiology. Discussion section led by Graduate Student Instructor will review material covered in lecture.

Physiology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Biology 1A, 1AL, 1B, Physics 8A. Physics 8B recommended

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 136 after completing Integrative Biology 132.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Summer:

6 weeks - 8 hours of lecture and 3 hours of discussion per week

8 weeks - 6 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Physiology: Read Less [\[-\]](#)

## MCELLBI 137L Physical Biology of the Cell 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2017

Biology is being revolutionized by new experimental techniques that have made it possible to measure the inner workings of molecules, cells and multicellular organisms with unprecedented precision. The objective of this course is to explore this deluge of quantitative data through the use of biological numeracy. We will develop theoretical models that make precise predictions about biological phenomena. These predictions will be tested through the hands-on analysis of experimental data and by performing numerical simulations using Matlab. A laptop is required for this course, but no previous programming experience is required.

Physical Biology of the Cell: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

**Summer:** 8 weeks - 6 hours of lecture and 2 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Garcia

Physical Biology of the Cell: Read Less [\[-\]](#)

## MCELLBI 140 General Genetics 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

An in depth introduction to genes, their sexual and asexual transmission in individuals and populations, and gene regulation in prokaryotes and eukaryotes. Gene manipulation by recombination, molecular cloning and genome editing is presented in contexts ranging from fundamental mechanisms of chromosome biology to applications in development, aging and disease. Human genetic variation and quantitative evaluation are illuminated. Non-Mendelian and epigenetic modes of inheritance of transposable elements, prions and chromatin states are paired with discussions of groundbreaking technology rewriting the rules of how the genome is analyzed, with attention to the ethical considerations ranging from the history of eugenics to modern controversies.

General Genetics: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Biology 1A and 1AL

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

General Genetics: Read Less [\[-\]](#)

## MCELLBI 140L Genetics Laboratory 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Experimental techniques in classical and molecular genetics.

Genetics Laboratory: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Molecular and Cell Biology 104 or 140. May be taken concurrently

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 6 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Genetics Laboratory: Read Less [\[-\]](#)

## MCELLBI 141 Developmental Biology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

An introduction to principles and processes of embryonic and post-embryonic development, stressing mechanisms of cell and tissue interactions, morphogenesis and regulation of gene expression.

Developmental Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** 102 or C100A; Biology 1A, 1AL, and 1B; 110 or 130 recommended

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** 131

Developmental Biology: Read Less [-]

## MCELLBI 143 Evolution of Genomes, Cells, and Development 3 Units

Terms offered: Fall 2016, Fall 2015, Fall 2014

This course is intended for upper-division undergraduates seeking an interactive course based on modern concepts in evolution and comparative genomics. The course will emphasize the contribution of molecular evolution to a series of seminal events in life's history: origin of life; origin of cells; origin of eukaryotes; origin of multicellularity; evolution of animal development; human origins.

Evolution of Genomes, Cells, and Development: Read More [+]

### Rules & Requirements

**Prerequisites:** Biology 1A-1B and Molecular and Cell Biology C100A or 102; 104 or 140 recommended

**Credit Restrictions:** Student will receive no credit for 143 after taking Integrative Biology 163.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructors:** King, Levine, Patel

Evolution of Genomes, Cells, and Development: Read Less [-]

## MCELLBI C148 Microbial Genomics and Genetics 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Course emphasizes bacterial and archaeal genetics and comparative genomics. Genetics and genomic methods used to dissect metabolic and development processes in bacteria, archaea, and selected microbial eukaryotes. Genetic mechanisms integrated with genomic information to address integration and diversity of microbial processes. Introduction to the use of computational tools for a comparative analysis of microbial genomes and determining relationships among bacteria, archaea, and microbial eukaryotes.

Microbial Genomics and Genetics: Read More [+]

### Rules & Requirements

**Prerequisites:** Molecular and Cell Biology C100A/Chemistry C130 or Molecular and Cell Biology 102

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Summer:

8 weeks - 6 hours of lecture and 2 hours of discussion per week

10 weeks - 5 hours of lecture and 1.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Brenner, Taga

**Also listed as:** PLANTBI C148

Microbial Genomics and Genetics: Read Less [-]

## MCELLBI 149 The Human Genome 3 Units

Terms offered: Spring 2019, Spring 2018, Spring 2016

This is an upper division course for majors in MCB with an interest in an in-depth exploration of the forces that shape the human genome and the human population, as well as the ways that human genetic information can be used in medicine, ancestry and forensics. The course will combine lectures and discussion of research papers.

The Human Genome: Read More [+]

### Rules & Requirements

**Prerequisites:** MCB 140, MCB 104 or equivalent

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructors:** Eisen, Meyer, Rokhsar

The Human Genome: Read Less [-]

## MCELLBI 150 Molecular Immunology 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Fundamentals of immunology with emphasis on biochemical and molecular approaches to study of the immune system and its application in medicine and biotechnology. Topics covered include description of the immune system, antibody and T-cell receptor structure and function, genes of the immunoglobulin superfamily, cells and molecular mediators that regulate the immune response, allergy, autoimmunity, immunodeficiency, tissue and organ transplants, and tumor immunology. Molecular Immunology: Read More [a+]

### Rules & Requirements

**Prerequisites:** C100A/Chemistry C130, or 102

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Molecular Immunology: Read Less [-]

## MCELLBI 150L Immunology Laboratory 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Experimental techniques in mammalian molecular biology and cellular immunology. Molecular techniques covered include PCR and recombinant DNA procedures such as gene cloning, gene transfer, DNA sequencing, Southern blot, and restriction mapping. Immunological techniques covered include cell culture and monoclonal antibody production, flow cytometry, ELISA, immunoprecipitation, and western blot.

Immunology Laboratory: Read More [a+]

### Rules & Requirements

**Prerequisites:** Molecular and Cell Biology 150 (may be taken concurrently); consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 8 hours of laboratory and 1 hour of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Formerly known as:** Microbiology 103L

Immunology Laboratory: Read Less [-]

## MCELLBI 160 Cellular and Molecular Neurobiology 4 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Comprehensive introductory survey of cellular and molecular neuroscience, including cellular neurophysiology, ion channel function, synaptic function and plasticity, sensory transduction, and brain development. Includes introduction to molecular basis of neurological disease. Analysis from the level of molecules to cells to simple circuits. Cellular and Molecular Neurobiology: Read More [a+]

### Rules & Requirements

**Prerequisites:** Biology 1A and 1AL. Prerequisite or co-requisite: Physics 8B

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Molecular and Cell Biology C160/Neuroscience C160

Cellular and Molecular Neurobiology: Read Less [-]

## MCELLBI 160L Neurobiology Laboratory 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Experimental analyses of properties and interactions of nerve cells and systems, illustrating principal features and current methods. Techniques employed include computer simulation of neuron properties, electrophysiological recording and stimulation of nerves and cells, digitally enhanced video imaging of outgrowth, fluorescence immunocytochemistry, analysis of sensory: CNS mapping, human-evoked potential recording, sensory psychophysics. Neurobiology Laboratory: Read More [a+]

### Rules & Requirements

**Prerequisites:** Biology 1A, 1AL; Physics 8A, 8B; MCB 160 or equivalent (may be taken concurrently). Recommended: a course in physical chemistry

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 8 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Neurobiology Laboratory: Read Less [-]

## **MCELLBI 161 Circuit, Systems and Behavioral Neuroscience 4 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Comprehensive survey of circuits and systems neuroscience, including sensory and motor systems, learning and memory, neuromodulatory systems and brain state and higher functions.

Biological and computational principles of neural circuit function. Analysis from the level of small circuits to behavior.

Circuit, Systems and Behavioral Neuroscience: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Molecular and Cell Biology 160

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Circuit, Systems and Behavioral Neuroscience: Read Less [\[-\]](#)

## **MCELLBI 163L Mammalian Neuroanatomy Lab 4 Units**

Terms offered: Fall 2019, Fall 2018, Fall 2017

Development, structure (gross and microscopic), and functional relationships of the mammalian nervous system.

Mammalian Neuroanatomy Lab: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Biology 1A/1AL, Molecular and Cell Biology 160 but can be taken concurrently. Molecular and Cell Biology 161 is recommended

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 6 hours of laboratory per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Roelink, Lammel, Ball

Mammalian Neuroanatomy Lab: Read Less [\[-\]](#)

## **MCELLBI 165 Neurobiology of Disease 3 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

The molecular, cellular, and neural circuit basis of neurological disease.

Includes neurochemistry and reward systems, neural development and its disorders, addiction, neurodegenerative and neuropsychiatric disorders. Students will read and discuss primary papers from the research literature.

Neurobiology of Disease: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Molecular and Cell Biology 160

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Caporale

Neurobiology of Disease: Read Less [\[-\]](#)

## MCELLBI 166 Biophysical Neurobiology 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Electrochemistry and ion transport phenomena, equivalent circuits, excitability, action potentials, voltage clamp and the Hodgkin-Huxley model. Biophysical properties of ion channels. Statistical and electrophysiological models of synaptic transmission, Quantitative models for dendritic structure and neuronal morphogenesis. Sensory transduction, cellular networks as computational devices, information processing and transfer.

Biophysical Neurobiology: [Read More](#) [+]

### Objectives Outcomes

#### Course Objectives: 1)

Derive equations for Nernst and GHK membrane potential from fundamental physics concepts.

2)

Describe the experiments and theory underlying the Hodgkin-Huxley model.

3)

Understand biophysical properties of gating particles called ion channels.

4)

Apply and solve equivalent circuit models to describe resting and excitable cells, synaptic transmission and sensory transduction.

5)

Use Poisson, Gaussian and binomial distributions to analyze the gating of ion channels, synaptic transmission, and absolute sensitivity of vision.

6)

Model dendritic structure based on quantitative descriptors of shape and energy minimization theory.

7)

Explain experiments and models of sensory transduction, neuronal integration and lateral inhibition.

### Rules & Requirements

**Prerequisites:** Biology 1A, 1AL, Physics 8A-8B, Chemistry 1A, 3A/3AL-3B, or consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Elul, Isacoff, Miller

Biophysical Neurobiology: [Read Less](#) [-]

## MCELLBI 170L Molecular and Cell Biology Laboratory 4 Units

Terms offered: Summer 2020 First 6 Week Session, Summer 2019 First 6 Week Session

This laboratory class is designed for molecular biology, cell biology and genetics majors to give them an overview of techniques and applications done in these three fields. This is an intense lab class, and you have to be ready to work at a fast pace throughout the 6 weeks span of the course.

Molecular and Cell Biology Laboratory: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Molecular and Cell Biology 102, 104, 110 or 140

**Credit Restrictions:** Students will receive no credit for Molecular and Cell Biology 170L after taking Molecular and Cell Biology 133L, 140L or C110L/Chemistry C110L

### Hours & Format

**Summer:** 6 weeks - 5 hours of lecture and 14 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructor:** Le Blanc

Molecular and Cell Biology Laboratory: [Read Less](#) [-]

## MCELLBI 180 Undergraduate Teaching of Biology 1A Laboratory 1 or 2 Units

Terms offered: Spring 2012, Spring 2007, Fall 2006

Course consists of a weekly three-hour training session that focuses on laboratory techniques, instructional aids, and problem solving, plus an additional three hour weekly laboratory where the UGSI is required to assist a GSI in the instruction of laboratory (answering questions, providing demonstrations, etc.).

Undergraduate Teaching of Biology 1A Laboratory: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Biology 1A, 1AL with a minimum grade of B.

Appointment as a UGSI in biology by consent of instructor. Restricted to undergraduate students

**Repeat rules:** Course may be repeated for credit up to a total of 4 units.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3-6 hours of session per week

**Summer:** 8 weeks - 6-12 hours of session per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

Undergraduate Teaching of Biology 1A Laboratory: [Read Less](#) [-]



## **MCELLBI 180C Undergraduate Teaching of Molecular and Cell Biology 32 Laboratory 1 - 2 Units**

Terms offered: Fall 2012, Fall 2011, Fall 2010

Course consists of a weekly three-hour training session that focuses on laboratory techniques, instructional aids, and problem solving, plus an additional three-hour weekly laboratory where the UGSI is required to assist a GSI in the instruction of laboratory (answering questions, providing demonstrations, etc.). Students will be graded on lecture and laboratory attendance and preparation of one quiz.

Undergraduate Teaching of Molecular and Cell Biology 32 Laboratory:  
Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** 32, 136, or Integrative Biology 132 and Molecular and Cell Biology 32L or Integrative Biology 132L laboratory courses in physiology with minimum grades of B. Appointment as a UGSI in physiology by consent of instructor

**Repeat rules:** Course may be repeated for credit up to a total of 4 units.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 3-6 hours of session per week

### **Summer:**

6 weeks - 7.5-15 hours of session per week

8 weeks - 5.5-11 hours of session per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam required.

Undergraduate Teaching of Molecular and Cell Biology 32 Laboratory:  
Read Less [\[-\]](#)

## **MCELLBI N184 Intro to CRISPR: From Basic Biology to Genome Editing Technology 1 Unit**

Terms offered: Summer 2020 3 Week Session, Summer 2019 3 Week Session, Summer 2018 3 Week Session

This 3 week course will address topics in genome editing and CRISPR-Cas9 research, including basic and enhanced CRISPR methods, cellular repair mechanisms, regulation of gene expression, bioinformatics, applications to various organisms, and bioethics. Students will learn from a collection of local experts about ongoing campus research, and gain the background knowledge to understand current publications and applications of genome editing.

Intro to CRISPR: From Basic Biology to Genome Editing Technology:  
Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** BIOLOGY 1A or equivalent

### **Hours & Format**

**Summer:** 3 weeks - 4 hours of lecture per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam required.

**Instructors:** Hockemeyer, Wilson

Intro to CRISPR: From Basic Biology to Genome Editing Technology:  
Read Less [\[-\]](#)



## MCELLBI N184L Intro to CRISPR Lab: From Basic Biology to Genome Editing Technology 1 Unit

Terms offered: Summer 2020 3 Week Session, Summer 2019 3 Week Session

This 3 week lab course will focus on applications of CRISPR technology as a platform for genome editing and functional genomics. The program will consist of a hands-on laboratory experience demonstrating how CRISPR systems work in situ, as well as use genome editing both in vitro and in vivo. Students will utilize fundamental molecular biology techniques and learn additional protocols specific to genome editing. Two bioinformatics based lessons will cover the essential programs and analyses used in the genome editing field. This course requires concurrent enrollment in a lecture component (MCELLBI N184), where lecturers will address topics in genome editing and CRISPR-Cas9 research.

Intro to CRISPR Lab: From Basic Biology to Genome Editing Technology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Biology 1A/1AL or equivalent course. MCELLBI N184 (may be taken concurrently)

### Hours & Format

**Summer:** 3 weeks - 14 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**Instructors:** Hockemeyer, Wilson

Intro to CRISPR Lab: From Basic Biology to Genome Editing Technology: Read Less [\[-\]](#)

## MCELLBI 191 Senior Research Thesis 3 Units

Terms offered: Not yet offered

This course is intended for advanced undergraduates wishing to pursue independent research projects under the mentorship of an Molecular and Cell Biology faculty member. To apply for MCELLBI 191, the research project must be rigorous and provide significant training in biology.

Senior Research Thesis: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor and departmental adviser

**Credit Restrictions:** Students will receive no credit for MCELLBI 191 after completing MCELLBI H196B, or MCELLBI H196A.

### Hours & Format

**Fall and/or spring:** 15 weeks - 9 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Senior Research Thesis: Read Less [\[-\]](#)

## MCELLBI 194 Undergraduate Student Instructor for Molecular and Cell Biology Courses 1 - 2 Units

Terms offered: Fall 2018, Fall 2017

UGSIs will work under supervision of instructor and/or GSI. The UGSI will attend three hours of lecture per week where they will assist a GSI in instruction (answering questions, providing demonstrations, facilitating activities, etc.). In addition, UGSIs will meet with students from their section for zero to three hours of tutoring per week depending on the number of units. UGSIs do not evaluate students' work or assign grades. UGSIs will be graded on attendance and preparation of one lesson plan and one quiz. Required to attend any mandatory preparatory and review meetings.

Undergraduate Student Instructor for Molecular and Cell Biology Courses: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Must have completed course applying to UGSI with a grade of B or better; or consent of instructor

**Repeat rules:** Course may be repeated for credit up to a total of 4 units.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3-3 hours of lecture per week

**Summer:** 8 weeks - 6-6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Alternative to final exam.

Undergraduate Student Instructor for Molecular and Cell Biology Courses: Read Less [\[-\]](#)

## MCELLBI H196A Honors Research 1 - 4 Units

Terms offered: Fall 2015, Fall 2014, Spring 2014

Individual research and thesis preparation under the supervision of a faculty member. Acceptance to the Molecular and Cell Biology Honors Program is required. Contact the MCB Undergraduate Affairs Office, 3060 Valley Life Sciences Building, for application and details. Honor students must complete at least two semesters of research, taking a minimum of 4 units and a maximum of 8 units of H196A-196B. If desired, one semester of 199 can be used to replace H196A.

Honors Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Senior honors status and consent of instructor

**Repeat rules:** Course may be repeated for credit up to a total of 4 units.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

**Summer:** 8 weeks - 1.5-7.5 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

Honors Research: Read Less [\[-\]](#)

## MCELLBI H196B Honors Research 1 - 4 Units

Terms offered: Spring 2016, Spring 2015, Spring 2014

Individual research and completion of thesis under the supervision of a faculty member. This course satisfies the thesis requirement for the Molecular and Cell Biology Department Honors Program. Contact the MCB Undergraduate Affairs Office, 3060 Valley Life Sciences Building, for program details and an application. Honor students must complete at least two semesters of research, taking a minimum of 4 units and a maximum of 8 units of H196A-196B. One semester of H196B is required.

Honors Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Senior honors status and consent of instructor

**Repeat rules:** Course may be repeated for credit up to a total of 4 units.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

**Summer:** 8 weeks - 1.5-7.5 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Honors Research: Read Less [\[-\]](#)

## MCELLBI 197 Supervised Internship 1 Unit

Terms offered: Fall 2016

Supervised experience relevant to specific topics of biology in off-campus organizations. Written report and evaluation from internship supervisor required.

Supervised Internship: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of MCB Faculty, restricted to MCB majors and prospective majors only. Certification from supervisor that credit is required

**Repeat rules:** Course may be repeated for credit with instructor consent.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of internship per week

**Summer:** 8 weeks - 6 hours of internship per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

Supervised Internship: Read Less [\[-\]](#)

## MCELLBI 198 Directed Group Study 1 - 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Lectures and small group discussions focusing on topics of interest, varying from semester to semester.

Directed Group Study: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Upper division standing

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

Directed Group Study: Read Less [\[-\]](#)

## MCELLBI 199 Supervised Independent Study and Research 1 - 4 Units

Terms offered: Fall 2015, Spring 2015, Fall 2014

Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog.

Supervised Independent Study and Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

#### Summer:

6 weeks - 1-4 hours of independent study per week

8 weeks - 1-4 hours of independent study per week

10 weeks - 1-4 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

Supervised Independent Study and Research: Read Less [\[-\]](#)

## MCELLBI 200A Fundamentals of Molecular and Cell Biology 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

The goal of this course is to provide graduate-level instruction on molecular and cellular biosciences from a highly-integrated systems perspective, rather than using a more classic, techniques-oriented format. A collection of approaches, and a focus on critical thinking and problem solving, will be used to show how fundamental, highly-significant biological problems are "cracked open." Reading will be assigned from a mix of classic and current peer-reviewed papers selected by the instructors.

Fundamentals of Molecular and Cell Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 200A and 200B must be taken concurrently. Combined course required and restricted to all MCB first-year graduate students

### Hours & Format

**Fall and/or spring:** 15 weeks - 6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructors:** Marqusee, Rio, Drubin, Rine, Vance, Feller

Fundamentals of Molecular and Cell Biology: Read Less [\[-\]](#)

## MCELLBI 200B Fundamentals of Molecular and Cell Biology 3 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

The goal of this course is to provide graduate-level instruction on molecular and cellular biosciences from a highly-integrated systems perspective, rather than using a more classic, techniques-oriented format. A collection of approaches, and a focus on critical thinking and problem solving, will be used to show how fundamental, highly-significant biological problems are "cracked open." Reading will be assigned from a mix of classic and current peer-reviewed papers selected by the instructors.

Fundamentals of Molecular and Cell Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Must be taken concurrently. Combined course required for all MCB first-year graduate students

### Hours & Format

**Fall and/or spring:** 15 weeks - 6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructors:** Marqusee, Rio, Drubin, Rine, Vance, Feller

Fundamentals of Molecular and Cell Biology: Read Less [\[-\]](#)

## MCELLBI C205 Modern Optical Microscopy for the Modern Biologist 3 Units

Terms offered: Not yet offered

This course is intended for graduate students in the early stages of their thesis research who are contemplating using modern microscopy tools as part of their work. It endeavors to cut through the confusion of the wide array of new imaging methods, with a practical description of the pros and cons of each. In addition to providing an intuitive physical understanding how these microscopes work, the course will offer hands on experience with cutting-edge microscopes where students will be able to see firsthand how different imaging modalities perform on their own samples, and where they will be able to access computational tools for the visualization and analysis of their data.

Modern Optical Microscopy for the Modern Biologist: Read More [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for MCELLBI 205 after completing MCELLBI 205, or MCELLBI 205. A deficient grade in MCELLBI 205 may be removed by taking MCELLBI 205, or MCELLBI 205.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructors:** Betzig, Ji

**Formerly known as:** Molecular and Cell Biology 205

**Also listed as:** PHYSICS C218

Modern Optical Microscopy for the Modern Biologist: Read Less [-]

## MCELLBI 206 Physical Biochemistry 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Application of modern physical concepts and experimental methods to the analysis of the structure, function, and interaction of large molecules of biological interest.

Physical Biochemistry: Read More [+]

### Rules & Requirements

**Prerequisites:** MCB C100A or equivalent. Admission to the course requires formal consent of instructors, except for MCB and Biophysics graduate students and graduate students in the laboratories of MCB faculty

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Physical Biochemistry: Read Less [-]

## MCELLBI 210 Macromolecular Reactions and the Cell 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

General course for first-year graduate students. Covers our current understanding of, methodological approaches for analyzing, and recent advances in the function of cellular macromolecules and macromolecular complexes in DNA replication, recombination, transposition and repair, gene expression and its regulation, mRNA splicing, genome organization, noncoding RNAs, signal transduction, protein synthesis, folding and degradation, growth control, and other life processes.

Macromolecular Reactions and the Cell: Read More [+]

### Rules & Requirements

**Prerequisites:** 110 or equivalent. Admission to the course requires formal consent of instructors, except for MCB graduate students and graduate students in the laboratories of MCB faculty

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Formerly known as:** 200

Macromolecular Reactions and the Cell: Read Less [-]

## MCELLBI C212A Chemical Biology I - Structure, Synthesis and Function of Biomolecules 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course will present the structure of proteins, nucleic acids, and oligosaccharides from the perspective of organic chemistry. Modern methods for the synthesis and purification of these molecules will also be presented.

Chemical Biology I - Structure, Synthesis and Function of Biomolecules: Read More [+]

### Hours & Format

**Fall and/or spring:** 5 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Also listed as:** CHEM C271A

Chemical Biology I - Structure, Synthesis and Function of Biomolecules: Read Less [-]

## MCELLBI C212B Chemical Biology II - Enzyme Reaction Mechanisms 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course will focus on the principles of enzyme catalysis. The course will begin with an introduction of the general concepts of enzyme catalysis which will be followed by detailed examples that will examine the chemistry behind the reactions and the three-dimensional structures that carry out the transformations.

Chemical Biology II - Enzyme Reaction Mechanisms: Read More [\[+\]](#)  
**Hours & Format**

**Fall and/or spring:** 5 weeks - 3 hours of lecture per week

**Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Also listed as:** CHEM C271B

Chemical Biology II - Enzyme Reaction Mechanisms: Read Less [\[-\]](#)

## MCELLBI C212C Chemical Biology III - Contemporary Topics in Chemical Biology 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course will build on the principles discussed in Chemical Biology I and II. The focus will consist of case studies where rigorous chemical approaches have been brought to bear on biological questions. Potential subject areas will include signal transduction, photosynthesis, immunology, virology, and cancer. For each topic, the appropriate bioanalytical techniques will be emphasized.

Chemical Biology III - Contemporary Topics in Chemical Biology: Read More [\[+\]](#)

**Hours & Format**

**Fall and/or spring:** 5 weeks - 3 hours of lecture per week

**Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Also listed as:** CHEM C271C

Chemical Biology III - Contemporary Topics in Chemical Biology: Read Less [\[-\]](#)

## MCELLBI C214 Protein Chemistry, Enzymology, and Bio-organic Chemistry 2 Units

Terms offered: Spring 2015, Spring 2014, Spring 2013

The topics covered will be chosen from the following: protein structure; protein-protein interactions; enzyme kinetics and mechanism; enzyme design. Intended for graduate students in chemistry, biochemistry, and molecular and cell biology.

Protein Chemistry, Enzymology, and Bio-organic Chemistry: Read More [\[+\]](#)

**Rules & Requirements**

**Prerequisites:** Graduate standing or consent of instructor

**Hours & Format**

**Fall and/or spring:**

10 weeks - 3 hours of lecture per week

15 weeks - 2 hours of lecture per week

**Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Also listed as:** CHEM C230

Protein Chemistry, Enzymology, and Bio-organic Chemistry: Read Less [\[-\]](#)

## MCELLBI C216 Microbial Diversity Workshop 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2017

This workshop for graduate students will parallel C116, Microbial Diversity, which should be taken concurrently. Emphasis in the workshop will be on review of research literature and formulation of paper pertinent to research in microbial diversity.

Microbial Diversity Workshop: Read More [\[+\]](#)

**Rules & Requirements**

**Prerequisites:** Graduate standing; C112 or consent of instructor and organic chemistry (may be taken concurrently)

**Hours & Format**

**Fall and/or spring:** 15 weeks - 1 hour of workshop and 1 hour of discussion per week

**Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructor:** Coates

**Formerly known as:** Molecular and Cell Biology C216, Plant and Microbial Biology C216

**Also listed as:** PLANTBI C216

Microbial Diversity Workshop: Read Less [\[-\]](#)

## **MCELLBI 218A Mapping Metabolic Drivers of Disease using Chemoproteomic and Metabolomic Platforms 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

We will discuss current research in the following three areas: 1) mapping metabolic drivers of human diseases using chemoproteomic and metabolomic platforms; 2) expanding the druggable proteome through mapping and pharmacologically interrogating proteome-wide hyper-reactive and ligandable hotspots; 3) mapping proteome-wide targets of environmental and pharmaceutical chemicals towards understanding novel toxicological mechanisms.

Mapping Metabolic Drivers of Disease using Chemoproteomic and Metabolomic Platforms: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Nomura

Mapping Metabolic Drivers of Disease using Chemoproteomic and Metabolomic Platforms: Read Less [-]

## **MCELLBI 218B Research Review in Biochemistry and Molecular Biology: Trace Elements in the Plant Lineage 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2013

Biochemistry of Cu, Fe, Zn and Mn homeostasis and comparative genomics of algae, especially related to photosynthesis and chloroplast biology. Mechanisms of elemental sparing, including responses to N, S, and P deficiency.

Research Review in Biochemistry and Molecular Biology: Trace Elements in the Plant Lineage: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Merchant

Research Review in Biochemistry and Molecular Biology: Trace Elements in the Plant Lineage: Read Less [-]

## **MCELLBI 218C Research Review in Biochemistry and Molecular Biology: Synthetic Biology and Cellular Enzymology 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Synthetic biology, metabolic engineering, systems biology, enzyme mechanism, and gene discovery.

Research Review in Biochemistry and Molecular Biology: Synthetic Biology and Cellular Enzymology: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor or consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Chang

Research Review in Biochemistry and Molecular Biology: Synthetic Biology and Cellular Enzymology: Read Less [-]



## MCELLBI 218D Research Review in Biochemistry and Molecular Biology: Gene Regulation at the RNA Level 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

RNA elements involved in alternative splicing and other co-transcriptional mechanisms of regulation. Specific areas of interest include riboswitches and other structured RNA elements involved in gene regulation.

Research Review in Biochemistry and Molecular Biology: Gene Regulation at the RNA Level: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor or consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Hammond

Research Review in Biochemistry and Molecular Biology: Gene Regulation at the RNA Level: [Read Less](#) [-]

## MCELLBI 218E Research Review in Biochemistry and Molecular Biology: Viruses as Models for Eukaryote Gene Expression and Replication 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Recent developments in eukaryote viral and cellular regulation. New concepts in transcription and RNA replication, with particular emphasis on virus-cell interactions.

Research Review in Biochemistry and Molecular Biology: Viruses as Models for Eukaryote Gene Expression and Replication: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor or consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Botchan

Research Review in Biochemistry and Molecular Biology: Viruses as Models for Eukaryote Gene Expression and Replication: [Read Less](#) [-]

## MCELLBI 218F Research Review in Biochemistry and Molecular Biology: Energy-dependent Proteases and Molecular Machines 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Our goals are to decipher the fundamental principles that govern substrate engagement, de-ubiquitylation, unfolding, and translocation by the proteasome.

Research Review in Biochemistry and Molecular Biology: Energy-dependent Proteases and Molecular Machines: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor or consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Martin

Research Review in Biochemistry and Molecular Biology: Energy-dependent Proteases and Molecular Machines: [Read Less](#) [-]

## MCELLBI 218H Research Review in Biochemistry and Molecular Biology: Protein Synthesis in Bacteria and Mammals 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

The mechanism of protein synthesis in bacteria and human cells. Specific areas of interest include the structure and function of the ribosome and the regulation of protein synthesis.

Research Review in Biochemistry and Molecular Biology: Protein Synthesis in Bacteria and Mammals: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Cate

Research Review in Biochemistry and Molecular Biology: Protein Synthesis in Bacteria and Mammals: [Read Less](#) [-]



## MCELLBI 218I Research Review in Biochemistry and Molecular Biology: Chemical Biology and Inorganic Chemistry 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research and literature topics in chemical biology and inorganic chemistry relevant to human health and disease and energy science will be discussed.

Research Review in Biochemistry and Molecular Biology: Chemical Biology and Inorganic Chemistry: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Chris Chang

Research Review in Biochemistry and Molecular Biology: Chemical Biology and Inorganic Chemistry: Read Less [\[-\]](#)

## MCELLBI 218J Research Review in Biochemistry and Molecular Biology: Advanced 20th Century Perspectives on Cancer Cell Genetics 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Transduction of cellular sequences and genetic regulation of transformation by oncogenic retroviruses as models for natural carcinogenesis, including a critical review of the current research.

Research Review in Biochemistry and Molecular Biology: Advanced 20th Century Perspectives on Cancer Cell Genetics: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Duesberg

Research Review in Biochemistry and Molecular Biology: Advanced 20th Century Perspectives on Cancer Cell Genetics: Read Less [\[-\]](#)

## MCELLBI 218K Gene Editing for Fundamental Biology and Therapeutics 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

The use of genome engineering to study cellular signaling (especially ubiquitin-mediated signals) and develop potential new therapeutics and diagnostics will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.

Gene Editing for Fundamental Biology and Therapeutics: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Corn

Gene Editing for Fundamental Biology and Therapeutics: Read Less [\[-\]](#)

## MCELLBI 218M Research Review in Molecular Mechanisms of Membrane Transport 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

In our laboratory, we study mechanisms by which molecules are transported across lipid bilayer membranes. Current research efforts to understand mechanisms of protein translocation across intracellular organelles and transport of other biomolecules will be discussed.

Research Review in Molecular Mechanisms of Membrane Transport: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Park

Research Review in Molecular Mechanisms of Membrane Transport: Read Less [\[-\]](#)

## MCELLBI 218O Research Review in Biochemistry and Molecular Biology: Chemical Biology and Enzymology 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Topics at the interface of chemistry and biology with a particular focus on mechanisms of enzyme catalysis.

Research Review in Biochemistry and Molecular Biology: Chemical Biology and Enzymology: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Marletta

Research Review in Biochemistry and Molecular Biology: Chemical Biology and Enzymology: [Read Less](#) [-]

## MCELLBI 218P Research Review in Biochemistry and Molecular Biology: Chemical Biology and Neuroscience 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Molecular approaches to designing and deploying tools for voltage imaging and brain mapping.

Research Review in Biochemistry and Molecular Biology: Chemical Biology and Neuroscience: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructors:** Miller, Evan

Research Review in Biochemistry and Molecular Biology: Chemical Biology and Neuroscience: [Read Less](#) [-]

## MCELLBI 218Q Research Review in Biochemistry and Molecular Biology: Single Molecular Imaging of Macromolecular Enzymes 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Yildiz laboratory combines molecular biology and single molecule biophysical techniques to understand mechanisms that underlie cellular organization and motility. Specific focuses of the lab are to dissect 1) the mechanism of cytoplasmic dynein motility, 2) the regulation of intraflagellar transport, and 3) the protection and maintenance of mammalian telomeres.

Research Review in Biochemistry and Molecular Biology: Single Molecular Imaging of Macromolecular Enzymes: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Yildiz

Research Review in Biochemistry and Molecular Biology: Single Molecular Imaging of Macromolecular Enzymes: [Read Less](#) [-]

## MCELLBI 218R Research Review in Biochemistry and Molecular Biology: The Protein Folding Problem 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Protein structure, stability, design, and the pathway of protein folding. Research Review in Biochemistry and Molecular Biology: The Protein Folding Problem: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Marqusee

Research Review in Biochemistry and Molecular Biology: The Protein Folding Problem: [Read Less](#) [-]

## **MCELLBI 218S Research Review in Biochemistry and Molecular Biology: Cryo-Electron Microscopy of Macromolecules 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Structure-function studies of the cytoskeleton and large molecular machines by cryo-electron microscopy and image reconstruction.

Research Review in Biochemistry and Molecular Biology: Cryo-Electron Microscopy of Macromolecules: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Nogales

Research Review in Biochemistry and Molecular Biology: Cryo-Electron Microscopy of Macromolecules: [Read Less](#) [-]

## **MCELLBI 218T Electron Cryo-tomography of Macromolecular Complexes 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Different methods for determining how the in situ structure and arrangement of macromolecular complexes influence cell morphology and

function will be discussed via literature review and implemented through lab-based research and discussions.

Electron Cryo-tomography of Macromolecular Complexes: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Davies

Electron Cryo-tomography of Macromolecular Complexes: [Read Less](#) [-]

## **MCELLBI 218V Research Review in Biochemistry and Molecular Biology: Biophysics of Macromolecule Transport Across Membranes 2 Units**

Terms offered: Fall 2014, Spring 2014, Fall 2013

Review of current literature and discussion of original research.

Research Review in Biochemistry and Molecular Biology: Biophysics of Macromolecule Transport Across Membranes: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Krantz

Research Review in Biochemistry and Molecular Biology: Biophysics of Macromolecule Transport Across Membranes: [Read Less](#) [-]

## **MCELLBI 218X Research Review in Biochemistry and Molecular Biology: Chemical Reactions of Metabolism 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Define how metabolic reactions function in the context of the cellular system in order to elucidate the so-called design principles of metabolic function.

Research Review in Biochemistry and Molecular Biology: Chemical Reactions of Metabolism: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Savage

Research Review in Biochemistry and Molecular Biology: Chemical Reactions of Metabolism: [Read Less](#) [-]

## MCELLBI 218Z Molecular and Cellular Mechanisms of Nutrient Sensing 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

In our laboratory, we study the molecular mechanisms of nutrient sensing and growth control. Specific areas of interest include the mTOR pathway, energy sensing, lysosomal biology and translational control.

Molecular and Cellular Mechanisms of Nutrient Sensing: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Zoncu

Molecular and Cellular Mechanisms of Nutrient Sensing: Read Less [\[-\]](#)

## MCELLBI 219A Structural Membrane Biology 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

The mechanisms by which protein complexes use their structures to bud, bend, and sever membranes will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.

Structural Membrane Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Hurley

Structural Membrane Biology: Read Less [\[-\]](#)

## MCELLBI 219B Regulation of Translation 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Understanding the molecular basis and physiological role of translational regulation in gene expression with an emphasis on global profiling and functional genomics.

Regulation of Translation: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Ingolia

Regulation of Translation: Read Less [\[-\]](#)

## MCELLBI 219F Research Review in Biochemistry and Molecular Biology: Eukaryotic Gene Expression 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Protein-DNA interactions and the control of gene expression in eukaryotes.

Research Review in Biochemistry and Molecular Biology: Eukaryotic

Gene Expression: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Tjian

Research Review in Biochemistry and Molecular Biology: Eukaryotic Gene Expression: Read Less [\[-\]](#)

## MCELLBI 219G Virus-Host Interactions 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Understanding the creative strategies viruses use to manipulate gene expression in host cells, with a focus on RNA-based regulation of gene expression.

Virus-Host Interactions: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Glaunsinger

Virus-Host Interactions: [Read Less](#) [-]

## MCELLBI 219H Research Review in Biochemistry and Molecular Biology: Molecular and Cell Biology of *Listeria monocytogenes* Pathogenesis 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Discussion of recent research on the genetics, cell biology, and immunology of the model facultative intracellular bacterial pathogen, Research Review in Biochemistry and Molecular Biology: Molecular and Cell Biology of *Listeria monocytogenes* Pathogenesis: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Portnoy

Research Review in Biochemistry and Molecular Biology: Molecular and Cell Biology of *Listeria monocytogenes* Pathogenesis: [Read Less](#) [-]

## MCELLBI 219J Research Review in Biochemistry and Molecular Biology: Structure and Function of RNA 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

RNA structure, folding, and function. Specific topics include ribozyme mechanisms, RNA-mediated translation initiation, and protein targeting and secretion.

Research Review in Biochemistry and Molecular Biology: Structure and Function of RNA: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Doudna

Research Review in Biochemistry and Molecular Biology: Structure and Function of RNA: [Read Less](#) [-]

## MCELLBI 219S Research Review in Biochemistry and Molecular Biology: Structural Biology of Signaling and Replication 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Mechanisms and structure in DNA replication and eukaryotic cell signaling.

Research Review in Biochemistry and Molecular Biology: Structural Biology of Signaling and Replication: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Kuriyan

Research Review in Biochemistry and Molecular Biology: Structural Biology of Signaling and Replication: [Read Less](#) [-]



## MCELLBI 219T Research Review in Biochemistry and Molecular Biology: Signal Transduction Mechanisms 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Discussion of recent research on various aspects of signal transduction mechanisms in eukaryotic cells, including G protein-coupled receptors, protein kinase cascades, synthesis and mobilization of lipid mediators, calcium sensing and response pathways, activation and inhibition of gene expression, and the biochemical basis of signal desensitization and physiological adaptation, with strong emphasis on genetic and molecular analysis of these systems, especially in the yeast

Research Review in Biochemistry and Molecular Biology: Signal Transduction Mechanisms: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Thorner

Research Review in Biochemistry and Molecular Biology: Signal Transduction Mechanisms: Read Less [-]

## MCELLBI 219U Research Review in Biochemistry and Molecular Biology: Single Molecule Biophysics 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Methods of single molecule manipulation and visualization that are used to characterize the structure and mechanochemical properties of translocating DNA binding protein such as RNA polymerase and to investigate the mechanical denaturation of single protein molecules will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.

Research Review in Biochemistry and Molecular Biology: Single Molecule Biophysics: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Bustamante

Research Review in Biochemistry and Molecular Biology: Single Molecule Biophysics: Read Less [-]

## MCELLBI 219X Research Review in Biochemistry and Molecular Biology: Cell Surface Glycoconjugate Interactions 2 Units

Terms offered: Spring 2018, Fall 2017, Spring 2017

Investigations of cell surface glycoproteins as mediators of cell-cell interactions. Development of new methods for engineering cell surface structures.

Research Review in Biochemistry and Molecular Biology: Cell Surface Glycoconjugate Interactions: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Bertozzi

Research Review in Biochemistry and Molecular Biology: Cell Surface Glycoconjugate Interactions: Read Less [-]

## **MCELLBI 219Y Research Review in Biochemistry and Molecular Biology: Regulation of HIV Gene Expression 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Regulation of HIV gene expression by viral proteins and cellular cofactors will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.

Research Review in Biochemistry and Molecular Biology: Regulation of HIV Gene Expression: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Zhou

Research Review in Biochemistry and Molecular Biology: Regulation of HIV Gene Expression: Read Less [-]

## **MCELLBI 219Z Research Review in Biochemistry and Molecular Biology: Telomere Synthesis and Dynamics 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Emphasizes a study of the replication of eukaryotic telomeric DNA. Special focus on techniques in protein biochemistry and molecular biology.

Research Review in Biochemistry and Molecular Biology: Telomere Synthesis and Dynamics: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Collins

Research Review in Biochemistry and Molecular Biology: Telomere Synthesis and Dynamics: Read Less [-]

## **MCELLBI 230 Advanced Cell Biology 4 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Advanced treatment of topics in cell biology.

Advanced Cell Biology: Read More [+]

### **Rules & Requirements**

**Prerequisites:** 130. Formal consent of instructors required, except for MCB graduate students and graduate students in the laboratories of MCB faculty

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Advanced Cell Biology: Read Less [-]

## **MCELLBI 231 Advanced Developmental and Stem Cell Biology 4 Units**

Terms offered: Spring 2018, Spring 2017, Spring 2015

Principles of animal development will be set forth from the classical and recent experimental analysis of induction, localization, patterning mutants, axis formation, regional gene expression, and cell interactions.

Early development of selected vertebrates and invertebrates will be examined, and emerging topics in microRNA and stem cell biology will be highlighted. A weekly discussion section with readings from the research literature is required.

Advanced Developmental and Stem Cell Biology: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Previous course in development (131 or equivalent) or consent of instructor

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1-2 hours of discussion per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Advanced Developmental and Stem Cell Biology: Read Less [-]



## MCELLBI 236 Advanced Mammalian Physiology 5 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Principles of mammalian (primarily human) physiology emphasizing physical, chemical, molecular, and cellular bases of functional biology. The following topics will be covered: cellular and membrane ion and nonelectrolyte transport; cell and endocrine regulation; autonomic nervous system regulation; skeletal, smooth, and cardiac muscle; cardiovascular physiology; respiration; renal physiology; gastrointestinal physiology. Discussion section will study advanced physiological topics, including: presentations by the faculty; problem sets; discussion of the primary literature and of reviews; two presentations by each student on topics in current physiological research.

Advanced Mammalian Physiology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Advanced Mammalian Physiology: Read Less [\[-\]](#)

## MCELLBI 237L Advanced Physical Biology of the Cell 4 Units

Terms offered: Spring 2020, Spring 2019

Biology is being revolutionized by new experimental techniques that have made it possible to measure the inner workings of molecules, cells and multicellular organisms with unprecedented precision. The objective of this course is to explore this deluge of quantitative data through the use of biological numeracy. We will develop theoretical models that make precise predictions about biological phenomena. These predictions will be tested through the hands-on analysis of experimental data and by performing numerical simulations using Matlab. A laptop is required for this course, but no previous programming experience is required.

Advanced Physical Biology of the Cell: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

**Summer:** 8 weeks - 6 hours of lecture and 2 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructor:** Garcia

Advanced Physical Biology of the Cell: Read Less [\[-\]](#)

## MCELLBI C237 Stem Cells and Directed Organogenesis 3 Units

Terms offered: Spring 2015, Spring 2014, Spring 2013

This course will provide an overview of basic and applied embryonic stem cell (ESC) biology. Topics will include early embryonic development, ESC laboratory methods, biomaterials for directed differentiation and other stem cell manipulations, and clinical uses of stem cells.

Stem Cells and Directed Organogenesis: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 6 hours of laboratory and 1 hour of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructor:** Conboy

**Also listed as:** BIO ENG C218

Stem Cells and Directed Organogenesis: Read Less [\[-\]](#)

## MCELLBI 239B Research Review in Cell and Developmental Biology: Regulation of the Cell Cycle 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Cell and Developmental Biology: Regulation of the Cell Cycle: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Rape

Research Review in Cell and Developmental Biology: Regulation of the Cell Cycle: Read Less [\[-\]](#)

## **MCELLBI 239BB Research Review in Cell and Developmental Biology: Mechanics and Dynamics of Cell Movements 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research in our laboratory is focused on the mechanics and dynamics of cell movements on the purified protein, single cell, and tissue levels. For these studies, we are developing new instruments to quantify cell and molecular mechanics bases on optical microscopy, force microscopy, and microfabrication.

Research Review in Cell and Developmental Biology: Mechanics and Dynamics of Cell Movements: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Fletcher

Research Review in Cell and Developmental Biology: Mechanics and Dynamics of Cell Movements: [Read Less](#) [-]

## **MCELLBI 239C The Regulation of Meiotic Gene Expression and Cellular Morphogenesis 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

The mechanisms that link cellular differentiation programs and dynamic gene regulation in complex eukaryotic systems remain mysterious. Such programs drive diverse and central biological processes including organismal development, immune function, disease progression, and meiosis. This course is focused on the molecular basis for the cellular remodeling accompanying meiosis, the highly conserved process by which gametes are produced.

The Regulation of Meiotic Gene Expression and Cellular Morphogenesis: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Brar

The Regulation of Meiotic Gene Expression and Cellular Morphogenesis: [Read Less](#) [-]

## **MCELLBI 239EE Research Review in Cell and Developmental Biology: Cell Morphogenesis 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research. Research Review in Cell and Developmental Biology: Cell Morphogenesis: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Heald

Research Review in Cell and Developmental Biology: Cell Morphogenesis: [Read Less](#) [-]

## **MCELLBI 239F Research Review in Cell and Developmental Biology: Nucleocytoplasmic Transport 2 Units**

Terms offered: Spring 2015, Fall 2014, Spring 2014

Review of current literature and discussion of original research.

Research Review in Cell and Developmental Biology: Nucleocytoplasmic Transport: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Weis

Research Review in Cell and Developmental Biology: Nucleocytoplasmic Transport: [Read Less](#) [-]

## **MCELLBI 239FF Research Review in Cell and Developmental Biology: Signal Transduction and Tumor Suppressor Genes 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Cell and Developmental Biology: Signal Transduction and Tumor Suppressor Genes: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Luo

Research Review in Cell and Developmental Biology: Signal Transduction and Tumor Suppressor Genes: [Read Less](#) [-]

## **MCELLBI 239G Research Review in Cell and Developmental Biology: Mitochondrial biology 2 Units**

Terms offered: Spring 2020, Spring 2008, Fall 2007

Review of relevant literature and discussion of current research:

Mitochondrial dynamics, transport and inheritance; replication, segregation and distribution of mitochondrial genomes; underlying mechanisms of human mitochondrial disease.

Research Review in Cell and Developmental Biology: Mitochondrial biology: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Lewis

Research Review in Cell and Developmental Biology: Mitochondrial biology: [Read Less](#) [-]

## **MCELLBI 239HH Research Review in Cell and Developmental Biology: Mechanisms of Control of Growth and Cell Proliferation 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Identifying pathways that restrict growth and cell proliferation in vivo.

Research Review in Cell and Developmental Biology: Mechanisms of Control of Growth and Cell Proliferation: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Hariharan

Research Review in Cell and Developmental Biology: Mechanisms of Control of Growth and Cell Proliferation: [Read Less](#) [-]

## **MCELLBI 239I Research Review in Cell and Developmental Biology: Cytoskeleton and Cell Motility 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Cell and Developmental Biology: Cytoskeleton and Cell Motility: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Welch

Research Review in Cell and Developmental Biology: Cytoskeleton and Cell Motility: [Read Less](#) [\[-\]](#)

## **MCELLBI 239J Research Review in Cell and Developmental Biology: Steroid Hormone and Growth Factor Action 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Cell and Developmental Biology: Steroid Hormone and Growth Factor Action: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Firestone

Research Review in Cell and Developmental Biology: Steroid Hormone and Growth Factor Action: [Read Less](#) [\[-\]](#)

## **MCELLBI 239K Research Review in Cell and Developmental Biology: Secretion and Cell Membrane Assembly 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Cell surface growth with emphasis on the unicellular eukaryote *S. cerevisiae*.

Research Review in Cell and Developmental Biology: Secretion and Cell Membrane Assembly: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Schekman

Research Review in Cell and Developmental Biology: Secretion and Cell Membrane Assembly: [Read Less](#) [\[-\]](#)

## **MCELLBI 239KK Research Review in Cell and Developmental Biology: Assembly and Subcellular Organization of Bacterial Organelles 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Cell and Developmental Biology: Assembly and Subcellular Organization of Bacterial Organelles: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Komeili

Research Review in Cell and Developmental Biology: Assembly and Subcellular Organization of Bacterial Organelles: [Read Less](#) [\[-\]](#)

## **MCELLBI 239M Research Review in Cell and Developmental Biology: MicroRNA Functions in Cancer Development, Mouse Tumor Models 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Malignant transformation represents the endpoint of successive genetic lesions that confer uncontrolled proliferation and survival, unlimited replicative potential, and invasive growth.

Research Review in Cell and Developmental Biology: MicroRNA Functions in Cancer Development, Mouse Tumor Models: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** He

Research Review in Cell and Developmental Biology: MicroRNA Functions in Cancer Development, Mouse Tumor Models: [Read Less](#) [\[-\]](#)

## **MCELLBI 239O Research Review in Cell and Developmental Biology: Cancer Biology 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Inheritance, chromatin structure, gene expression, and the organization of chromosomes in the nucleus.

Research Review in Cell and Developmental Biology: Cancer Biology: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Karpen

Research Review in Cell and Developmental Biology: Cancer Biology: [Read Less](#) [\[-\]](#)

## **MCELLBI 239P Research Review in Cell and Developmental Biology: Energy Metabolism and Aging 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of current research. Current research focuses on regulation of energy metabolism and the effect of changes in energy metabolism induced by diet and exercise on age-associated functional decline of organisms.

Research Review in Cell and Developmental Biology: Energy Metabolism and Aging: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Titov

Research Review in Cell and Developmental Biology: Energy Metabolism and Aging: [Read Less](#) [\[-\]](#)

## **MCELLBI 239Q Research Review in Cell and Developmental Biology: Regulation of Cell Polarity in Drosophila 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Mechanisms underlying the establishment and maintenance of cellular organization in epithelia and other cell types.

Research Review in Cell and Developmental Biology: Regulation of Cell Polarity in Drosophila: [Read More](#) [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Bilder

Research Review in Cell and Developmental Biology: Regulation of Cell Polarity in Drosophila: [Read Less](#) [\[-\]](#)

## **MCELLBI 239R Research Review in Cell and Developmental Biology: Telomere Biology of Human Stem Cells 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

The goal of our laboratory is to understand the key functions of telomeres and telomerase in tissue homeostasis, tumorigenesis, and aging. To this end, we generate genetically engineered human pluripotent and adult stem cell models to measure telomere and telomerase function during cellular differentiation and tumor formation.

Research Review in Cell and Developmental Biology: Telomere Biology of Human Stem Cells: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Hockemeyer

Research Review in Cell and Developmental Biology: Telomere Biology of Human Stem Cells: [Read Less](#) [-]

## **MCELLBI 239T Research Review in Cell and Developmental Biology: The Cell Biology of Fertilization 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research in our lab is focused on the cell biology of mammalian fertilization. Our lab uses biophysical, biochemical, and molecular genetics methods to study sperm ion channels and transporters that regulate sperm motility, chemotaxis, and the acrosome reaction. A better understanding of these processes will eventually lead to the development of effective tools to control and preserve male fertility, improve the reproductive health of human population worldwide, and advance family planning.

Research Review in Cell and Developmental Biology: The Cell Biology of Fertilization: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Lishko

Research Review in Cell and Developmental Biology: The Cell Biology of Fertilization: [Read Less](#) [-]

## **MCELLBI 239U Research Review in Cell and Developmental Biology: The Cytoskeleton and Morphogenesis 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of current research. Research Review in Cell and Developmental Biology: The Cytoskeleton and Morphogenesis: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2-0 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Drubin

Research Review in Cell and Developmental Biology: The Cytoskeleton and Morphogenesis: [Read Less](#) [-]



## **MCELLBI 239V Research Review in Cell and Developmental Biology: Molecular Mechanisms of Transduction in Touch and Pain Receptors 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of current research.

Current research focuses on elucidating the molecular mechanisms of somatosensory mechanotransduction.

Research Review in Cell and Developmental Biology: Molecular Mechanisms of Transduction in Touch and Pain Receptors: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Bautista

Research Review in Cell and Developmental Biology: Molecular Mechanisms of Transduction in Touch and Pain Receptors: Read Less [-]

## **MCELLBI 239W Research Review in Cell and Developmental Biology: Leech Embryology and Development 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Cell and Developmental Biology: Leech Embryology and Development: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Weisblat

Research Review in Cell and Developmental Biology: Leech Embryology and Development: Read Less [-]

## **MCELLBI 239Z Research Review in Cell and Developmental Biology: Chromosome Remodeling and Reorganization During Meiosis 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

How chromosomes are reorganized during meiosis to accomplish the pairing, recombination, and segregation leading up to successful gamete production.

Research Review in Cell and Developmental Biology: Chromosome Remodeling and Reorganization During Meiosis: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Dernburg

Research Review in Cell and Developmental Biology: Chromosome Remodeling and Reorganization During Meiosis: Read Less [-]

## **MCELLBI 240 Advanced Genetic Analysis 4 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Principles and practice of classical and modern genetic analysis as applied to eukaryotic organisms, including yeast, nematodes, mice and humans; isolation and analysis of mutations; gene mapping; suppressor analysis; chromosome structure; control of gene expression; and developmental genetics.

Advanced Genetic Analysis: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Graduate standing with 110 or 140 or consent of instructor

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructors:** Koshland, Meyer

Advanced Genetic Analysis: Read Less [-]

## MCELLBI C243 Seq: Methods and Applications 3 Units

Terms offered: Spring 2015, Spring 2014

A graduate seminar class in which a group of students will closely examine recent computational methods in high-throughput sequencing followed by directly examining interesting biological applications thereof.

Seq: Methods and Applications: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Graduate standing in Math, MCB, and Computational Biology; or consent of the instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructor:** Pachter

**Also listed as:** MATH C243

Seq: Methods and Applications: [Read Less](#) [-]

## MCELLBI C244 Discrete Mathematics for the Life Sciences 4 Units

Terms offered: Spring 2013

Introduction to algebraic statistics and probability, optimization, phylogenetic combinatorics, graphs and networks, polyhedral and metric geometry.

Discrete Mathematics for the Life Sciences: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Also listed as:** MATH C239

Discrete Mathematics for the Life Sciences: [Read Less](#) [-]

## MCELLBI 249BB Research Review in Genetics and Development: Aging and Protein Homeostasis 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Central to the aging process is the unfolding of the proteome. Specific areas under study include cellular responses to protein misfolding and coordination of these responses across an organism.

Research Review in Genetics and Development: Aging and Protein Homeostasis: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Dillin

Research Review in Genetics and Development: Aging and Protein Homeostasis: [Read Less](#) [-]

## MCELLBI 249C Research Review in Genetics and Development: Nucleic Acid-Protein Interactions and Control of Gene Expression 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Biochemical and molecular genetic aspects of eukaryotic messenger RNA splicing and transposition, with an emphasis on as an experimental system.

Research Review in Genetics and Development: Nucleic Acid-Protein Interactions and Control of Gene Expression: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Rio

Research Review in Genetics and Development: Nucleic Acid-Protein Interactions and Control of Gene Expression: [Read Less](#) [-]

## MCELLBI 249D Research Review in Genetics and Development: Mechanisms of Genetic Regulation in Yeast 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Genes, gene products and molecular mechanisms that control cell types in the unicellular eukaryote .

Research Review in Genetics and Development: Mechanisms of Genetic Regulation in Yeast: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Rine

Research Review in Genetics and Development: Mechanisms of Genetic Regulation in Yeast: Read Less [-]

## MCELLBI 249E Research Review in Genetics and Development: Molecular Genetics of Drosophila 2 Units

Terms offered: Spring 2005, Fall 2004, Spring 2004

Gene regulation and developmental neurobiology.

Research Review in Genetics and Development: Molecular Genetics of Drosophila: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** G. Rubin

Research Review in Genetics and Development: Molecular Genetics of Drosophila: Read Less [-]

## MCELLBI 249F Research Review in Genetics and Development: Neuronal Development 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Molecular and genetic approaches to the problem of how neurons develop, with emphasis on and .

Research Review in Genetics and Development: Neuronal Development: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Garriga

Research Review in Genetics and Development: Neuronal Development: Read Less [-]

## MCELLBI 249G Research Review in Genetics and Development: Developmental and Evolutionary Genetics 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

We study how genes control pattern formation during development and pattern modification during evolution.

Research Review in Genetics and Development: Developmental and Evolutionary Genetics: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Miller

Research Review in Genetics and Development: Developmental and Evolutionary Genetics: Read Less [-]

## **MCELLBI 249H Investigating Cellular Aging and Chromosome Segregation during Gametogenesis 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

This course focuses on understanding 1) how cellular aging is affected during gametogenesis, the developmental program that produces gametes for sexual reproduction and 2) how chromosome segregation is regulated during meiosis, the specialized cell division that generates gametes.

Investigating Cellular Aging and Chromosome Segregation during Gametogenesis: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Unal

Investigating Cellular Aging and Chromosome Segregation during Gametogenesis: [Read Less](#) [-]

## **MCELLBI 249HH Research Review in Genetics and Development: Human Population Genetics and Evolutionary Biology 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research focuses on use of statistical and computational approaches to study questions in human genetics and evolutionary biology. This includes, but is not limited to, studying (1) how different evolutionary processes such as mutation rate evolve across primates, (2) when key events (such as introgression and adaptations) occurred in human history, and (3) how we can leverage large-scale datasets to identify genetic variants related to human adaptation and disease.

Research Review in Genetics and Development: Human Population Genetics and Evolutionary Biology: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Moorjani

Research Review in Genetics and Development: Human Population Genetics and Evolutionary Biology: [Read Less](#) [-]

## MCELLBI 249J Research Review in Genetics and Development: Developmental and Molecular Genetics of *C. elegans* 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Molecular and genetical analysis of sex determination and dosage compensation in the nematode .

Research Review in Genetics and Development: Developmental and Molecular Genetics of *C. elegans*: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Meyer

Research Review in Genetics and Development: Developmental and Molecular Genetics of *C. elegans*: Read Less [-]

## MCELLBI 249K Research Review in Genetics and Development: Animal Origins 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Evaluation of current research on choanoflagellates, sponges, and animal origins. Intended to complement ongoing research for graduate students.

Research Review in Genetics and Development: Animal Origins: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** King

Research Review in Genetics and Development: Animal Origins: Read Less [-]

## MCELLBI 249L Imaging Single Molecules: Fashion or Game Changer? 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research review in genetics, genomics and development. We will explore how the detection of single particles

(DNA, RNA, proteins) can help with understanding cellular organization and

enzymatic processes dynamics and kinetics. Most of the experiments described will be drawn from the gene expression and nuclear organization literature.

Imaging Single Molecules: Fashion or Game Changer?: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Darzacq

Imaging Single Molecules: Fashion or Game Changer?: Read Less [-]

## MCELLBI 249M Research Review in Genetics and Development: *Saccharomyces Cerevisiae* Microtubule Cytoskeleton 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of current research.

Research Review in Genetics and Development: *Saccharomyces*

*Cerevisiae* Microtubule Cytoskeleton: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Barnes

Research Review in Genetics and Development: *Saccharomyces Cerevisiae* Microtubule Cytoskeleton: Read Less [-]

## MCELLBI 249MM Physical Biology of Living Organisms 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research review in genetics, genomics and development. In development a single cell goes through a series of repeated divisions and these cells read the program encoded in their DNA in order to become familiar cell types such as those found in muscle, liver, or our brains. The goal of our lab is to uncover the rules behind these decisions with the objective of predicting and manipulating developmental programs from just looking at DNA sequence. In order to reach this predictive understanding we combine physics, synthetic biology, and new technologies to query and control developmental decisions in real time at the single cell level in the fruit fly embryo.

Physical Biology of Living Organisms: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Garcia

Physical Biology of Living Organisms: Read Less [-]

## MCELLBI 249N Research Review in Genetics and Development: Gene Regulation 2 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Current literature and research in gene regulation will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.

Research Review in Genetics and Development: Gene Regulation: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Levine

Research Review in Genetics and Development: Gene Regulation: Read Less [-]

## MCELLBI 249O Research Review in Genetics and Development: Genome Sequences 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Biochemistry, cancer biology and virology, cell biology, computational biology, genetics, microbiology, molecular and cell physiology.

Research Review in Genetics and Development: Genome Sequences: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Eisen

Research Review in Genetics and Development: Genome Sequences: Read Less [-]



## MCELLBI 249Q Research Review in Genetics and Development: Computational Genomics 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Recent developments in computational methods for genomics and their application for understanding the structure and function of genes encoded in completely sequenced genomes.

Research Review in Genetics and Development: Computational Genomics: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Brenner

Research Review in Genetics and Development: Computational Genomics: [Read Less](#) [-]

## MCELLBI 249S Research Review in Genetics and Development: Evolution of Development Mechanisms 2 Units

Terms offered: Fall 2019, Spring 2019, Fall 2018

Evolution of development mechanisms with a focus on the genes that regulate segmentation and regionalization of the body plan.

Research Review in Genetics and Development: Evolution of Development Mechanisms: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Patel

Research Review in Genetics and Development: Evolution of Development Mechanisms: [Read Less](#) [-]

## MCELLBI 249T Research Review in Genetics, Genomics and Development: Evolution of Genomes 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Comparative analysis of eukaryotic genomes to inform the origins and diversification of animals and plants.

Research Review in Genetics, Genomics and Development: Evolution of Genomes: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Rokhsar

Research Review in Genetics, Genomics and Development: Evolution of Genomes: [Read Less](#) [-]

## MCELLBI 249V Research Review in Genetics and Development: Induction in Vertebrate Development and ES Cell Differentiation 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

The Roelink laboratory is interested in the mechanisms of embryonic induction, the phenomenon in which a group of cells changes the developmental fate of neighboring cells via the release of inducers.

Research Review in Genetics and Development: Induction in Vertebrate Development and ES Cell Differentiation: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Roelink

Research Review in Genetics and Development: Induction in Vertebrate Development and ES Cell Differentiation: [Read Less](#) [-]

## **MCELLBI 249W Research Review in Genetics and Development: Archaeal Genetics and Methane Metabolism 2 Units**

Terms offered: Spring 2020, Spring 2013, Spring 2012

Discussions pertaining to the development of new genetic tools for archaeal model organisms with a particular emphasis on methane metabolizing archaea in order to characterize their physiology, evolution and metabolism.

Research Review in Genetics and Development: Archaeal Genetics and Methane Metabolism: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Nayak

Research Review in Genetics and Development: Archaeal Genetics and Methane Metabolism: [Read Less](#) [-]

## **MCELLBI 249X Research Review in Genetics and Development: Comparative Genomics and Computational Biology 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

The fundamental problem of comparative genomics: the determination of the origins and evolutionary history of the nucleotides in all extant genomes. My work incorporates various aspects of genomics, including the reconstruction of ancestral genomes (paleogenomics), the modeling of genome dynamics (phylogenomics and systems biology), and the assignment of function of genome elements (functional genomics and epigenomics).

Research Review in Genetics and Development: Comparative Genomics and Computational Biology: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Pachter

Research Review in Genetics and Development: Comparative Genomics and Computational Biology: [Read Less](#) [-]

## MCELLBI 249Y Research Review in Genetics and Development: Mechanisms of Gene Control in Vertebrate Animals 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

This course will focus on mechanisms of gene control in vertebrate animals, particularly in the area of vertebrate development. Amphibian egg formation, mesoderm induction, neural induction, and patterning of the nervous system at the molecular level. Control of transcription, post-transcriptional control of gene expression (including control of RNA turnover and RNA localization).

Research Review in Genetics and Development: Mechanisms of Gene Control in Vertebrate Animals: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Harland

**Formerly known as:** 218Y

Research Review in Genetics and Development: Mechanisms of Gene Control in Vertebrate Animals: Read Less [-]

## MCELLBI 249Z Research Review in Genetics and Development: Chromosome Structure and Integrity, Genome Evolution 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Use of genetic, cell biological, and biochemical approaches in budding yeast to understand genome integrity, genome evolution, and most recently desiccation tolerance.

Research Review in Genetics and Development: Chromosome Structure and Integrity, Genome Evolution: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Koshland

Research Review in Genetics and Development: Chromosome Structure and Integrity, Genome Evolution: Read Less [-]

## MCELLBI 250 Advanced Immunology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Molecular and cellular analysis of the immune response emphasizing concepts and methodology. Innate immunity, pathogen sensors, antibodies and T cell receptors, lymphocyte activation, tolerance and selection. Antigen processing, T cell subtypes, and T regulatory cells. NK cells, tumor surveillance, and AIDS.

Advanced Immunology: Read More [+]

### Rules & Requirements

**Prerequisites:** 100, 110, 140, 150 or consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Advanced Immunology: Read Less [-]

## MCELLBI 251 The Regulation of Immune System Development and Function 1 Unit

Terms offered: Spring 2020, Fall 2019, Spring 2019

This is an advanced seminar course which will consider current research questions and experimental approaches in molecular and cellular immunology. Each registrant will present a 30-minute research talk describing the problems they are studying, the approach they are taking, their preliminary data, and technical problems. Other course participants (including basic immunology faculty) will provide criticism and suggestions.

The Regulation of Immune System Development and Function: Read More [+]

### Rules & Requirements

**Prerequisites:** 250 or consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Winoto

The Regulation of Immune System Development and Function: Read Less [-]

## MCELLBI 259A Mycobacterium Tuberculosis (Mtb) 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

The TB field has entered a new era with the convergence of genetic tools, genome sequencing, bioinformatics, advanced imaging techniques, animal models of infection, and high-throughput assays that allow us to study this multi-faceted interaction between Mtb and its host. We use all of these tools to probe the molecular and cellular events that enable M. tuberculosis to evade host defense mechanisms.

Mycobacterium Tuberculosis (Mtb): Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Cox

Mycobacterium Tuberculosis (Mtb): Read Less [-]

## MCELLBI 259B Research Review in Immunology and Pathogenesis: Specificity of T Lymphocytes 2 Units

Terms offered: Spring 2019, Fall 2018, Spring 2018

Mechanisms of immune surveillance by T lymphocytes.

Research Review in Immunology and Pathogenesis: Specificity of T Lymphocytes: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Shastri

Research Review in Immunology and Pathogenesis: Specificity of T Lymphocytes: Read Less [-]

## MCELLBI 259C Research Review in Immunology and Pathogenesis: Nuclear Receptor-Mediated Regulation of Neuroinflammation 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

In this course we will discuss our research as well as recent literatures focusing on understanding of 1) How is homeostasis in the CNS regulated by innate immune functions of microglia? 2) How can we intervene in dysfunction of microglia-mediated immune functions using NRs signaling and transcription?

Research Review in Immunology and Pathogenesis: Nuclear Receptor-Mediated Regulation of Neuroinflammation: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Saijo

Research Review in Immunology and Pathogenesis: Nuclear Receptor-Mediated Regulation of Neuroinflammation: Read Less [-]

## **MCELLBI 259D Research Review in Immunology and Pathogenesis: Mycobacterial Biology and Host-Pathogen Interactions 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

We will discuss macrophage biology and innate immunity in the context of infection with \*Mycobacterium tuberculosis\* through discussion of current research from the Stanley Lab and both cutting edge and classic literature in relevant fields.

Research Review in Immunology and Pathogenesis: Mycobacterial Biology and Host-Pathogen Interactions: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Stanley

Research Review in Immunology and Pathogenesis: Mycobacterial Biology and Host-Pathogen Interactions: Read Less [-]

## **MCELLBI 259E Research Review in Immunology and Pathogenesis: Regulation of T Cell Receptor Genes Expression 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Molecular biology of T cell receptor genes and their transcription controlling proteins/genes. Programmed cell death during thymocyte differentiation.

Research Review in Immunology and Pathogenesis: Regulation of T Cell Receptor Genes Expression: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Winoto

Research Review in Immunology and Pathogenesis: Regulation of T Cell Receptor Genes Expression: Read Less [-]

## **MCELLBI 259F Research Review in Immunology and Pathogenesis: Natural Killer (NK) Cell and T Cell Receptors 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Molecular and biological basis for recognition by natural killer cells and T cells.

Research Review in Immunology and Pathogenesis: Natural Killer (NK) Cell and T Cell Receptors: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Raulet

Research Review in Immunology and Pathogenesis: Natural Killer (NK) Cell and T Cell Receptors: Read Less [-]

## **MCELLBI 259G Research Review in Immunology and Pathogenesis: T Cell Development 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Molecular and cellular aspects of thymocyte differentiation.

Research Review in Immunology and Pathogenesis: T Cell Development: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Robey

Research Review in Immunology and Pathogenesis: T Cell Development: Read Less [-]

## **MCELLBI 259H Research Review in Immunology and Pathogenesis: B Cell Differentiation 2 Units**

Terms offered: Fall 2019, Fall 2018, Fall 2015

Molecular basis of terminal B cell differentiation. Role of transcription factors in B cell activation.

Research Review in Immunology and Pathogenesis: B Cell Differentiation: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Sha

Research Review in Immunology and Pathogenesis: B Cell Differentiation: [Read Less](#) [-]

## **MCELLBI 259J Research Review in Immunology and Pathogenesis: Immune Evasion by Viruses 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

The mechanisms used by viruses to counteract the pressure of the immune system.

Research Review in Immunology and Pathogenesis: Immune Evasion by Viruses: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Coscoy

Research Review in Immunology and Pathogenesis: Immune Evasion by Viruses: [Read Less](#) [-]

## **MCELLBI 259K Research Review in Immunology and Pathogenesis: Epigenetic Control for Regulatory T Cell Function in Cancer and Autoimmunity 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Intersecting the fields of cancer biology, immunology, and epigenetics to strengthen our own immune defense mechanisms against our own cancers by reprogramming T cell function specifically within the tumor microenvironment.

Research Review in Immunology and Pathogenesis: Epigenetic Control for Regulatory T Cell Function in Cancer and Autoimmunity: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Dupage

Research Review in Immunology and Pathogenesis: Epigenetic Control for Regulatory T Cell Function in Cancer and Autoimmunity: [Read Less](#) [-]

## **MCELLBI 259M Research Review in Immunology and Pathogenesis: Innate Immunity and Innate Control of Adaptive Immunity 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Innate immunity and innate control of adaptive immunity.

Research Review in Immunology and Pathogenesis: Innate Immunity and Innate Control of Adaptive Immunity: [Read More](#) [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Barton

Research Review in Immunology and Pathogenesis: Innate Immunity and Innate Control of Adaptive Immunity: [Read Less](#) [-]



## **MCELLBI 259N Research Review in Immunology and Pathogenesis: Immunology, Microbiology, and Genetics of Bacterial Pathogenesis 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Role of innate host responses in defense against intracellular bacterial pathogens.

Research Review in Immunology and Pathogenesis: Immunology, Microbiology, and Genetics of Bacterial Pathogenesis: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Vance

Research Review in Immunology and Pathogenesis: Immunology, Microbiology, and Genetics of Bacterial Pathogenesis: Read Less [\[-\]](#)

## **MCELLBI C261 Cellular and Developmental Neurobiology 3 Units**

Terms offered: Fall 2019, Fall 2018, Fall 2017

This course covers the molecular/cellular basis of neuron excitability (membrane potentials, action potential generation and propagation, ion channels), synaptic transmission and plasticity, sensory receptor function, and developmental neurobiology.

Cellular and Developmental Neurobiology: Read More [\[+\]](#)

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Also listed as:** NEUROSC C261

Cellular and Developmental Neurobiology: Read Less [\[-\]](#)

## **MCELLBI C262 Circuit and Systems Neurobiology 3 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Advanced coverage of current research problems in systems-level neuroscience, and experimental and computational techniques used for these studies.

Circuit and Systems Neurobiology: Read More [\[+\]](#)

### **Rules & Requirements**

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Also listed as:** NEUROSC C262

Circuit and Systems Neurobiology: Read Less [\[-\]](#)

## **MCELLBI 269A Research Review in Neurobiology: Special Topics in Neuroplasticity 2 Units**

Terms offered: Spring 2020, Spring 2019, Spring 2018

Molecular and cellular studies of nerve growth, axon guidance, synaptic formation, and synaptic plasticity using electrophysiological and optical imaging techniques.

Research Review in Neurobiology: Special Topics in Neuroplasticity: Read More [\[+\]](#)

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Poo

Research Review in Neurobiology: Special Topics in Neuroplasticity: Read Less [\[-\]](#)

## **MCELLBI 269B Research Review in Neurobiology: Synaptic Transmission and Neuromodulation 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Neurobiology: Synaptic Transmission and Neuromodulation: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Zucker

Research Review in Neurobiology: Synaptic Transmission and Neuromodulation: Read Less [-]

## **MCELLBI 269C Research Review in Neurobiology: Molecular Mechanisms of Neuronal Plasticity 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research in our laboratory focuses on understanding how neurons use biochemical pathways to integrate diverse types of information in order to adjust synaptic strength and modulate neuronal excitability, and how these interactions go awry in disease. To investigate this we are taking a multi-disciplinary approach incorporating molecular, biochemical, imaging, and electrophysiological analyses in mouse and human cells. Research Review in Neurobiology: Molecular Mechanisms of Neuronal Plasticity: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Bateup

Research Review in Neurobiology: Molecular Mechanisms of Neuronal Plasticity: Read Less [-]

## **MCELLBI 269D Research Review in Neurobiology: Signaling Within and Between Neurons 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of recent research in molecular mechanisms involved in intracellular and extracellular signaling in the nervous system.

Research Review in Neurobiology: Signaling Within and Between Neurons: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Kramer

Research Review in Neurobiology: Signaling Within and Between Neurons: Read Less [-]

## **MCELLBI 269E Molecular and Biophysical Neuroscience 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of research in molecular and biophysical aspects of sensory transduction and electrical signaling in the nervous system.

Molecular and Biophysical Neuroscience: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of the instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Brohawn

Molecular and Biophysical Neuroscience: Read Less [-]

## MCELLBI 269F Optogenetic Dissection of Neural Circuits 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Research review in neurobiology. Review of recent optogenetic strategies for dissecting neural connectivity, function, and dysfunction in the rodent and primate brain.

Optogenetic Dissection of Neural Circuits: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Lammel

Optogenetic Dissection of Neural Circuits: Read Less [-]

## MCELLBI 269G Research Review in Development and Application of Advanced Methods for In Vivo Imaging 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Development and application of optical imaging methods for clearer, deeper, and faster imaging of biological tissue in vivo, including a critical review of the current research.

Research Review in Development and Application of Advanced Methods for In Vivo Imaging: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Ji

Research Review in Development and Application of Advanced Methods for In Vivo Imaging: Read Less [-]

## MCELLBI 269I Research Review in Neurobiology: Stem Cells and Gene Therapy in the Nervous System 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

The basic investigation of neural differentiation of stem cells, as well as the

use of stem cells and gene delivery for neuroregeneration.

Research Review in Neurobiology: Stem Cells and Gene Therapy in the Nervous System: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Schaffer

Research Review in Neurobiology: Stem Cells and Gene Therapy in the Nervous System: Read Less [-]

## MCELLBI 269J Research Review in Neurobiology: Taste Recognition in Drosophila 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

The molecular and cellular basis of taste perception in the model organism .

Research Review in Neurobiology: Taste Recognition in Drosophila: Read More [+]

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Scott

Research Review in Neurobiology: Taste Recognition in Drosophila: Read Less [-]

## **MCELLBI 269M Research Review in Neurobiology: Insect Neurophysiology 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

*Drosophila* mutants that have behavioral abnormalities to unravel new and basic features of nervous system structure and function.

Research Review in Neurobiology: Insect Neurophysiology: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Tanouye

Research Review in Neurobiology: Insect Neurophysiology: Read Less [-]

## **MCELLBI 269O Research Review in Neurobiology: Neural Circuits for Sensory Processing and Behavior 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Microcircuitry of the cerebral cortex that underlies sensory processing and adaptive behavior.

Research Review in Neurobiology: Neural Circuits for Sensory Processing and Behavior: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Adesnik

Research Review in Neurobiology: Neural Circuits for Sensory Processing and Behavior: Read Less [-]

## **MCELLBI 269Q Research Review in Neurobiology: Sensory Processing and Plasticity in Cerebral Cortex 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

How the cerebral cortex processes sensory input and stores information about the sensory world. We focus on the rat's primary somatosensory (S1) cortex.

Research Review in Neurobiology: Sensory Processing and Plasticity in Cerebral Cortex: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Feldman

Research Review in Neurobiology: Sensory Processing and Plasticity in Cerebral Cortex: Read Less [-]

## **MCELLBI 269R Research Review in Neurobiology: Potassium Channels and Synaptic Plasticity 2 Units**

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Neurobiology: Potassium Channels and Synaptic Plasticity: Read More [+]

### **Rules & Requirements**

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### **Hours & Format**

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### **Additional Details**

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Isacoff

Research Review in Neurobiology: Potassium Channels and Synaptic Plasticity: Read Less [-]

## MCELLBI 269S Research Review in Neurobiology: Molecular Mechanisms of Olfaction 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Neurobiology: Molecular Mechanisms of Olfaction:

Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Ngai

Research Review in Neurobiology: Molecular Mechanisms of Olfaction:  
Read Less [\[-\]](#)

## MCELLBI 269T Research Review in Neurobiology: Processing of Visual Information in the Mammalian Brain 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Review of current literature and discussion of original research.

Research Review in Neurobiology: Processing of Visual Information in the Mammalian Brain: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Dan

Research Review in Neurobiology: Processing of Visual Information in the Mammalian Brain: Read Less [\[-\]](#)

## MCELLBI 269U Research Review in Neurobiology: Diseases/Retina 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Evaluation of current research in molecular mechanisms underlying diseases of the retina.

Research Review in Neurobiology: Diseases/Retina: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Flannery

Research Review in Neurobiology: Diseases/Retina: Read Less [\[-\]](#)

## MCELLBI 269W Research Review in Neurobiology: Neural Activity Affecting the Assembly of Neural Circuits 2 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

How neural activity affects the assembly of neural circuits.

Research Review in Neurobiology: Neural Activity Affecting the Assembly of Neural Circuits: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Enrollment is restricted to students conducting research in the laboratory of the instructor, or requires consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Feller

Research Review in Neurobiology: Neural Activity Affecting the Assembly of Neural Circuits: Read Less [\[-\]](#)

## MCELLBI C277 Communicating Quantitative Information 2 Units

Terms offered: Spring 2020, Spring 2019

This course will cover several aspects of communicating quantitative information, with a primary focus on visualizations for publications, presentations, and posters. Other topics include sharing of data and analyses, such as new publication models and interactive notebooks, as well as lifecycle data management and publication. Primary discussion will be on conceptual issues, and students will be expected to use various systems and resources as self-directed homestudy.

Communicating Quantitative Information: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of seminar and 1.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructor:** Brenner

**Also listed as:** PLANTBI C277

Communicating Quantitative Information: Read Less [\[-\]](#)

## MCELLBI 280A Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2012, Spring 2011, Spring 2010

The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbiology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.

Selected Topics in Molecular and Cell Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing or consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 5 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [\[-\]](#)

## MCELLBI 280B Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2012, Spring 2011, Spring 2010

The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbiology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.

Selected Topics in Molecular and Cell Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing and consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 5 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [\[-\]](#)

## MCELLBI 280C Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2016, Spring 2012, Spring 2011

The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbiology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.

Selected Topics in Molecular and Cell Biology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing and consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 5 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [\[-\]](#)



## MCELLBI 280D Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2017

The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology.

Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbiology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.

Selected Topics in Molecular and Cell Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing or consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 5 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

## MCELLBI 280E Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2012, Spring 2011, Spring 2010

The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology.

Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbiology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.

Selected Topics in Molecular and Cell Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing and consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 5 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

## MCELLBI 280F Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Fall 2016, Spring 2012, Spring 2011

The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology.

Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbiology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.

Selected Topics in Molecular and Cell Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing and consent of instructor

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 5 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

## MCELLBI 288 Data Science for Molecular and Cell Biology 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Data science is rapidly becoming a critical skill for molecular and cell biologists. This course provides a survey of data science concepts and methods, including practical statistical inference and modeling, data visualization and exploration, elementary machine learning, and simulation. The course is practically oriented. Diverse real-world datasets, along with simulated data, will be used to develop skills and intuition.

Data Science for Molecular and Cell Biology: Read More [+]

### Rules & Requirements

**Prerequisites:** Graduate standing in the biological sciences or permission from instructors. Prior introductory exposure to programming is desired, e.g., through Data Science 8, MCB Python “boot camp,” or self taught from introductory programming tutorials. Please see <http://python.berkeley.edu/resources/> for suggested resources. No prior statistics is assumed. The course is not suitable for students with advanced training in statistics or machine learning

**Repeat rules:** Course may be repeated for credit with instructor consent.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of lecture and 1.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructors:** Rokhsar, Eisen

Data Science for Molecular and Cell Biology: Read Less [-]

## MCELLBI 290 Graduate Seminar 1 Unit

Terms offered: Spring 2020, Fall 2019, Spring 2019

Graduate student presentations on selected research topics in molecular and cell biology. Several sections covering different topics offered each semester. Concurrent enrollment in more than one section is permitted.

List of topics to be announced before each semester.

Graduate Seminar: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing in the department or consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Graduate Seminar: Read Less [\[-\]](#)

## MCELLBI 291A Introduction to Research 2 - 12 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Closely supervised experimental work under the direction of an individual faculty member; an introduction to experimental methods and research approaches in particular areas of molecular and cell biology.

Introduction to Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-12 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade. This is part one of a year long series course. A provisional grade of IP (in progress) will be applied and later replaced with the final grade after completing part two of the series.

Introduction to Research: Read Less [\[-\]](#)

## MCELLBI 291B Introduction to Research 2 - 12 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Closely supervised experimental work under the direction of an individual faculty member; an introduction to experimental methods and research approaches in particular areas of molecular and cell biology.

Introduction to Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-12 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade. This is part two of a year long series course. Upon completion, the final grade will be applied to both parts of the series.

Introduction to Research: Read Less [\[-\]](#)

## MCELLBI 292 Research 3 - 12 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Individual research under the supervision of a faculty member.

Research: Read More [\[+\]](#)

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 0 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Research: Read Less [\[-\]](#)

## MCELLBI N292 Research 3 - 6 Units

Terms offered: Summer 2009 10 Week Session, Summer 2008 10 Week Session, Summer 2006 10 Week Session

Individual research under the supervision of a staff member.

Research: Read More [+]

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Summer:** 8 weeks - 3-6 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

Research: Read Less [-]

## MCELLBI 293A Research Seminar 2 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017

Seminar on presentation and evaluation of results in area of student's individual research interests.

Research Seminar: Read More [+]

### Rules & Requirements

**Prerequisites:** Concurrent enrollment in 291A or 292

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Research Seminar: Read Less [-]

## MCELLBI 293C Responsible Conduct in Research 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018

The purpose of this course is to ensure that research trainees receive ample training in Responsible Conduct in Research. Students also gain an understanding of federal, state, and UC Berkeley policies and resources available to further support their research endeavors.

Responsible Conduct in Research: Read More [+]

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of lecture and 1.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Sharma

Responsible Conduct in Research: Read Less [-]

## MCELLBI 293D Rigor and Reproducibility in Research 1 Unit

Terms offered: Prior to 2007

The purpose of this course is to ensure that research trainees receive training in Rigor and Reproducibility in Research. Students also gain an understanding of federal, state, and UC Berkeley policies and resources available to further support their research endeavors.

Rigor and Reproducibility in Research: Read More [+]

### Rules & Requirements

**Prerequisites:** Consent of Instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Sharma

Rigor and Reproducibility in Research: Read Less [-]

## MCELLBI 293R Responsible Conduct of Research Refresher 1 Unit

Terms offered: Prior to 2007

This refresher course will cover topics in responsible conduct in research drawing from case studies of the Association of American Medical Colleges and the NIH. Students will review case studies in preparation for class discussion. Required of all 4th year MCB graduate students funded on NIH training grants.

Responsible Conduct of Research Refresher: Read More [+]

### Objectives Outcomes

**Course Objectives:** Collaborative research including collaborations with industry

Data acquisition and laboratory tools; management, sharing and ownership

Mentor/mentee responsibilities and relationships

Policies regarding human subjects, live vertebrate animal subjects in research, and safe laboratory practices

Research misconduct and policies for handling misconduct

Responsible authorship and publication

The scientist as a responsible member of society, contemporary ethical issues in biomedical research, and

the environmental and societal impacts of scientific research

### Rules & Requirements

**Prerequisites:** Consent of instructor. Must be a 4th year MCB graduate student

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructor:** Sharma

Responsible Conduct of Research Refresher: Read Less [-]

## MCELLBI 293S Foundations of Biostatistical Practice 1 Unit

Terms offered: Fall 2018, Spring 2018

This course is designed to introduce students to the foundations of statistics in the context of biological research. Rather than focusing on a catalog of specific methods (by essence non-exhaustive and rapidly outdated), the course emphasizes general concepts and approaches necessary for sound statistical practice. Topics covered include: exploratory data analysis (EDA); data visualization; inferential reasoning; models and assumptions; statistical computing; computationally reproducible research. The statistical methods and software are motivated by and illustrated on data structures that arise in current biological and medical research.

Foundations of Biostatistical Practice: Read More [+]

### Rules & Requirements

**Prerequisites:** Consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Foundations of Biostatistical Practice: Read Less [-]

## MCELLBI 294 Current Topics in Biomedical Sciences 1 Unit

Terms offered: Spring 2020, Fall 2019, Spring 2019

This course will discuss cutting-edge topics in biochemistry, structural biology, cell biology, developmental biology and genetics. Lectures will be given by internationally recognized biomedical scientists that visit the Molecular and Cell Biology Department and present work currently performed in their laboratories. The class will include topics ranging from structural analysis of important signaling molecules, live cell imaging and high resolution microscopy of critical cellular structures, to genetic dissection of essential signaling networks in cells and developmental pathways in multicellular organisms. It is the goal of this class to expose students to both the breadth and highest standards of current biomedical research.

Current Topics in Biomedical Sciences: Read More [+]

### Rules & Requirements

**Prerequisites:** Molecular and Cell Biology graduate students only

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Current Topics in Biomedical Sciences: Read Less [-]

## MCELLBI 295 Careers for Life Sciences Ph.D's 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course is designed to assist graduate students in the biological sciences with planning their postgraduate careers. Weekly guest speakers will present their experiences on a variety of topics. Postdoctoral students are invited. Topics may include academia; job searches; setting up a laboratory; patent law/technology transfer; public policy/regulatory affairs; bioinformatics; science writing/technical support; forensic science; postdoctoral positions in industry; teaching, and other topics of interest.

Careers for Life Sciences Ph.D's: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Open to graduate and postdoctoral students

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Careers for Life Sciences Ph.D's: [Read Less](#) [-]

## MCELLBI 296 Molecular and Cell Biology Colloquium 0.0 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018

Meetings for the presentation of original work by faculty, visiting lecturers, and graduate students.

Molecular and Cell Biology Colloquium: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of colloquium per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Molecular and Cell Biology Colloquium: [Read Less](#) [-]

## MCELLBI C296 Doctoral Seminar in Computational Biology 2 Units

Terms offered: Fall 2019, Fall 2018

This one-year interactive seminar builds skills, knowledge and community in computational biology for first year PhD and second year Designated Emphasis students. Topics covered include concepts in human genetics/genomics, laboratory methodologies and data sources for computational biology, workshops/instruction on use of various bioinformatics tools, critical review of current research studies and computational methods, preparation for success in the PhD program and career development. Faculty members of the graduate program in computational biology and scientists from other institutions will participate. Topics will vary each semester.

Doctoral Seminar in Computational Biology: [Read More](#) [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate

**Grading:** Letter grade.

**Instructors:** Moorjani, Rokhsar

**Also listed as:** CMPBIO C293

Doctoral Seminar in Computational Biology: [Read Less](#) [-]

## MCELLBI 380 Teaching of Molecular and Cell Biology 1 - 2 Units

Terms offered: Spring 2016, Fall 2015, Spring 2015

Teaching laboratories and/or discussions for Molecular and Cell Biology courses: analysis of specific format and problems. Two units of credit for those with 50% teaching appointment; one unit of credit for those with 25% teaching appointment.

Teaching of Molecular and Cell Biology: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Appointment as graduate student instructor or consent of instructor

**Repeat rules:** Course may be repeated for credit up to a total of 4 units.

### Hours & Format

**Fall and/or spring:** 15 weeks - 0-1 hours of seminar per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Professional course for teachers or prospective teachers

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Teaching of Molecular and Cell Biology: [Read Less](#) [-]

## MCELLBI 481B Instrumentation in Molecular and Cell Biology: Transmission Electron Microscopy 1 - 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Individualized laboratory instruction.

Instrumentation in Molecular and Cell Biology: Transmission Electron Microscopy: [Read More](#) [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing; consent of instructor and sponsorship of a faculty member

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

### Summer:

6 weeks - 2.5-10 hours of independent study per week

8 weeks - 2-7.5 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Other professional

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructors:** Dernburg, Karpen

Instrumentation in Molecular and Cell Biology: Transmission Electron Microscopy: [Read Less](#) [\[-\]](#)

## MCELLBI 481C Instrumentation in Molecular and Cell Biology: Scanning Electron Microscopy 1 - 4 Units

Terms offered: Spring 2020, Fall 2019, Spring 2019

Individualized laboratory instruction.

Instrumentation in Molecular and Cell Biology: Scanning Electron Microscopy: [Read More](#) [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Graduate standing; consent of instructor and sponsorship of a faculty member

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of independent study per week

### Summer:

6 weeks - 2.5-10 hours of independent study per week

8 weeks - 2-7.5 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Other professional

**Grading:** Offered for satisfactory/unsatisfactory grade only.

**Instructors:** Dernburg, Karpen

Instrumentation in Molecular and Cell Biology: Scanning Electron Microscopy: [Read Less](#) [\[-\]](#)

## MCELLBI 601 Individual Study for Master's Students 1 - 8 Units

Terms offered: Fall 2006, Spring 2005, Spring 2001

Individual study for the comprehensive or language examinations in consultation with the field adviser.

Individual Study for Master's Students: [Read More](#) [\[+\]](#)

### Rules & Requirements

**Credit Restrictions:** Course does not satisfy unit or residence requirements for master's degree.

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-8 hours of independent study per week

**Summer:** 8 weeks - 1.5-15 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate examination preparation

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Individual Study for Master's Students: [Read Less](#) [\[-\]](#)

## MCELLBI 602 Individual Study for Doctoral Students 1 - 8 Units

Terms offered: Spring 2006, Spring 2005, Fall 2004

Individual study in consultation with the major field adviser. Intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D.

Individual Study for Doctoral Students: [Read More](#) [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Restricted to Ph.D. candidates

**Credit Restrictions:** Course does not satisfy unit or residence requirements for doctoral degree.

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 0 hours of independent study per week

### Summer:

6 weeks - 1-8 hours of independent study per week

8 weeks - 1-8 hours of independent study per week

### Additional Details

**Subject/Course Level:** Molecular and Cell Biology/Graduate examination preparation

**Grading:** Offered for satisfactory/unsatisfactory grade only.

Individual Study for Doctoral Students: [Read Less](#) [\[-\]](#)

[Expand all course descriptions](#) [\[+\]](#)[Collapse all course descriptions](#) [\[-\]](#)



## UGBA C5 Introduction to Entrepreneurship 2 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Spring 2017, Fall 2015

This course offers students a taste of what it's really like to start a business. In addition to learning key foundational entrepreneurial concepts such as idea generation & evaluation, customer & product development, creating a business model, fundraising, marketing, and scaling & exiting a business, students will also hear from successful entrepreneurs who share their perspectives and best practices. Students will apply core concepts by working in teams to evaluate and select a venture idea that they will then develop throughout the semester.

Introduction to Entrepreneurship: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Also listed as:** L & S C5

Introduction to Entrepreneurship: Read Less [\[-\]](#)

## UGBA 10 Principles of Business 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

This team-taught course provides an introduction to the study of the modern business enterprise. It consists of four modules, the order of which may vary from semester to semester, and an online business simulation that runs during most of the semester. The four modules cover: Finance & Accounting, Marketing, Operations & Sustainability, and Leadership. In addition to lectures and the simulation, students attend discussion section each week.

Principles of Business: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Formerly known as:** Business Administration 10

Principles of Business: Read Less [\[-\]](#)

## UGBA 24 Freshman Seminars 1 Unit

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2013, Spring 2007

The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

Freshman Seminars: Read More [\[+\]](#)

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of seminar per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Final exam required.

Freshman Seminars: Read Less [\[-\]](#)

## UGBA 39AC Philanthropy: A Cross-Cultural Perspective 3 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

This class will compare and contrast the variety of gift giving and sharing traditions that make up American philanthropy. Both the cultural antecedents and their expression in this country will be explored from five ethnic and racial groups: Native American, European American, African American, Hispanic American, and Asian American. The goal is to gain a greater understanding of the many dimensions of philanthropy as it is practiced in the United States today.

Philanthropy: A Cross-Cultural Perspective: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 39AC

Philanthropy: A Cross-Cultural Perspective: Read Less [\[-\]](#)

## UGBA 39D Freshman/Sophomore Seminar 2 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2008, Fall 2007

Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

Freshman/Sophomore Seminar: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Priority given to freshmen and sophomores

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-4 hours of seminar per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Final exam required.

Freshman/Sophomore Seminar: [Read Less](#) [-]

## UGBA 39E Freshman/Sophomore Seminar 2 - 4 Units

Offered through: Business Administration

Terms offered: Fall 2019, Spring 2018, Fall 2016

Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

Freshman/Sophomore Seminar: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Priority given to freshmen and sophomores

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-4 hours of seminar per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Final exam required.

**Formerly known as:** Business Administration 39

Freshman/Sophomore Seminar: [Read Less](#) [-]

## UGBA 88 Data and Decisions 2 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019

The goal of this connector course is to provide an understanding of how data and statistical analysis can improve managerial decision-making.

We will explore statistical methods for gleanings insights from economic and social data, with an emphasis on approaches to identifying causal relationships. We will discuss how to design and analyze randomized experiments and introduce econometric methods for estimating causal effects in non-experimental data. The course draws on a variety of business and social science applications, including advertising, management, online marketplaces, labor markets, and education. This course, in combination with the Data 8 Foundations course, satisfies the statistics prerequisite for admission to Haas.

Data and Decisions: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** One semester of Calculus (Math 16A or Math 1A).

Also, this is a Data Science connector course and may only be taken concurrently with or after completing Computer Science C8/Statistics C8/Information C8

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Miller

Data and Decisions: [Read Less](#) [-]

## UGBA C95B Introduction to the Biotechnology Field and Industry: Impact, History, Therapeutics R&D, Entrepreneurship and Careers 2 Units

Offered through: Business Administration

Terms offered: Spring 2019

This course offers an introduction to the field of biotechnology and will cover the history of the field, its impact on medicine and society, key methodologies, important therapeutic areas, and the range of career options available in the biopharmaceutical industry. In addition to lectures on innovation and entrepreneurship, students will hear from lecturers with expertise ranging from molecular biology to clinical trial design and interpretation. Several case studies of historically impactful scientists, entrepreneurs, and biotherapeutic companies will be presented. Students will work in teams to create and develop novel biotechnology company ideas to present in class. Intended for students interested in the Biology +Business program.

Introduction to the Biotechnology Field and Industry: Impact, History, Therapeutics R&D, Entrepreneurship and Careers: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Alternative to final exam.

**Instructors:** Kirn, Lasky

**Also listed as:** MCELLBI C95B

Introduction to the Biotechnology Field and Industry: Impact, History, Therapeutics R&D, Entrepreneurship and Careers: Read Less [-]

## UGBA 96 Lower Division Special Topics in Business Administration 1 - 4 Units

Offered through: Business Administration

Terms offered: Fall 2019, Spring 2019, Fall 2018

Study in various fields of business administration for lower division students. Topics will vary from year to year and will be announced at the beginning of each semester.

Lower Division Special Topics in Business Administration: Read More [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Lower Division Special Topics in Business Administration: Read Less [-]

## UGBA 98 Directed Group Study 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2015, Fall 2014, Spring 2014

Organized group study on topics selected by lower division students under the sponsorship and direction of a member of the Haas School of Business faculty.

Directed Group Study: Read More [+]

### Rules & Requirements

**Credit Restrictions:** Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**Formerly known as:** Business Administration 98

Directed Group Study: Read Less [-]

## UGBA 100 Business Communication 2 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Theory and practice of effective communication in a business environment. Students practice what they learn with oral presentations and written assignments that model real-life business situations.

Business Communication: Read More [+]

### Rules & Requirements

**Prerequisites:** Restricted to Undergraduate Business Administration Majors Only

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Summer:

6 weeks - 5 hours of lecture per week

8 weeks - 4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Business Communication: Read Less [-]

## UGBA 101A Microeconomic Analysis for Business Decisions 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

Economic analysis applicable to the problems of business enterprises with emphasis on the determination of the level of prices, outputs, and inputs; effects of the state of the competitive environment on business and government policies.

Microeconomic Analysis for Business Decisions: Read More [+]

### Rules & Requirements

**Prerequisites:** Economics 1, Mathematics 1A or 16A, Statistics 21, or equivalents

**Credit Restrictions:** Students will receive no credit for UGBA 101A after completing ECON 100A, ECON 101A, BUS ADM 110, ENVECON 100, BUS ADM S110, IAS 106, or POLECON 106. A deficient grade in UGBA 101A may be removed by taking POLECON 106, ECON 100A, ECON 101A, ENVECON 100, IAS 106, or POLECON 106.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Microeconomic Analysis for Business Decisions: Read Less [-]

## UGBA 101B Macroeconomic Analysis for Business Decisions 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Summer 2020 Second 6 Week Session, Spring 2020

Analysis of the operation of the market system with emphasis on the factors responsible for economic instability; analysis of public and business policies which are necessary as a result of business fluctuations.

Macroeconomic Analysis for Business Decisions: Read More [+]

### Rules & Requirements

**Prerequisites:** Economics 1, Mathematics 1A or 16A, Statistics 21, or equivalents

**Credit Restrictions:** Students will receive no credit for UGBA 101B after completing ECON 100B, ECON 101B, BUS ADM 111, IAS 107, or POLECON 107. A deficient grade in UGBA 101B may be removed by taking ECON 100B, ECON 101B, IAS 107, or POLECON 107.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Formerly known as:** Business Administration 111

Macroeconomic Analysis for Business Decisions: Read Less [-]

## UGBA 102A Financial Accounting 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

The identification, measurement, and reporting of financial effects of events on enterprises, with a particular emphasis on business organization. Preparation and interpretation of balance sheets, income statements, and statements of cash flows.

Financial Accounting: Read More [\[+\]](#)

### Rules & Requirements

**Credit Restrictions:** Course not open for credit for students who are taking or have completed Undergraduate Business Administration W102A.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Financial Accounting: Read Less [\[-\]](#)

## UGBA 102B Managerial Accounting 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 Second 6 Week Session, Spring 2020, Fall 2019

The uses of accounting systems and their outputs in the process of management of an enterprise. Classification of costs and revenue on several bases for various uses; budgeting and standard cost accounting; analyses of relevant costs and other data for decision making.

Managerial Accounting: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 102A

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Managerial Accounting: Read Less [\[-\]](#)

## UGBA W102A Financial Accounting 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Summer 2019 First 6 Week Session, Summer 2018 First 6 Week Session

The identification, measurement, and reporting of financial effects of events on enterprises, with a particular emphasis on business organization. Preparation and interpretation of balance sheets, income statements, and statements of cash flows.

Financial Accounting: Read More [\[+\]](#)

### Rules & Requirements

**Credit Restrictions:** Course not open for credit for students who are taking or have completed Undergraduate Business Administration 102A.

### Hours & Format

**Summer:** 6 weeks - 7.5 hours of web-based lecture per week

**Online:** This is an online course.

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Financial Accounting: Read Less [\[-\]](#)

## UGBA 103 Introduction to Finance 4 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Summer 2020 Second 6 Week Session, Spring 2020

Analysis and management of the flow of funds through an enterprise. Cash management, source and application of funds, term loans, types and sources of long-term capital. Capital budgeting, cost of capital, and financial structure. Introduction to capital markets.

Introduction to Finance: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 101A

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

### Summer:

6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

8 weeks - 6 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Introduction to Finance: Read Less [\[-\]](#)

## UGBA 104 Introduction to Business Analytics 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

This course provides an introduction to several quantitative methods used to facilitate complex decision-making in business, with applications in many different industries, at different levels in the organization, and with different scopes of decisions. The power of the methods covered in this class is further enhanced by implementing them in spreadsheet software, which allows complex problems to be approached and solved in a straightforward and understandable manner.

Introduction to Business Analytics: Read More [+]

### Rules & Requirements

**Prerequisites:** Mathematics 1B or 16B, Statistics 21, or equivalents

### Hours & Format

**Fall and/or spring:** 15 weeks - 1.5 hours of lecture and 1.5 hours of laboratory per week

**Summer:** 6 weeks - 2.5 hours of lecture and 2.5 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Introduction to Business Analytics: Read Less [-]

## UGBA 105 Leading People 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

A general descriptive and analytical study of organizations from the behavioral science point of view. Problems of motivation, leadership, morale, social structure, groups, communications, hierarchy, and control in complex organizations are addressed. The interaction among technology, environment, and human behavior are considered. Alternate theoretical models are discussed.

Leading People: Read More [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for Undergrad. Business Administration 105 after completing Business Administration 150 or S150.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Summer:

6 weeks - 8 hours of lecture per week

8 weeks - 6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Leading People: Read Less [-]

## UGBA 106 Marketing 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Summer 2020 Second 6 Week Session, Spring 2020

The evolution of markets and marketing; market structure; marketing cost and efficiency; public and private regulation; the development of marketing programs including decisions involving products, price, promotional distribution.

Marketing: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Summer:

6 weeks - 7.5 hours of lecture per week

8 weeks - 6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Marketing: Read Less [-]



## UGBA 107 The Social, Political, and Ethical Environment of Business 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

Study and analysis of American business in a changing social and political environment. Interaction between business and other institutions. Role of business in the development of social values, goals, and national priorities. The expanding role of the corporation in dealing with social problems and issues.

The Social, Political, and Ethical Environment of Business: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 5-7.5 hours of lecture and 2.5-0 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

The Social, Political, and Ethical Environment of Business: Read Less [\[-\]](#)

## UGBA 113 Managerial Economics 3 Units

Offered through: Business Administration

Terms offered: Fall 2010, Fall 2009

Analysis of the theory and practice of decision-making in business firms, utilizing the concepts and techniques of managerial economics. The business decisions to be investigated include pricing policies, internal transfer pricing, and various choices under uncertainty.

Managerial Economics: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 101A-101B or equivalents

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 113

Managerial Economics: Read Less [\[-\]](#)

## UGBA 115 Competitive Strategy 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 3 Week Session, Spring 2020, Fall 2019

This course draws upon theories and frameworks from industrial organization economics, game theory, and resource-based views to address the unique challenges confronted by senior executives of organizations. The focus is strategies for competitive advantage at an organizational level. Topics include industry and competitor analysis, horizontal and vertical boundaries of the firm, strategic positioning, internal competencies, and dynamic capabilities.

Competitive Strategy: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 101A or equivalent

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Summer:

3 weeks - 15 hours of lecture per week

6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Competitive Strategy: Read Less [\[-\]](#)

## UGBA 117 Special Topics in Economic Analysis and Policy 1 - 4 Units

Offered through: Business Administration

Terms offered: Fall 2018, Spring 2018, Fall 2017

A variety of topics in economic analysis and policy with emphasis on current problems and research.

Special Topics in Economic Analysis and Policy: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 101A-101B or equivalents

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 119

Special Topics in Economic Analysis and Policy: Read Less [\[-\]](#)

## UGBA 118 International Trade 3 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Summer 2018 Second 6 Week Session

This course will develop models for understanding the economic causes and effects of international trade, will investigate the effects of economic policies that inhibit trade, and will examine the political economy of trade. By integrating the findings of the latest theoretical and empirical research in international economics, this course help students learn how to explore the current political debates in the U.S. and elsewhere regarding the benefits and costs of international trade.

International Trade: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Undergraduate Business Administration 101A or equivalent

**Credit Restrictions:** Students will receive no credit for Undergraduate Business Administration 118 after taking Economics 181 or Economics C181/Environmental Economics and Policy C181.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

International Trade: [Read Less](#) [-]

## UGBA 119 Leading Strategy Implementation 3 Units

Offered through: Business Administration

Terms offered: Spring 2019, Spring 2018, Spring 2017

Class format consists of lectures, experiential exercises, student presentations, and case discussions. This course will cover the concepts and techniques required for successful implementation of business strategies with a particular focus on the role of effective leadership in leading strategic change.

Leading Strategy Implementation: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 10 weeks - 4.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Formerly known as:** Business Administration 190

Leading Strategy Implementation: [Read Less](#) [-]

## UGBA 120AA Intermediate Financial Accounting 1 4 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Fall 2019, Summer 2019 First 6 Week Session

This Course introduces the student to concepts, theory and applications of financial accounting. The topics covered include accrual accounting concepts, financial statement analysis, inventory valuations, capital assets and their corresponding depreciation and impairment. Attention is given to examples on current reporting practices and to the study of reporting requirements promulgated by the Financial Accounting Standards Board ("FASB") with comparison to the International Accounting Standards Board ("IASB").

Intermediate Financial Accounting 1: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** 102A

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Intermediate Financial Accounting 1: [Read Less](#) [-]

## UGBA 120AB Intermediate Financial Accounting 2 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course expands students' knowledge of the concepts, theory, and application of financial accounting. It continues the technical accounting sequence, which also includes UGBA 120AA, Intermediate Accounting 1 and UGBA 120B, Advanced Financial Accounting. Topics include an in-depth treatment of the financing elements of the balance sheet and the income statement, as well as a detailed examination of the statement of cash flows.

Intermediate Financial Accounting 2: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** UGBA 102A is required. UGBA 120AA is recommended

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Intermediate Financial Accounting 2: Read Less [\[-\]](#)

## UGBA 120B Advanced Financial Accounting 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Continuation of 120A. Sources of long term capital; funds statements, financial analysis, accounting for partnerships, consolidated financial statements, adjustments of accounting data using price indexes; accounting for the financial effects of pension plans; other advanced accounting problems.

Advanced Financial Accounting: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** UGBA 120AA and 120AB are recommended

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Advanced Financial Accounting: Read Less [\[-\]](#)

## UGBA 121 Federal Income Tax Accounting 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Determination of individual and corporation tax liability; influence of federal taxation on economic activity; tax considerations in business and investment decisions.

Federal Income Tax Accounting: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 102A (120AA recommended)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Federal Income Tax Accounting: Read Less [\[-\]](#)

## UGBA 122 Financial Information Analysis 4 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

This course is designed to: 1) develop basic skills in financial statement analysis; 2) teach students to identify the relevant financial data used in a variety of decision contexts, such as equity valuation, forecasting firm-level economic variables, distress prediction and credit analysis; 3) help students appreciate the factors that influence the outcome of the financial reporting process, such as the incentives of reporting parties, regulatory rules, and a firm's competitive environment.

Financial Information Analysis: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 120AA

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Financial Information Analysis: Read Less [\[-\]](#)

## UGBA 123 Operating and Financial Reporting Issues in the Financial Services Industry 3 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

This course examines how accounting in the financial services industry – banking, insurance, investment industry, and real estate – actually operates. Students learn about underwriting and pricing in each sector, investment processes and controls, incentive-based profit sharing, risk management, and the factors that contribute to profitability. Students learn what financial statements reveal about estimates companies make regarding liabilities and, more generally, what they reveal about how companies deal with uncertainty associated with predicting and measuring financial results. Students examine the controversy over employing Fair Value Accounting across sectors and learn about other sector-specific accounting requirements.

Operating and Financial Reporting Issues in the Financial Services Industry: Read More [+]

### Rules & Requirements

**Prerequisites:** 120AA

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Operating and Financial Reporting Issues in the Financial Services Industry: Read Less [-]

## UGBA 125 Ethics in Accounting 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019

This course focuses on ethics related to the accounting for and reporting of financial statements and related financial information, and touches on the ethics of tax preparers. It is taught within the context of the American Institute of Certified Public Accountants (AICPA), as well as broader ethical concepts. This course fulfills the accounting ethics education requirement of the California Board of Accountancy, needed for a California CPA license. The course covers (i) theories and rules and (ii) the application of these theories and rules to case studies drawn from real life. Students are taught not only to identify the risks of fraud, but also how an organization's culture and structure might be altered to reduce the risks.

Ethics in Accounting: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Ethics in Accounting: Read Less [-]

## UGBA W125 Professional Judgment in Accounting 3 Units

Offered through: Business Administration

Terms offered: Prior to 2007

An online course in reviewing auditing principles with a simulated audit experience over the complex areas of estimates and judgments.

Professional Judgment in Accounting: Read More [+]

### Rules & Requirements

**Prerequisites:** Preferable to have auditing completed or in progress. Must have intermediate accounting

### Hours & Format

**Summer:** 8 weeks - 5 hours of web-based lecture and 2 hours of web-based discussion per week

**Online:** This is an online course.

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Professional Judgment in Accounting: Read Less [-]

## UGBA 126 Auditing 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Concepts and problems in the field of professional verification of financial and related information, including ethical, legal and other professional issues, historical developments, and current concerns.

Auditing: Read More [+]

### Rules & Requirements

**Prerequisites:** 120AA (120AB and 120B recommended)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Auditing: Read Less [-]

## UGBA 127 Special Topics in Accounting 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Fall 2018

A variety of topics in accounting with emphasis on current problems and research.

Special Topics in Accounting: Read More [+]

### Rules & Requirements

**Prerequisites:** At the discretion of the instructor

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture and 0-1 hours of discussion per week

**Summer:** 6 weeks - 2.5-10 hours of lecture and 0-2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Special Topics in Accounting: Read Less [-]

## UGBA 128 Strategic Cost Management 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Fall 2017

Managerial accounting is a company's internal language and is used for decision-making, production management, product design and pricing, performance evaluation and motivation of employees. The objective of the course is to develop the skills and analytical ability of effectively and efficiently use managerial accounting information in order to help a company achieve its strategic and financial goals.

Strategic Cost Management: Read More [+]

### Rules & Requirements

**Prerequisites:** 102B

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Strategic Cost Management: Read Less [-]

## UGBA 129 Financial Reporting for Complex Transactions 3 Units

Offered through: Business Administration

Terms offered: Spring 2014

This course develops sophisticated users of financial information.

Students will enhance their ability to understand the economic essence of important complex business transactions, focusing on topics related to major financial events in the lifecycle of an organization (IPOs, mergers and acquisitions, bankruptcies, etc.) Students' ability to identify and understand the financial reporting and tax issues related to these business dealings and accounting situations will dramatically increase. Many fascinating transactions will be examined in an effort to understand the economic underpinnings of the transactions and their accounting representation in the financial statements.

Financial Reporting for Complex Transactions: Read More [+]

### Rules & Requirements

**Prerequisites:** UGBA 120A

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 8 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Financial Reporting for Complex Transactions: Read Less [-]

## UGBA 131 Corporate Finance and Financial Statement Analysis 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 Second 6 Week Session, Spring 2020, Fall 2019

This course will cover the principles and practice of business finance. It will focus on project evaluation, capital structure, and corporate governance. Firms' policies toward debt, equity, and dividends are explored. The incentives and conflicts facing managers and owners are also discussed.

Corporate Finance and Financial Statement Analysis: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 103

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 134

Corporate Finance and Financial Statement Analysis: Read Less [\[-\]](#)

## UGBA 131A Corporate Strategy and Valuation 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019

The course is designed to cover advanced corporate finance issues. Its purpose is two-fold. First, it will help students develop a tool-box, both conceptual and quantitative, to address real-world corporate financial issues that they will likely use immediately in any finance-related career. Second, the course is designed to give the "the big picture," i.e., sharpen understanding of how corporate financial strategy helps increase a firm's value in a dynamic environment. The course examines qualitative factors that help determine financial strategy, including the costs of financial distress and the value of financial flexibility, as well as quantitative techniques, such as option pricing, that will be helpful in various analyses.

Corporate Strategy and Valuation: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Undergraduate Business Administration 103

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Corporate Strategy and Valuation: Read Less [\[-\]](#)

## UGBA 132 Financial Institutions and Markets 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Summer 2019 First 6 Week Session, Summer 2018 First 6 Week Session

Organization, behavior, and management of financial institutions. Markets for financial assets and the structure of yields, influence of Federal Reserve System and monetary policy on financial assets and institutions. Financial Institutions and Markets: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 101A-101B, and 103

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 8 hours of lecture and 2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 132

Financial Institutions and Markets: Read Less [\[-\]](#)



## UGBA 133 Investments 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Summer 2020 Second 6 Week Session, Fall 2019

Sources of and demand for investment capital, operations of security markets, determination of investment policy, and procedures for analysis of securities.

Investments: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 103

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

**Summer:** 6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Investments: Read Less [\[-\]](#)

## UGBA 134 Introduction to Financial Engineering 3 Units

Offered through: Business Administration

Terms offered: Spring 2019

This course provides students with an introduction to the application of mathematics and statistics in the field of finance. It consists of three integrated modules: 1) an introduction to the quantitative foundations of finance, using calculus, linear algebra, statistics and probability; 2) extension into financial theory as it relates to asset pricing, fixed income, derivatives, structured finance and risk management; and 3) application and implementation of these foundational tools and theory through software like Excel to build basic quantitative financial models (touching on programming). The goal is to use financial models that can guide business and financial decisions.

Introduction to Financial Engineering: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** UGBA 103

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Introduction to Financial Engineering: Read Less [\[-\]](#)

## UGBA 135 Personal Financial Management 2 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019

Survey of major life financial decisions (e.g., career choice, consumption versus saving, investments, mortgages, insurance) and how decision-making biases (e.g., overconfidence, present bias, limited attention) can lead to suboptimal choice. The course draws on research from economics, psychology, and sociology.

Personal Financial Management: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructors:** Odean, Selinger

Personal Financial Management: Read Less [\[-\]](#)

## UGBA 136F Behavioral Finance 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 Second 6 Week Session, Summer 2019 Second 6 Week Session, Summer 2018 Second 6 Week Session

This course explores why markets are sometimes inefficient. We consider the role that investors' heuristics and biases play in generating mispricing in financial markets. We also explore how various trading frictions limit the ability of arbitrageurs to reduce mispricing. Finally, we look at the influence of market inefficiencies on corporate decisions.

Behavioral Finance: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 103

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Behavioral Finance: Read Less [\[-\]](#)

## UGBA 137 Special Topics in Finance 1 - 4 Units

Offered through: Business Administration

Terms offered: Summer 2020 Second 6 Week Session, Spring 2020, Summer 2019 Second 6 Week Session

A variety of topics in finance with emphasis on current problems and research.

Special Topics in Finance: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 103

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 139

Special Topics in Finance: Read Less [\[-\]](#)

## UGBA 141 Production and Operations Management 2 - 3 Units

Offered through: Business Administration

Terms offered: Spring 2017, Spring 2016, Spring 2015

A survey of the concepts and methodologies for management control of production and operations systems. Topics include inventory control, material requirements planning for multistage production systems, aggregate planning, scheduling, and production distribution.

Production and Operations Management: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 104 or equivalent, or consent of instructor

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-3 hours of lecture and 0-1 hours of discussion per week

**Summer:** 6 weeks - 5-7.5 hours of lecture and 0-2.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 142

Production and Operations Management: Read Less [\[-\]](#)

## UGBA 143 Game Theory and Business Decisions 3 Units

Offered through: Business Administration

Terms offered: Fall 2014, Fall 2013, Spring 2010

This course provides an introduction to game theory and decision analysis. Game theory is concerned with strategic interactions among players (multi-player games), and decision analysis is concerned with making choices under uncertainty (single-player games). Emphasis is placed on applications.

Game Theory and Business Decisions: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Mathematics 1B or 16B, Statistics 21, or equivalent

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Game Theory and Business Decisions: Read Less [\[-\]](#)

## UGBA 146 Project Management 2 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Fall 2005, Spring 2005

The primary objective of this course is to develop the critical skills and knowledge needed to successfully pitch and lead projects, and to deliver those projects on time and within budget. The course delves into formal planning and scheduling techniques including: project definition, project selection, Work Breakdown Structure (WBS), Resource Estimation, Critical Path Method (CPM), Pert, Gantt Charts, Resource Constrained Scheduling, Project Monitoring and Project Closing.

Project Management: Read More [\[+\]](#)

### Hours & Format

**Summer:** 6 weeks - 5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Project Management: Read Less [\[-\]](#)

## UGBA 147 Special Topics in Operations and Information Technology Management 1 - 4 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Summer 2019 First 6 Week Session

A variety of topics in manufacturing and information technology with emphasis on current problems and research.

Special Topics in Operations and Information Technology Management:

[Read More](#) [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Special Topics in Operations and Information Technology Management:  
[Read Less](#) [-]

## UGBA 151 Management of Human Resources 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2018, Fall 2016

The designs of systems of rewards, assessment, and manpower development. The interaction of selection, placement, training, personnel evaluation, and career ladders within an on-going organization. Role of the staff manager. Introduction of change. Implications of behavioral research for management problems and policies.

Management of Human Resources: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** 105

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 151

Management of Human Resources: [Read Less](#) [-]

## UGBA 152 Negotiation and Conflict Resolution 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

The purpose of this course is to understand the theory and processes of negotiation as practiced in a variety of settings. It is designed to be relevant to the broad spectrum of negotiation problems faced by managers and professionals. By focusing on the behavior of individuals, groups, and organizations in the context of competitive situations, the course will allow students the opportunity to develop negotiation skills experientially in useful analytical frameworks (e.g.- simulations, cases).  
Negotiation and Conflict Resolution: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** 105

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 152

Negotiation and Conflict Resolution: [Read Less](#) [-]

## UGBA 154 Power and Politics in Organizations 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 Second 6 Week Session, Fall 2019, Summer 2019 Second 6 Week Session

This course will provide students with a sense of "political intelligence." After taking this course, students will be able to: (1) diagnose the true distribution of power in organizations, (2) identify strategies for building sources of power, (3) develop techniques for influencing others, (4) understand the role of power in building cooperation and leading change in organizations, and (5) make sense of others' attempts to influence them. These skills are essential for effective and satisfying career building.

Power and Politics in Organizations: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Power and Politics in Organizations: [Read Less](#) [-]

## UGBA 155 Leadership 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

The purpose of this course is for the students to develop understanding of the theory and practice of leadership in various organizational settings. It is designed to allow students the opportunity to develop leadership skills through experiential exercises, behavioral and self-assessments, case studies, class discussions, and lectures.

Leadership: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Leadership: Read Less [-]

## UGBA W155 Leadership: Purpose, Authority, and Empowerment 3 Units

Offered through: Business Administration

Terms offered: Not yet offered

The purpose of this course is for the students to develop understanding of the theory and practice of leadership in various organizational settings. It is designed to allow students the opportunity to develop leadership skills through experiential exercises, behavioral and self-assessments, case studies, class discussions, and lectures.

Leadership: Purpose, Authority, and Empowerment: Read More [+]

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for UGBA W155 after completing UGBA 155. A deficient grade in UGBA W155 may be removed by taking UGBA 155.

### Hours & Format

**Summer:** 10 weeks - 4.5 hours of web-based lecture per week

**Online:** This is an online course.

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Mulhern

Leadership: Purpose, Authority, and Empowerment: Read Less [-]

## UGBA 156AC Diversity in the Workplace 3 Units

Offered through: Business Administration

Terms offered: Fall 2013, Spring 2013, Fall 2011

This course introduces students to various theories on diversity in business and the importance of human capital equity and inclusion to organizations. Students will engage in community-based projects to be more conscious of the social impact of positive human relations and to foster equity, social justice, and civic responsibility. Emphasis placed on experiential learning with issues of race, ethnicity, gender, generational status, spirituality, sexual orientation, and physical and mental ability.

Diversity in the Workplace: Read More [+]

### Rules & Requirements

**Prerequisites:** 10, 105, 151 recommended

**Requirements this course satisfies:** Satisfies the American Cultures requirement

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Diversity in the Workplace: Read Less [-]

## UGBA 157 Special Topics in the Management of Organizations 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

A variety of topics in organizational behavior and industrial relations with emphasis on current problems and research.

Special Topics in the Management of Organizations: Read More [+]

### Rules & Requirements

**Prerequisites:** 105

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 159

Special Topics in the Management of Organizations: Read Less [-]

## UGBA 160 Consumer Behavior 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Summer 2019 First 6 Week Session

Consumer behavior is the study of how consumers process information, form attitudes and judgments, and make decisions. Its study is critical to understand how consumers think and behave, which is critical for a company wishing to develop a customer focus. Given how different people are, it is amazing how similarly their minds work. Consumer psychology is the systematic study of how consumers perceive information, how they encode it in memory, integrate it with other sources of information, retrieve it from memory, and utilize it to make decisions. It is one of the building blocks of the study of marketing and provides the student with a set of tools with diverse applications.

Consumer Behavior: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 106

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Consumer Behavior: Read Less [\[-\]](#)

## UGBA 161 Market Research: Tools and Techniques for Data Collection and Analysis 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2017

Information technology has allowed firms to gather and process large quantities of information about consumers' choices and reactions to marketing campaigns. However, few firms have the expertise to intelligently act on such information. This course addresses this shortcoming by teaching students how to use customer information to better market to consumers. In addition, the course addresses how information technology affects marketing strategy.

Market Research: Tools and Techniques for Data Collection and Analysis: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 106

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Market Research: Tools and Techniques for Data Collection and Analysis: Read Less [\[-\]](#)

## UGBA 162 Brand Management and Strategy 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Fall 2017

This course is an introduction to product management in marketing consumer and industrial goods and services. The course will cover analysis of market information, development of product strategy, programming strategy, and implementation.

Brand Management and Strategy: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 106

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 162

Brand Management and Strategy: Read Less [\[-\]](#)



## UGBA 162A Product Branding and Branded Entertainment 2 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

As consumers demand information and products tailored specifically to their individual needs, brands strive to create alternative advertising methods to build lasting relationships and retain “top of mind” status. Smart consumers, especially those in niche markets, have dismissed traditional avenues of sponsorship and product placement. Course explores how and why brand executives across multiple industries are leveraging entertainment to connect with niche markets. It educates students about how marketers develop creative and entertaining ways to connect with multi-hyphenate customers. Course culminates in a Creative Pitch, based on a case study, and a Client Presentation where students present marketing campaigns to industry executives.

Product Branding and Branded Entertainment: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

**Summer:** 6 weeks - 5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Product Branding and Branded Entertainment: Read Less [-]

## UGBA 164 Marketing Strategy 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

This course specifically addresses how to deal with competition. Additionally, marketing managers usually have to make decisions with incomplete or unreliable information. In “Marketing Strategy” students learn how firms develop plans that can be updated in light of changing circumstances. The course covers the following topics: Market size estimation; Competitor identification and analysis; Internal analysis; Alternative business models; Risk identification, assessment and management using scenario planning; Handling unknown futures using sensitivity analysis; Price setting dynamics; Competitive tactics. The course utilizes a combination of lectures and cases. There are group presentations (self-selected teams) and some group projects.

Marketing Strategy: Read More [+]

### Rules & Requirements

**Prerequisites:** 106

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Marketing Strategy: Read Less [-]

## UGBA 165 Advertising Strategy 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Fall 2019, Summer 2019 First 6 Week Session

Basic concepts and functions of advertising in the economy; consumer motivation; problems in utilizing advertising and measuring its effectiveness.

Advertising Strategy: Read More [+]

### Rules & Requirements

**Prerequisites:** 106

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 165

Advertising Strategy: Read Less [-]

## UGBA 167 Special Topics in Marketing 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2018

A variety of topics in marketing with emphasis on current problems and research.

Special Topics in Marketing: Read More [+]

### Rules & Requirements

**Prerequisites:** 106

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:**

6 weeks - 2.5-10 hours of lecture per week

8 weeks - 4-6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 169

Special Topics in Marketing: Read Less [-]



## UGBA 168B International Marketing 3 Units

Offered through: Business Administration

Terms offered: Spring 2015, Spring 2014

Provides frameworks, knowledge, and sensitivities to formulate and implement marketing strategies for competing in the international arena.

Regions and countries covered include the Americas, Europe, Japan, China, India, Russia, Africa, and Asia-Pacific. Issues covered include global versus local advertising, international pricing strategies, selecting and managing strategic international alliances and distribution channels, managing international brands and product lines through product life cycle, international retailing, and international marketing organization and control.

International Marketing: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

International Marketing: Read Less [-]

## UGBA 169 Pricing 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 Second 6 Week Session, Fall 2019, Summer 2019 Second 6 Week Session

This three-module course aims to equip students with proven concepts, techniques, and frameworks for assessing and formulating pricing strategies. The first module develops the economics and behavioral foundations of pricing. The second module discusses several innovative pricing concepts including price customization, nonlinear pricing, price matching, and product line pricing. The third module analyzes the strengths and weaknesses of several Internet-based, buyer-determined pricing models.

Pricing: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Pricing: Read Less [-]

## UGBA 170 Ethical Leadership in Business 2 Units

Offered through: Business Administration

Terms offered: Spring 2017, Spring 2016, Spring 2015

The purpose of this class is to enhance the ability of students to anticipate, critically analyze, and appropriately respond to the wide-range social and ethical issues that challenge managers as well as individuals in their roles as citizens, consumers, investors, and employees.

Instruction is based on lectures and case analysis, supplemented by topical and philosophical articles and essays.

Ethical Leadership in Business: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Ethical Leadership in Business: Read Less [-]

## UGBA C172 History of American Business 3 Units

Offered through: Business Administration

Terms offered: Spring 2019, Spring 2017, Spring 2016

This course will examine selected aspects of the history of American business. Included will be discussions of the evolution of the large corporation, the development of modern managerial techniques, and the changing relationship of business, government, and labor.

History of American Business: Read More [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Instructor:** Rosen

**Formerly known as:** American Studies C172, Business Administration C172

**Also listed as:** AMERSTD C172

History of American Business: Read Less [-]

## UGBA 175 Legal Aspects of Management 3 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

An analysis of the law and the legal process, emphasizing the nature and functions of law within the U.S. federal system, followed by a discussion of the legal problems pertaining to contracts and related topics, business association, and the impact of law on economic enterprise.

Legal Aspects of Management: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 175

Legal Aspects of Management: Read Less [\[-\]](#)

## UGBA 176 Innovations in Communications and Public Relations 2 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

This course introduces students to public relations and how it is used by companies, non-profits and individuals to build and support their brands through innovative communication techniques. Students will hear from and have direct access to entrepreneurs and established executives who share insights on how they've used creative public relations campaigns and communications skills to create attention and value for their brand or avoid it in a crisis. They also learn to work in teams crafting effective media responses for an existing company needing real help now (not a case study). The semester ends with each student applying this technique to create their own personal brand that they can refine as they prepare to move into the workforce.

Innovations in Communications and Public Relations: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

**Summer:** 6 weeks - 5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Innovations in Communications and Public Relations: Read Less [\[-\]](#)

## UGBA 177 Special Topics in Business and Public Policy 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2016, Fall 2015, Fall 2014

A variety of topics in business and public policy with emphasis on current problems and research.

Special Topics in Business and Public Policy: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 107

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 179

Special Topics in Business and Public Policy: Read Less [\[-\]](#)

## UGBA 178 Introduction to International Business 3 Units

Offered through: Business Administration

Terms offered: Summer 2020 Second 6 Week Session, Spring 2020, Fall 2019

A survey involving environmental, economic, political, and social constraints on doing business abroad; effects of overseas business investments on domestic and foreign economies; foreign market analysis and operational strategy of a firm; management problems and development potential of international operations.

Introduction to International Business: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Undergraduate Business Administration 101A-101B or equivalents

**Credit Restrictions:** Students will receive no credit for Undergraduate Business Administration 178 after completing Business Administration 188. A deficient grade in Business Administration 188 may be removed by taking Undergraduate Business Administration 178.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Introduction to International Business: Read Less [\[-\]](#)

## UGBA 179 International Consulting for Small and Medium-Sized Enterprises 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

By exploring the intersection of global business, entrepreneurship, and consulting, this course provides an understanding of how decision-makers in small and medium sized enterprises (SMEs) can develop the frameworks necessary for making decisions about how to venture across borders in pursuit of economic opportunities in today's hypercompetitive global business environment. In addition to the technical analysis of cases, there is a strong emphasis on how to create a new service company, market and sell to potential clients, manage client relationships, and leverage financial and human resources in a service setting. International Consulting for Small and Medium-Sized Enterprises: Read More [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

International Consulting for Small and Medium-Sized Enterprises: Read Less [\[-\]](#)

## UGBA 180 Introduction to Real Estate and Urban Land Economics 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2018

The nature of real property; market analysis; construction cycles; mortgage lending; equity investment; metropolitan growth; urban land use; real property valuation; public policies.

Introduction to Real Estate and Urban Land Economics: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Economics 1, Mathematics 16A or 1A, or equivalents

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 180

Introduction to Real Estate and Urban Land Economics: Read Less [\[-\]](#)

## UGBA 183 Introduction to Real Estate Finance 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2018

Real estate debt and equity financing; mortgage market structure; effects of credit on demand; equity investment criteria; public policies in real estate finance and urban development.

Introduction to Real Estate Finance: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** 180

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 183

Introduction to Real Estate Finance: Read Less [\[-\]](#)

## UGBA 184 Urban and Real Estate Economics 3 Units

Offered through: Business Administration

Terms offered: Spring 2016, Spring 2015, Spring 2014

This course examines how market forces influence the development of cities and the development and pricing of real estate assets. Topics include city formation; city size; land rent and land use; the operation of residential, commercial and industrial property markets; and the impacts of government policies, including the provision of public services, the imposition property taxes and fees, transportation pricing and investment, and land use regulations.

Urban and Real Estate Economics: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** A background in microeconomics and basic calculus is preferable. Please contact the instructor if you are unsure about your preparation for this course

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Urban and Real Estate Economics: Read Less [\[-\]](#)

## UGBA 187 Special Topics in Real Estate Economics and Finance 1 - 4 Units

Offered through: Business Administration

Terms offered: Fall 2010, Fall 2009

A variety of topics in real estate economics and finance with emphasis on current problems and research.

Special Topics in Real Estate Economics and Finance: [Read More](#) [\[+\]](#)

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Special Topics in Real Estate Economics and Finance: [Read Less](#) [\[-\]](#)

## UGBA 190C Collaborative Innovation 4 Units

Offered through: Business Administration

Terms offered: Spring 2020

This is a project-based course in collaborative innovation where students experience group creativity and team-based design by using techniques from across the disciplines of business, theater, design, and art practice. Students will leverage problem framing and solving techniques derived from critical thinking, systems thinking, and creative problem solving (popularly known today as design thinking). The course is grounded in a brief weekly lecture that sets out the theoretical, historical, and cultural contexts for particular innovation practices, but the majority of the class involves hands-on studio-based learning guided by an interdisciplinary team of teachers leading small group collaborative projects.

Collaborative Innovation: [Read More](#) [\[+\]](#)

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for UGBA 190C after completing ART 100, or THEATER 100. A deficient grade in UGBA 190C may be removed by taking ART 100, or THEATER 100.

### Hours & Format

**Fall and/or spring:** 15 weeks - 6 hours of studio per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

**Instructor:** Beckman

Collaborative Innovation: [Read Less](#) [\[-\]](#)

## UGBA 190D Innovation and Design Thinking in Business 2 Units

Offered through: Business Administration

Terms offered: Fall 2019

The goal of this course is to equip students with innovation skills and practices. This is a learn-by-doing lab. Students learn research methods, ethnography, analysis and synthesis, reflective thinking, scenario creation, ideation processes, rapid prototyping cycles and designing experiments, iterative design and how to tell the story of "Never Before Seen" ideas. Class time is spent using hands-on innovation and human-centered design practices. Teams present work for critique and iterative development. The course features short lectures, guest talks, campus-based fieldwork, site visits, research and readings. Projects will be launched in the sessions and each team will be coached and mentored.

Innovation and Design Thinking in Business: [Read More](#) [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Innovation and Design Thinking in Business: [Read Less](#) [\[-\]](#)

## UGBA 190S Strategy for the Information Technology Firm 2 - 3 Units

Offered through: Business Administration

Terms offered: Not yet offered

This course is a strategy and general management course for students interested in pursuing careers in the global information technology industry. Students are taught to view the IT industry through the eyes of the general manager/CEO (whether at a start-up or an industry giant). They learn how to evaluate strategic options and their consequences, how to understand the perspectives of various industry players, and how to anticipate how they are likely to behave under various circumstances. These include the changing economics of production, the role network effects and standards have on adoption of new products and services, the tradeoffs among potential pricing strategies, and the regulatory and public policy context.

Strategy for the Information Technology Firm: [Read More](#) [\[+\]](#)

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-3 hours of lecture per week

**Summer:** 8 weeks - 4-6 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Strategy for the Information Technology Firm: [Read Less](#) [\[-\]](#)

## UGBA 190T Special Topics in Innovation and Design 1 - 4 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session, Spring 2020, Fall 2019

Advanced study in the fields of innovation and design that will address current and emerging issues. Topics will vary with each offering and will be announced at the beginning of each term.

Special Topics in Innovation and Design: [Read More](#) [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

### Summer:

6 weeks - 2.5-10 hours of lecture per week

8 weeks - 2-7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Special Topics in Innovation and Design: [Read Less](#) [-]

## UGBA 190V Corporate Strategy in Telecommunications and Media 2 Units

Offered through: Business Administration

Terms offered: Prior to 2007

This course is an intensive and in-depth study of the rapidly evolving global telecommunications and media industry viewed through the perspective of an entrepreneur/innovator (whether at a start-up or an established company) attempting to introduce a new product or service into the market. The course is fundamentally about strategy and general management, but will draw from a variety of disciplines including public policy, law, marketing, economics, finance, engineering, and physics to identify the key issues, analyze the potential options and understand the consequences of the decisions made by management.

Corporate Strategy in Telecommunications and Media: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

**Summer:** 6 weeks - 5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Corporate Strategy in Telecommunications and Media: [Read Less](#) [-]

## UGBA 191C Communication for Leaders 2 Units

Offered through: Business Administration

Terms offered: Fall 2016, Summer 2016 10 Week Session, Summer 2016 Second 6 Week Session

This course is a workshop in the fundamentals of public speaking skills in today's business environment. Each student will give speeches, coach, and debate each other, and take part in a variety of listening and other communication exercises. The course focuses on authenticity, persuasion, and advocacy.

Communication for Leaders: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture and 2 hours of discussion per week

### Summer:

6 weeks - 2.5 hours of lecture and 5 hours of discussion per week

8 weeks - 1.5 hours of lecture and 3.5 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Communication for Leaders: [Read Less](#) [-]

## UGBA 191I Improvisational Leadership 3 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

This class explores the broad principles of improvisation, a performing art form that has developed pedagogical methods to enhance individual spontaneity, listening and awareness, expressive skills, risk-taking, and one's ability to make authentic social and emotional connections. The ultimate aim of the course is to help students develop an innovative and improvisational leadership mindset, sharpening in-the-moment decision making and the ability to quickly recognize and act upon opportunities when presented. In practical terms, this course strives to enhance students' business communication skills and increase both interpersonal intuition and confidence.

Improvisational Leadership: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Improvisational Leadership: [Read Less](#) [-]



## UGBA 191L Leadership Communication 1 Unit

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019

Leadership Communication is a workshop in the fundamentals of public speaking in today's business environment. Through prepared and impromptu speeches aimed at moving others to action, peer coaching, and lectures, students will sharpen their authentic and persuasive communication skills, develop critical listening skills, improve abilities to give, receive, and apply feedback, and gain confidence as public speakers.

Leadership Communication: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 2 weeks - 8 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** The grading option will be decided by the instructor when the class is offered. Alternative to final exam.

Leadership Communication: [Read Less](#) [-]

## UGBA 191P Leadership and Personal Development 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course is highly interactive and challenges you to explore questions central to your own leadership journey. The ultimate aim of the class is to help you develop a lifelong leadership development practice, where continuous personal growth is valued and actively pursued.

Leadership and Personal Development: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Leadership and Personal Development: [Read Less](#) [-]

## UGBA 192A Leading Nonprofit and Social Enterprises 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course prepares students conceptually and practically to found, lead, and manage organizations in the nonprofit sector. The course focuses on mission and theory of change (strategy), role of the board in governance, managing and marketing to multiple constituencies, role of advocacy in meeting mission, leadership styles and managing organizational culture, resource development (philanthropy), nonprofit financial management, managing for impact, HR management (volunteering), and cross-sector alliances.

Leading Nonprofit and Social Enterprises: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** 101A or equivalent

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Formerly known as:** Business Administration 115

Leading Nonprofit and Social Enterprises: [Read Less](#) [-]

## UGBA 192AC Social Movements and Social Media 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Fall 2017

This course provides a survey of innovative social movements and their complex relationships to social media technologies. It will examine the evolution from pre-social-media to present-day mobilizing strategies and the interplay between explicitly policy- and advocacy-focused approaches and related efforts rooted in music, visual arts, popular culture and celebrities. The course will place into comparative relief the discourses of explicitly racially- or ethnically-defined movements and movements that mobilize based on other, sometimes overlapping categories of marginalization including class, immigration status, gender identity and occupational category.

Social Movements and Social Media: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

**Instructor:** David Harris

Social Movements and Social Media: [Read Less](#) [-]



## UGBA 192B Strategic Philanthropy 2 Units

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2018

This course teaches students the concepts and practices of effective philanthropy. It offers students the experience of studying relevant theories and frameworks for assessing potential grant recipients and a real-world grant making experience in which they complete a series of nonprofit organizational assessments and then make actual grants totaling \$10,000 to a limited number of organizations. Students learn about the evolution of the philanthropic sector from traditional entities, such as private, corporate and community foundations, to an array of new funding intermediaries, technology-driven philanthropies, open source platforms, "impact" investors, and venture philanthropy partnerships. Strategic Philanthropy: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Strategic Philanthropy: [Read Less](#) [-]

## UGBA 192E Social Entrepreneurship 2 Units

Offered through: Business Administration

Terms offered: Fall 2019

This course is designed to provide broad exposure to the theories and activities of social entrepreneurship. The inquiry is grounded in real-world examples that illustrate the topics and stimulate thinking, discussion, and learning. Working in groups, students develop a business plan or pitch deck for a social enterprise that addresses an issue that is of interest/concern to the student team. Students with preexisting social enterprise ideas or plans that they would like to further develop and refine are welcomed and encouraged to use this class project as an opportunity to do so.

Social Entrepreneurship: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Social Entrepreneurship: [Read Less](#) [-]

## UGBA 192G Strategic Approaches for Global Social Impact 2 Units

Offered through: Business Administration

Terms offered: Prior to 2007

The main objective of this course is to help students become effective practitioners in global development and understand career options in the global social sector. The course aims to (i) analyze the historical, sociological and statistical underpinnings of the major issues in global development (conflict, food security, human rights, poverty, health and education), (ii) understand what various organizations can contribute to each issue (government agencies, multilateral institutions, private foundations, NGOs, and private sector companies and entrepreneurs), and (iii) design and analyze approaches to addressing these issues. Strategic Approaches for Global Social Impact: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Strategic Approaches for Global Social Impact: [Read Less](#) [-]

## UGBA 192L Applied Impact Evaluation 2 Units

Offered through: Business Administration

Terms offered: Prior to 2007

This course covers the methods and applications of impact evaluations, which is the science of measuring the causal impact of a program or policy on outcomes of interest. At its essence, impact evaluation is about generating evidence on which policies work, and which don't. This subject matter should appeal to three main audiences: (1) those in decision-making positions, such as policy makers and business leaders, and need to consume the information generated from impact evaluations to make informed evidence-based decisions, (2) project managers, development practitioners and business managers who commission impact evaluations and (3) researchers who actually design and implement impact evaluations.

Applied Impact Evaluation: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Applied Impact Evaluation: [Read Less](#) [-]

## UGBA 192N Topics in Social Sector Leadership 1 - 5 Units

Offered through: Business Administration

Terms offered: Fall 2019, Spring 2019, Fall 2018

Advanced study in the field of social sector leadership that will address current and emerging issues. Topics will vary with each offering and will be announced at the beginning of each term.

Topics in Social Sector Leadership: [Read More](#) [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-5 hours of lecture per week

**Summer:** 6 weeks - 2.5-12.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Topics in Social Sector Leadership: [Read Less](#) [-]

## UGBA 192P Sustainable Business Consulting Projects 3 Units

Offered through: Business Administration

Terms offered: Fall 2018, Fall 2016, Fall 2014

Discuss the field of strategic corporate social responsibility (CSR) through a series of lectures, guest speakers, and projects. The course will examine best practices used by companies to engage in socially responsible business practices. It will provide students with a flavor of the complex dilemmas one can face in business in trying to do both "good for society" and "well for shareholders." It looks at CSR from a corporation perspective, and how this supports core business objectives, core competencies, and bottom-line profits.

Sustainable Business Consulting Projects: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Sustainable Business Consulting Projects: [Read Less](#) [-]

## UGBA 192S Business and Sustainability 2 Units

Offered through: Business Administration

Terms offered: Summer 2020 First 6 Week Session

This course—a mixture of lectures, readings, business cases and corporate speakers—uses theory, frameworks, tools and business cases to teach students how to systematically evaluate and implement sustainability strategies that also maintain or maximize financial returns. Students are taught to identify opportunities to create business value from environmental and social challenges, and to evaluate the competitive implications related to sustainability initiatives. What type of long-term strategies can organizations set to simultaneously foster sustainable development strategy and sound financial practice? How should decision makers make trade-offs between these two organizational objectives? When is "sustainability" also "good business"? Business and Sustainability: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

**Summer:** 6 weeks - 5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Business and Sustainability: [Read Less](#) [-]

## UGBA 192T Topics in Corporate Social Responsibility 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Advanced study in the field of corporate social responsibility that will address current and emerging issues. Topics will vary with each offering and will be announced at the beginning of each term.

Topics in Corporate Social Responsibility: [Read More](#) [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

**Summer:** 6 weeks - 2.5-10 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Topics in Corporate Social Responsibility: [Read Less](#) [-]

## UGBA 193B Energy & Civilization 4 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

Energy is one of the main drivers of civilization. Today we are at the precipice of what many hope will be a major paradigm shift in energy production and use. Two transitions are needed. On the one hand, we must find ways to extend the benefits of our existing energy system to the impoverished people living in the developing world while continuing to provide these benefits to the people of the developed world. On the other hand, we must completely overhaul the existing system to fight climate change and other forms of air and water pollution. Are these shifts truly within our reach? Can we achieve both simultaneously? If so, how? This Big Ideas course will grapple with these questions using an interdisciplinary systems approach.

Energy & Civilization: Read More [+]

### Rules & Requirements

**Credit Restrictions:** Students who take UGBA 193B will not receive credit for L&S 126.

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture and 1 hour of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Energy & Civilization: Read Less [-]

## UGBA 193C Curricular Practical Training for International Students 0.0 Units

Offered through: Business Administration

Terms offered: Summer 2014 10 Week Session, Summer 2013 10 Week Session, Summer 2012 10 Week Session

This is a zero-unit internship course for non-immigrant international students participating in internships under the Curricular Practical Training program. Requires a paper exploring how the theoretical constructs learned in UGBA courses were applied during the internship. Curricular Practical Training for International Students: Read More [+]

### Rules & Requirements

**Prerequisites:** International students only

### Hours & Format

**Fall and/or spring:** 15 weeks - 0 hours of internship per week

**Summer:** 6 weeks - 0 hours of internship per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam required.

Curricular Practical Training for International Students: Read Less [-]

## UGBA 193I Business Abroad 4 - 6 Units

Offered through: Business Administration

Terms offered: Summer 2020 8 Week Session, Summer 2019 8 Week Session, Summer 2018 Second 6 Week Session

This course includes both formal learning in lectures, experiential learning, and action research through site visits abroad. Students and instructor will visit with international companies and/or organizations to learn about the business opportunities and challenges of operating in a specific country or region. Evaluation is based on student participation, presentations, and a research paper. Country and business industry focus may vary from term to term depending upon the instructor.

Business Abroad: Read More [+]

### Rules & Requirements

**Prerequisites:** To be determined by instructor depending on topic

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 4-6 hours of lecture per week

**Summer:** 5 weeks - 16-25 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Business Abroad: Read Less [-]

## UGBA 194 Undergraduate Colloquium on Business Topics 1 Unit

Offered through: Business Administration

Terms offered: Spring 2020, Spring 2019, Spring 2018

This is a speakers series course designed to give students insights from practitioners into complex issues facing American business leaders. Each week a guest speaker will discuss an issue related to a particular theme, ranging from corporate governance to the social responsibilities of business. Students will be challenged to synthesize, question, and extend those insights under the guidance of the instructor.

Undergraduate Colloquium on Business Topics: Read More [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1 hour of lecture per week

**Summer:** 6 weeks - 2.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam required.

Undergraduate Colloquium on Business Topics: Read Less [-]

## UGBA 195A Entrepreneurship 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Do you have an idea for a new business, but want to learn how to more fully develop this idea? Would you like to receive funding for your business idea, but lack a framework to ask for capital? This course takes students through the new venture process using a business plan as the main deliverable. A well-written business plan sets key milestones and indicates the resources needed to achieve them, in an increasingly complex business environment. Through the planning process that tightly links market and financial planning a business plan creates a set of standards to which investors and teammates can evaluate actual performance, laying the foundation for an "operating plan" once the business is launched.

Entrepreneurship: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Entrepreneurship: [Read Less](#) [-]

## UGBA 195P Entrepreneurship: How to Successfully start a New Business 3 Units

Offered through: Business Administration

Terms offered: Fall 2019, Fall 2018, Fall 2017

This course explores and examines key issues facing entrepreneurs and their businesses. It is intended to provide a broad spectrum of topics across many business disciplines including accounting, finance, marketing, organizational behavior, production/quality, technology, etc. Students will acquire a keen understanding of both the theoretical and real world tools used by today's entrepreneurial business leaders in achieving success in today's global business environment.

Entrepreneurship: How to Successfully start a New Business: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

**Summer:** 6 weeks - 7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternative to final exam.

Entrepreneurship: How to Successfully start a New Business: [Read Less](#) [-]

## UGBA 195S Entrepreneurship To Address Global Poverty 3 Units

Offered through: Business Administration

Terms offered: Spring 2013, Spring 2012, Spring 2011

This course examines whether and how entrepreneurial ventures can meaningfully address global poverty vs. more traditional approaches such as foreign aid, private philanthropy or corporate social responsibility initiatives. Combining lectures, case studies, and interviews with social entrepreneurs, it explores poverty and entrepreneurship before focusing on their intersection in various bottom-of-pyramid markets, from health, housing, and education to energy, agriculture, and finance.

Entrepreneurship To Address Global Poverty: [Read More](#) [+]

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam not required.

Entrepreneurship To Address Global Poverty: [Read Less](#) [-]

## UGBA 195T Topics in Entrepreneurship 1 - 3 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Courses of this kind will cover issues in entrepreneurship that either appeal to a specialized interest by type of firm being started (e.g., new ventures in computer software) or in the aspect of the entrepreneurial process being considered (e.g., new venture funding). The courses typically will be designed to take advantage of the access offered by the University and the locale to knowledgeable and experienced members of the business community.

Topics in Entrepreneurship: [Read More](#) [+]

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-3 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

Topics in Entrepreneurship: [Read Less](#) [-]

## UGBA 196 Special Topics in Business Administration 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2020, Fall 2019, Spring 2019

Study in various fields of business administration. Topics will vary from year to year and will be announced at the beginning of each semester.

Special Topics in Business Administration: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Upper division standing

**Repeat rules:** Course may be repeated for credit when topic changes.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of lecture per week

#### Summer:

6 weeks - 2.5-10 hours of lecture per week

10 weeks - 2-4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Final exam required.

**Formerly known as:** Business Administration 196

Special Topics in Business Administration: [Read Less](#) [-]

## UGBA 198 Directed Study 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2016, Fall 2015, Spring 2015

Organized group study on topics selected by upper division students under the sponsorship and direction of a member of the Haas School of Business faculty.

Directed Study: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Credit Restrictions:** Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 1-4 hours of directed group study per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**Formerly known as:** Business Administration 198

Directed Study: [Read Less](#) [-]

## UGBA 199 Supervised Independent Study and Research 1 - 4 Units

Offered through: Business Administration

Terms offered: Spring 2015, Spring 2014, Fall 2013

Enrollment restrictions apply.

Supervised Independent Study and Research: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Credit Restrictions:** Enrollment is restricted; see the Introduction to Courses and Curricula section of this catalog.

**Repeat rules:** Course may be repeated for credit without restriction.

### Hours & Format

**Fall and/or spring:** 15 weeks - 0 hours of independent study per week

#### Summer:

6 weeks - 1-4 hours of independent study per week

8 weeks - 1-4 hours of independent study per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Offered for pass/not pass grade only. Final exam not required.

**Formerly known as:** Business Administration 199

Supervised Independent Study and Research: [Read Less](#) [-]