

# Life Science, Business, and Entrepreneurship

The Robinson Life Science, Business, and Entrepreneurship (LSBE) Program is designed to help students bridge scientific inquiry and research with entrepreneurship and commercial application. LSBE offers specialized coursework taught by award-winning faculty, networking opportunities and specialized career coaching, and mentoring opportunities within a peer-to-peer cohort of students who are working to become future leaders and innovators.

Through LSBE, students will earn a BS in Business Administration **AND** a BA in one of the following biology majors: Molecular and Cell Biology (MCB) **OR** Integrative Biology (IB) **OR** Neuroscience (NEU).

Admission to LSBE is highly competitive and open only to students who enter UC Berkeley as freshmen. Course planning begins during freshman year, and students apply for admission to LSBE during the fall of sophomore year. All prerequisite requirements (<https://lsbe.berkeley.edu/academics/>) for Business and MCB, IB, or NEU must be completed by the end of sophomore year.

Students who complete the Program will be uniquely advantaged for careers in a variety of innovative industries and research institutions and will be competitive applicants to graduate programs including pre-health, biosciences, MBA, and beyond.

LSBE students complete all academic requirements for *both* Business Administration and Molecular and Cell Biology/Integrative Biology/Neuroscience in addition to the university and campus requirements, and all policies of each school are enforced. Additional Program requirements include a freshman introductory course and a senior capstone course. Students must contact LSBE staff to enroll in these program-specific courses.

Lower division and upper division Business Administration requirements can be found on the Business Administration program page (<https://haas.berkeley.edu/undergrad/academics/>).

## Haas Prerequisites

MATH 51/1A	Calculus I (MATH 51 as of Fall 2025)	4
MATH 52/1B	Calculus II (MATH 52 as of Fall 2025)	4
ECON 1	Introduction to Economics	4
or ECON 2	Introduction to Economics--Lecture Format	
Select one of the following statistics courses:		4-7
STAT 20	Introduction to Probability and Statistics [4]	
STAT W21	Introductory Probability and Statistics for Business [4]	
DATA C88S	Probability and Mathematical Statistics in Data Science [3]	
UGBA 10	Course Not Available	3

## MCB Prerequisites

CHEM 1A	General Chemistry	3
CHEM 1AL	General Chemistry Laboratory	2
CHEM 3A	Chemical Structure and Reactivity	4
CHEM 3AL	Organic Chemistry Laboratory	2
CHEM 3B	Chemical Structure and Reactivity	3
CHEM 3BL	Organic Chemistry Laboratory	2

BIOLOGY 1A	General Biology Lecture	3
BIOLOGY 1AL	General Biology Laboratory	2
PHYSICS 8A	Introductory Physics	4
PHYSICS 8B	Introductory Physics	4

## IB Prerequisites

BIOLOGY 1A	General Biology Lecture	3
BIOLOGY 1AL	General Biology Laboratory	2
BIOLOGY 1B	General Biology Lecture and Laboratory	4
CHEM 1A	General Chemistry	3
CHEM 1AL	General Chemistry Laboratory	2
INTEGBI 77A	Integrative Human Biology	1
or INTEGBI 77B	Integrative Human Biology	

PHYSICS 8A	Introductory Physics	4
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## Neuroscience Prerequisites

BIOLOGY 1A	General Biology Lecture	3
BIOLOGY 1AL	General Biology Laboratory	2
CHEM 1A	General Chemistry	3
CHEM 1AL	General Chemistry Laboratory	2
PHYSICS 8A	Introductory Physics	4
PHYSICS 8B	Introductory Physics	4

## Program Prerequisite

UGBA C95B/	Introduction to the Biotechnology Field and	2
MCELLBI C75	Industry	

Students have a choice between six emphases within Molecular and Cell Biology (<https://guide.berkeley.edu/archive/2024-25/undergraduate/degree-programs/molecular-cell-biology/#majorrequirements#text>):

- Biochemistry, Biophysics, & Structural Biology
- Cell Biology, Development & Physiology
- Genetics, Genomics, Evolution, and Development
- Immunology & Molecular Medicine
- Molecular Therapeutics
- Neurobiology

LSBE Program plans can be found on our website (<https://lsbe.berkeley.edu/academics/>).

Undergraduate students must fulfill the following requirements in addition to those required by their major program.

For a detailed lists of L&S requirements, please see Overview tab to the right in this guide or visit the L&S Degree Requirements (<https://lsadvising.berkeley.edu/degree-requirements/>) webpage. For College advising appointments, please visit the L&S Advising (<https://lsadvising.berkeley.edu/home/>) Pages.

## University of California Requirements

### Entry Level Writing

All students who will enter the University of California as freshmen must demonstrate their command of the English language by fulfilling the Entry Level Writing requirement. Fulfillment of this requirement is also a prerequisite to enrollment in all reading and composition courses at UC Berkeley and must be taken for a letter grade.

### American History and American Institutions

The American History and American Institutions requirements are based on the principle that all U.S. residents who have graduated from an

American university should have an understanding of the history and governmental institutions of the United States.

Berkeley Campus Requirement

American Cultures

All undergraduate students at Cal need to take and pass this campus requirement course in order to graduate. The requirement offers an exciting intellectual environment centered on the study of race, ethnicity and culture of the United States. AC courses are plentiful and offer students opportunities to be part of research-led, highly accomplished teaching environments, grappling with the complexity of American Culture.

College of Letters & Science Essential Skills Requirements

Quantitative Reasoning

The Quantitative Reasoning requirement is designed to ensure that students graduate with basic understanding and competency in math, statistics, or computer/data science. The requirement may be satisfied by exam or by taking an approved course taken for a letter grade.

Foreign Language

The Foreign Language requirement may be satisfied by demonstrating proficiency in reading comprehension, writing, and conversation in a foreign language equivalent to the second semester college level, either by passing an exam or by completing approved course work taken for a letter grade.

Reading and Composition

In order to provide a solid foundation in reading, writing, and critical thinking the College of Letters and Science requires two semesters of lower division work in composition in sequence. Students must complete parts A & B reading and composition courses in sequential order by the end of their fourth semester for a letter grade.

College of Letters & Science 7 Course Breadth Requirements

Breadth Requirements

The undergraduate breadth requirements provide Berkeley students with a rich and varied educational experience outside of their major program. As the foundation of a liberal arts education, breadth courses give students a view into the intellectual life of the University while introducing them to a multitude of perspectives and approaches to research and scholarship. Engaging students in new disciplines and with peers from other majors, the breadth experience strengthens interdisciplinary connections and context that prepares Berkeley graduates to understand and solve the complex issues of their day.

Unit Requirements

- 120 total units
- Of the 120 units, 36 must be upper division units
- Of the 36 upper division units, 6 must be taken in courses offered outside your major department

Residence Requirements

For units to be considered in "residence," you must be registered in courses on the Berkeley campus as a student in the College of Letters &

Science. Most students automatically fulfill the residence requirement by attending classes at Cal for four years, or two years for transfer students. In general, there is no need to be concerned about this requirement, unless you graduate early, go abroad for a semester or year, or want to take courses at another institution or through UC Extension during your senior year. In these cases, you should make an appointment to meet an L&S College adviser to determine how you can meet the Senior Residence Requirement.

Note: Courses taken through UC Extension do not count toward residence.

Senior Residence Requirement

After you become a senior (with 90 semester units earned toward your B.A. degree), you must complete at least 24 of the remaining 30 units in residence in at least two semesters. To count as residence, a semester must consist of at least 6 passed units. Intercampus Visitor, EAP, and UC Berkeley-Washington Program (UCDC) units are excluded.

You may use a Berkeley Summer Session to satisfy one semester of the Senior Residence requirement, provided that you successfully complete 6 units of course work in the Summer Session and that you have been enrolled previously in the college.

Modified Senior Residence Requirement

Participants in the UC Education Abroad Program (EAP), Berkeley Summer Abroad, or the UC Berkeley Washington Program (UCDC) may meet a Modified Senior Residence requirement by completing 24 (excluding EAP) of their final 60 semester units in residence. At least 12 of these 24 units must be completed after you have completed 90 units.

Upper Division Residence Requirement

You must complete in residence a minimum of 18 units of upper division courses (excluding UCEAP units), 12 of which must satisfy the requirements for your major.

Each student's plan will vary depending on the chosen biology major (MCB/IB/NEU) and AP/IB exam scores, if applicable. Seek individual advising from Haas (<https://haas.berkeley.edu/undergrad/student-life-services/advising/>), MCB (<https://mcb.berkeley.edu/undergrad/advising/advising-office/advising-services/>), IB (<https://ib.berkeley.edu/undergrad/advising.php>), and Neuroscience (<https://neuroscience.berkeley.edu/academics/undergraduate/advising/>).

The sample course schedules below show a four-year plan for completing all program requirements, taking classes only during Fall and Spring Semesters. Many courses are offered during the summer as well. **You should schedule advising (links above) to discuss your options in detail.**

MCB Plan

Please note that the MCB degree has 9 emphases, so the plan below indicates "MCB UD" for an MCB upper-division course that will depend on the emphasis you choose to pursue during your junior and senior years.

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

	MCELLBI C75	2
	16-17	17-19
	<b>Second Year</b>	
	<b>Fall Units</b>	<b>Spring Units</b>
UGBA 10	3 BIOLOGY 1A	3
CHEM 3B	3 ECON 1 or 2	4
STAT 20	4 BIOLOGY 1AL	2
CHEM 3BL	2 PHYSICS 8B	4
PHYSICS 8A	4 Breadth	3-4
Apply to the Program	Declare MCB	
	16	16-17
	<b>Third Year</b>	
	<b>Fall Units</b>	<b>Spring Units</b>
UGBA 100	2 UGBA 102B	3
UGBA 101A	3 UGBA 103	4
UGBA 102A	3 Breadth	3-4
BIOLOGY 1B	4 MCB UD	4
MCB UD	4 MCB UD	4
	16	18-19
	<b>Fourth Year</b>	
	<b>Fall Units</b>	<b>Spring Units</b>
UGBA 104	3 UGBA 107	3
UGBA 105	3 UGBA Elective	4
LSBE Capstone (MCB + Haas Elective)	4 Breadth	3-4
MCB UD	4 MCB UD	4
UGBA 106	3 UGBA 101B	3
	17	17-18
<b>Total Units: 133-139</b>		

**Plan Notes:**

- This plan assumes one Breadth course will also be an American Cultures (AC) course.
- This plan assumes the student has completed the Entry Level Writing, American History and Institutions, and Foreign Language requirement prior to admission to UC Berkeley.
- 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 (<http://guide.berkeley.edu/undergraduate/colleges-schools/letters-science/reading-composition-requirement/>).
- BIOLOGY 1A, BIOLOGY 1B, MCELLBI 102, or MCELLBI C100A will fulfill the Biological Sciences Breadth Requirement.
- CHEM 1A, CHEM 3A, or CHEM 3B will fulfill the Physical Sciences Breadth Requirement.
- 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. Talk with the LSBE advisor about this option.
- Haas accepts AP for Economics.

**IB Plan**

IB offers two emphases, so the plan below indicates "IB UD" for an IB upper-division course that will depend on the emphasis you choose to pursue during your junior and senior years.

	<b>First Year</b>	
	<b>Fall Units</b>	<b>Spring Units</b>
BIOLOGY 1A	3 UGBA 10	3
ENGLISH R1A	4 CHEM 1A	3

BIOLOGY 1AL	2 CHEM 1AL	2
INTEGBI 77A	1 MCELLBI C75	2
Breadth	3-4 Breadth/AC	3-4
MATH 1A	4 MATH 1B	4
	17-18	17-18
	<b>Second Year</b>	
	<b>Fall Units</b>	<b>Spring Units</b>
BIOLOGY 1B	4 PHYSICS 8A	4
Breadth	3-4 Breadth	3-4
ENGLISH R1B	4 Breadth	3-4
STAT W21	4 ECON 1 or 2	4
Apply to the Program	Declare IB	
	15-16	14-16
	<b>Third Year</b>	
	<b>Fall Units</b>	<b>Spring Units</b>
IB UD	3-5 IB UD	3-5
IB UD	3-5 IB UD	3-5
UGBA 100	2 UGBA 101B	3
UGBA 101A	3 UGBA 102B	3
UGBA 102A	3	
	14-18	12-16
	<b>Fourth Year</b>	
	<b>Fall Units</b>	<b>Spring Units</b>
UGBA 103	4 UGBA 105	3
IB UD	3-5 UGBA 107	3
UGBA 106	3 IB UD	3-5
UGBA Elective	4 Breadth	3-4
LSBE Capstone (IB + Haas Elective)	4 UGBA 104	3
	18-20	15-18
<b>Total Units: 122-140</b>		

**Plan Notes:**

- This plan assumes one Breadth course will also be an American Cultures (AC) course.
- This plan assumes the student has completed the Entry Level Writing, American History and Institutions, and Foreign Language requirement prior to admission to UC Berkeley.
- This plan assumes the student does not require CHEM 32 (<https://guide.berkeley.edu/archive/2024-25/search/?P=CHEM%2032>) or MATH 32 (<https://guide.berkeley.edu/archive/2024-25/search/?P=MATH%2032>).
- BIOLOGY 1A (<https://guide.berkeley.edu/archive/2024-25/search/?P=BIOLOGY%201A>) or BIOLOGY 1B (<https://guide.berkeley.edu/archive/2024-25/search/?P=BIOLOGY%201B>) will fulfill the Biological Sciences Breadth Requirement.
- CHEM 1A (<https://guide.berkeley.edu/archive/2024-25/search/?P=CHEM%201A>) will fulfill the Physical Sciences Breadth Requirement.
- Molecular Cell Biology accepts AP for BIOLOGY 1A (<https://guide.berkeley.edu/archive/2024-25/search/?P=BIOLOGY%201A>) and CHEM 1A (<https://guide.berkeley.edu/archive/2024-25/search/?P=CHEM%201A>) if not planning post-BA health-related programs. Talk with the LSBE advisor about this option.
- Haas accepts AP for Economics.

Neuroscience Plan

Neuroscience requires three electives to complete; these have been denoted as "NEU UD."

First Year			
	Fall Units	Spring Units	
CHEM 1A		3 PHYSICS 8A	4
CHEM 1AL		2 MCELLBI C75	2
ENGLISH R1A		4 BIOLOGY 1A	3
Breadth/AC		BIOLOGY 1AL	2
MATH 1A		4 MATH 1B	4
		ENGLISH R1E	4
	13		19
Second Year			
	Fall Units	Spring Units	
UGBA 10		3 STAT 20	4
Breadth		3-4 UGBA Elective	4
PHYSICS 8B		4 UGBA 103	4
Breadth		3-4 ECON 1 or 2	4
	13-15		16
Third Year			
	Fall Units	Spring Units	
UGBA 100		2 NEU 100B	4
UGBA 101A		3 UGBA 101B	3
UGBA 102A		3 UGBA 102B	3
NEU 100A		4 Choose one of the following:	4
Breadth	3-4	NEU 171L [4]	
		NEU 172L [4]	
		NEU 173L [4]	
		Breadth	3-4
	15-16		17-18
Fourth Year			
	Fall Units	Spring Units	
LSBE Capstone (Neuroscience + Haas Elective)		4 UGBA 105	3
UGBA 106		3 UGBA 107	3
NEU UD		3-4 NEU UD	3-4
NEU UD		3-4 NEU 100	2
UGBA 103		4 Breadth	3-4
		UGBA 104	3
	17-19		17-19
Total Units: 127-135			

Plan Notes:

- This plan assumes one Breadth course will also be an American Cultures (AC) course.
- This plan assumes the student has completed the Entry Level Writing, American History and Institutions, and Foreign Language requirements prior to admission to UC Berkeley.
- This plan assumes the student does not require CHEM 32 (<https://guide.berkeley.edu/archive/2024-25/search/?P=CHEM%2032>) or MATH 32 (<https://guide.berkeley.edu/archive/2024-25/search/?P=MATH%2032>).
- BIOLOGY 1A (<https://guide.berkeley.edu/archive/2024-25/search/?P=BIOLOGY%201A>) will fulfill the Biological Sciences Breadth Requirement.

- CHEM 1A (<https://guide.berkeley.edu/archive/2024-25/search/?P=CHEM%201A>) will fulfill the Physical Sciences Breadth Requirement.
- Haas accepts AP for Economics.

Major maps are experience maps that help undergraduates plan their Berkeley journey based on intended major or field of interest. Featuring student opportunities and resources from your college and department as well as across campus, each map includes curated suggestions for planning your studies, engaging outside the classroom, and pursuing your career goals in a timeline format.

Use the major map below to explore potential paths and design your own unique undergraduate experience:

**View the Life Science, Business, and Entrepreneurship Major Map.** (<https://discovery.berkeley.edu/getting-started/major-maps/life-science-business-entrepreneurship/>)

Life Sciences, Business, and Entrepreneurship Program staff are available on the third floor of the Valley Life Sciences Building in room 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 every day. Check our website (<https://lsbe.berkeley.edu/meet-team/contact-us/>) for details regarding our advising hours as they are subject to change throughout the year. To schedule an appointment or for more information about the Program, email [lsbe@berkeley.edu](mailto:lsbe@berkeley.edu).

MCELLBI 15 Current Topics in the Biological Sciences 2 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023  
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.  
**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

## MCELLBI 24 Freshman Seminars 1 Unit

Terms offered: Spring 2025, Fall 2024, Spring 2024

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.

### 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.

**Formerly known as:** Molecular and Cell Biology 90A

## 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.

### 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

## MCELLBI 32 Introduction to Human Physiology 3 Units

Terms offered: Fall 2025, Summer 2025 8 Week Session, Fall 2024

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.

### 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

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

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Fall 2024

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.

### 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



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

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

## 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.

### 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.

## MCELLBI 50 The Immune System and Disease 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

## MCELLBI 55 Plagues and Pandemics 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Fall 2024

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.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for MCELLBI 55 after completing CHEM C130, MCELLBI 150, MCELLBI C103, MCELLBI 102, or CHEM 135.

### 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:** Molecular and Cell Biology/Undergraduate

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

**Instructors:** Beatty, Vance

## MCELLBI C75 Introduction to the Biotechnology Field and Industry 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.

### 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

**Formerly known as:** Molecular and Cell Biology C95B/Undergrad. Business Administration C95B

**Also listed as:** UGBA C95B

## 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.

### 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.

## 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.

### 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

## MCELLBI C96 Studying the Biological Sciences 1 Unit

Terms offered: Fall 2025, Fall 2024, Fall 2023

Students 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 courses, and as future science professionals.

### 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

## MCELLBI 98 Directed Group Study 1 - 4 Units

Terms offered: Spring 2025, Fall 2024, Fall 2023

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

### 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.

## MCELLBI 99 Supervised Independent Study 1 - 4 Units

Terms offered: Spring 2012, Fall 2009, Spring 2009

### 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.

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### Rules & Requirements

**Prerequisites:** CHEM 3A or CHEM 112A, MATH 51, BIOLOGY 1A, and BIOLOGY 1AL; CHEM 3B or CHEM 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



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

Terms offered: Fall 2025, Summer 2025 8 Week Session, Spring 2025  
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.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A and CHEM 3B with minimum grades of C- (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.

## MCELLBI C103 Bacterial Pathogenesis 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023  
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.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A and CHEM 3B

**Credit Restrictions:** Students will receive no credit for MCELLBI C103 after completing PB HLTH 262.

### 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

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

Terms offered: Fall 2025, Summer 2025 8 Week Session, Spring 2025  
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.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A

### 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.

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

Terms offered: Fall 2025, Spring 2025, Fall 2024  
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.

### 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.

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

Experimental techniques of biochemistry and molecular biology, designed to accompany the lectures in Molecular and Cell Biology 100B and 110.

### 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

## MCELLBI C112 General Microbiology 4 Units

Terms offered: Fall 2025, Summer 2025 10 Week Session, Fall 2024

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.

### 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

## MCELLBI C112L General Microbiology Laboratory 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Students will become proficient in basic microbiology research methods and experimental design. The course covers fundamental principles and techniques of the microbiology lab including sterile technique, culturing, and microscopy. Students will learn these methods in the context of two structured, discovery-based research projects: predicting and analyzing the phenotypes of *E. coli* metabolic mutants, and isolating and characterizing bacteria with novel properties from environmental samples. Student will synthesize their results in the format of a Journal of Bacteriology research article and a scientific poster presentation.

### 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 2 hours 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:** Komeili, Traxler

**Also listed as:** PLANTBI C112L

## MCELLBI C114 Introduction to Comparative Virology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

## MCELLBI C116 Microbial Diversity 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2022

This course for upper-division and graduate students will broadly survey myriad types of microbial organisms, both prokaryote 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.

### 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

## MCELLBI C117 Advanced Plant Biochemistry 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Students will build on the central metabolic pathways to learn about plant-specific metabolism from a more mechanistic perspective, including photosynthesis, regulation of sugar and starch metabolism, chloroplast-based pathways of inorganic nutrient (nitrogen, sulfur) processing, N<sub>2</sub> fixing in free-living and symbiotic bacteria, polyunsaturated fatty acid and oil biosynthesis and accumulation, secondary metabolism, cell-wall structure and biosynthesis. Instruction will focus on a research-based approach, including retrieving and researching the primary literature, and understanding experimental design in modern plant biochemistry.

### Rules & Requirements

**Prerequisites:** A minimum grade of C- in MCELLBI C100A/CHEM C130, MCELLBI 102, MCELLBI 104, MCELLBI 140, PLANTBI 135, or equivalent

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Merchant

**Also listed as:** PLANTBI C136

## MCELLBI 120 Therapeutics Discovery and Development 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This class is designed to introduce students to crucial concepts that underlie the discovery and development of therapeutic modalities. It will cover questions of target discovery and validation; basic properties of therapeutic modalities, such as small molecules, designer proteins, or genome engineering approaches; the design and execution of chemical screens; the medicinal chemistry, pharmacodynamics and -kinetics that is required for drug development; and the steps needed to introduce a new modality into the clinic. Lectures are based on a combination of textbook readings and primary literature and summarized through case studies that highlight critical aspects of drug discovery and development.

### Rules & Requirements

**Prerequisites:** MCELLBI 104 (can be taken concurrently) and MCELLBI C100A/CHEM C130 or MCELLBI 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.

**Instructor:** Urnov

## MCELLBI 120L Therapeutics Discovery Laboratory 4 Units

Terms offered: Prior to 2007

This lab course will familiarize students with general principles of drug discovery and action. The first module focuses on aspects of small molecule function by comparing stoichiometric inhibitors and PROTAC molecules against the BTK kinase. Students will learn how to purify protein, monitor drug binding and in vitro efficiency, and determine effects on cell survival. The second module focuses on genomic therapies by introducing students to principles of CRISPR genome editing. Students will design genome editing strategies and cognate guide RNAs and then perform an editing experiment that replaces a catalytic Cys residue in BTK with Ser. Students will compare stoichiometric inhibitors against BTK to PROTAC in wildtype or mutant cells.

### Rules & Requirements

**Prerequisites:** MCELLBI C100A or MCELLBI 102

### 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.

## MCELLBI C130 Cell Biology: from Discovery to Disease 4 Units

Terms offered: Spring 2025, Spring 2024

This course will investigate a wide range of topics in cell biology, focusing on modern and classic experimental approaches that have provided important insights, and the relevance of their findings to understanding human health and disease. We will emphasize the importance of quantitative understanding in research topics that are current areas of discovery. We aim to convey an understanding of how cellular structure and function arise as a result of the properties of macromolecules and how understanding the behavior of molecules is needed to explain how cells and organisms operate. This understanding thus also explains what happens when normal cellular functions are impacted, leading to cellular dysfunction and disease.

### Rules & Requirements

**Prerequisites:** Upper Division Standing; MCELLBI 102 or MCELLBI C100A

**Credit Restrictions:** Students will receive no credit for MCELLBI 130 after completing MCELLBI 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 130

**Also listed as:** NUSCTX C130

## MCELLBI 132 Biology of Human Cancer 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A

**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.

## MCELLBI C134 Genome Organization and Nuclear Dynamics 3 Units

Terms offered: Spring 2025, Spring 2024, Fall 2022

This course focuses on the structure, functions, and dynamics of eukaryotic chromosomes and their organization within cell nuclei. All life on earth relies on genetic information, which is encoded within nucleic acids (DNA and RNA). Most organisms have DNA-based genomes; bacterial and archaeal genomes typically comprise a single circular DNA molecule, while the genomes of most eukaryotes are divided into a variable number of linear DNA molecules. These contiguous DNA strands, along with the associated proteins and other components that contribute to their organization and function, are known as "chromosomes."

### 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

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

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A. Recommended: MCELLBI 102 or MCELLBI C110A/CHEM C130 (may be taken concurrently)

**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

## MCELLBI 136 Physiology 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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.



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

Terms offered: Spring 2025, Spring 2024, Spring 2022

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.

### 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

## MCELLBI 140 General Genetics 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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.

## MCELLBI 140L Genetics Laboratory 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Experimental techniques in classical and molecular genetics.

### 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.

## MCELLBI 141 Developmental Biology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

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

Terms offered: Fall 2023, Fall 2016, Fall 2015

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.

### 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.

**Instructor:** King

## MCELLBI C144 Evolution 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

An analysis of the patterns and processes of organic evolution. History and philosophy of evolutionary thought; the different lines of evidence and fields of inquiry that bear on the understanding of evolution. The major features and processes of evolution through geologic times; the generation of new forms and new lineages; extinction; population processes of selection, adaptation, and other forces; genetics, genomics, and the molecular basis of evolution; evolutionary developmental biology; sexual selection; behavioral evolution; applications of evolutionary biology to medical, agricultural, conservational, and anthropological research.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for INTEGBI 160 after completing ZOOLOGY 109.

### 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:** Whiteman

**Formerly known as:** Integrative Biology 160

**Also listed as:** INTEGBI C160

## MCELLBI C146 Data Science for Biology 3 Units

Terms offered: Spring 2025, Spring 2024, Fall 2022

Biology has become a data science! This lab course aims for student curiosity to drive hands-on

case studies and coding projects about biological applications of data science. The course design

supports students' development of fundamental and transferable computational and statistical

skills for critically thinking about and using data in biology. Ethical considerations are

interwoven throughout. This course offers projects with multiple levels of sophistication and

complexity, enabling participation for students with varying levels of experience.

**PREREQUISITES:** Biology 1A; Biology 1B (can be taken concurrently); Data C8 or equivalent statistics and programming experience

### Objectives & Outcomes

**Course Objectives:** Students will become empowered to use basic coding approaches to access, work with, and analyze biological data

Students will learn how to appropriately apply statistical tests to biological data

Students will learn how to select and evaluate methods and tools for data analysis

Students will understand how to grapple with the ethical considerations of biological data

### Rules & Requirements

**Prerequisites:** Biology 1A; Biology 1B (can be taken concurrently); Data C8 or equivalent statistics and programming experience

### Hours & Format

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

### Additional Details

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

**Grading/Final exam status:** Letter grade. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

**Instructors:** Brenner, Eisen

**Also listed as:** BIO ENG C146/CMPBIO C146/PLANTBI C146

## MCELLBI C148 Microbial Genomics and Genetics 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

## MCELLBI 149 The Human Genome 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### Rules & Requirements

**Prerequisites:** MCELLBI 110 and MCELLBI 140, MCELLBI 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

## MCELLBI 150 Molecular Immunology 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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.

## MCELLBI 150L Immunology Laboratory 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

## MCELLBI 153 Molecular Medicine 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

The overarching goal of MCB153 is to convey to students the scientific and regulatory process by which therapeutic drugs are developed and created. After completing this course, students will have a firm understanding on the mechanism of action of several therapies used to fight disease. The course will cover areas such as the discovery and refinement of antibiotics, anti-virals, cancer therapies and CRISPR-based therapies. Furthermore, MCB153 will delve into disease areas not covered in other courses, such as autoimmune diseases, cardiovascular diseases and neurological diseases. Lastly, MCB153 will implement a "case study" for each topic displaying real world challenges and solutions to treating complex diseases.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A and MCELLBI 102, MCELLBI C100A, or CHEM 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.

**Instructors:** Dillin, Stanley

## MCELLBI 153L Molecular Medicine Laboratory 4 Units

Terms offered: Spring 2025

The lab class seeks to provide students with exposure to basic methodologies for the discovery of novel therapeutics and therapeutic targets. The class will consist of three main modules: Module 1: Phage/Antibiotics, Module 2: Synthetic lethality and remission in cancer, Module 3: Bioinformatic Analysis. The modules will provide a foundation in cell culture, molecular biology techniques, and computational analysis of data.

### Rules & Requirements

**Prerequisites:** MCELLBI 102 or MCELLBI C100A/CHEM C130

### 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. Alternative to final exam.

**Instructors:** Dillin, Cox

## MCELLBI 168 Sensory Neuroscience 4 Units

Terms offered: Fall 1995

Sensory cells monitor the environment to trigger behaviors required to feed, avoid danger and thrive. This interactive course combines lectures with instructor-led discussions of research from the scientific literature. Our goals are two fold. First, we will present current concepts in sensory neurobiology by illustrating how different sensory inputs govern homeostasis and behavior. Second, through discussions of scientific data, the course will foster critical thinking skills, and provide practice in drawing logical, evidence-based conclusions.

### Rules & Requirements

**Prerequisites:** MCELLBI 160 or BIOLOGY 1A/1AL-1B, PHYSICS 8A-8B and 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:** Lumpkin, Bautista

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

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 First 6 Week Session, Summer 2023 First 6 Week Session

This laboratory course for majors in Chemical Biology, Cell Biology, and Biochemistry & Molecular Biology is designed to have students learn the theory and practicality of modern laboratory science. The first and last third of the course will focus on Molecular Biology and Biochemistry where the students will learn basic skills and investigate the role of Kinesin 5 in Mitosis. In the middle Cell Biology portion of the course you will learn about cell structure and the cytoskeleton with an emphasis on microscopy techniques.

### Rules & Requirements

**Prerequisites:** MCELLBI 102, MCELLBI 104, MCELLBI 110 or MCELLBI 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

## MCELLBI C175 Life Sciences, Business, and Entrepreneurship Capstone Course 4 Units

Terms offered: Prior to 2007

Blended lecture / Project-based course where student teams build out a business plan for a mock biotech company, demonstrating advanced knowledge in therapeutics and business development. Throughout the course student teams will work toward a final project in which they will identify and present a technology overview, disease overview and explanation of unmet need, a development plan, a commercialization plan, risk mitigation strategy, and financials. Class will include field trips, guest lectures, and a pitch competition with prize.

### Rules & Requirements

**Prerequisites:** Students must be in their fourth and final year of the Life Sciences, Business, and Entrepreneurship Program in order to enroll in this class

### Hours & Format

**Fall and/or spring:** 15 weeks - 4 hours of lecture per week

### Additional Details

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

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

**Instructors:** Schaletzky, Dillin

**Also listed as:** UGBA C195C

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

Terms offered: Summer 2025 8 Week Session, Spring 2025, Fall 2024

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.).

### 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.

## 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.

### 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.

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

Terms offered: Summer 2025 3 Week Session, Summer 2024 3 Week Session, Summer 2023 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.

### 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



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

Terms offered: 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.

### **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

## **MCELLBI 186A Critical Thinking & Scientific Communication in Biomedical Research 2 Units**

Terms offered: Fall 2025

This active-learning course is designed for upper division STEM majors pursuing authentic research experiences through a formal research training program at UC Berkeley. Students will develop research and professional skills needed to pursue PhD training in the biosciences, including critical thinking, scientific reasoning and data interpretation, and scientific communication. The course will be structured around scientific presentation formats commonly used at national scientific conferences. Students will learn best-practices for rigor and reproducibility in research, writing meeting abstracts, data display and interpretation, and disseminating research results through talks, posters, and lay summaries.

### **Rules & Requirements**

**Prerequisites:** BIOLOGY 1A and BIOLOGY 1AL (can be concurrently enrolled); consent of instructor or acceptance in a Biosciences Research Training Program (i.e., MARC or Harris Scholars). MCELLBI 186B can be taken first

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

### **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:** Letter grade. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

**Instructor:** Lumpkin

## MCELLBI 186B Critical Thinking & Scientific Communication in Biomedical Research 2 Units

Terms offered: Not yet offered

This active-learning course is designed for upper division STEM majors pursuing authentic research experiences through a formal research training program at UC Berkeley. Students will develop research and professional skills needed to pursue PhD training in the biosciences, including critical thinking, scientific reasoning and data interpretation, and scientific communication. The course will be structured around scientific presentation formats commonly used at national scientific conferences. Students will learn best-practices for rigor and reproducibility in research, writing meeting abstracts, data display and interpretation, and disseminating research results through talks, posters, and lay summaries.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A and BIOLOGY 1AL (can be concurrently enrolled); consent of instructor or acceptance in a Biosciences Research Training Program (i.e., MARC or Harris Scholars). This course may be taken prior to MCELLBI 186A

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

### 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:** Letter grade. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

**Instructor:** Lumpkin

## MCELLBI 191 Senior Research Thesis 3 Units

Terms offered: Spring 2021, Spring 2020

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.

### 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

### Summer:

6 weeks - 23 hours of independent study per week

8 weeks - 17 hours of independent study per week

10 weeks - 14 hours of independent study per week

12 weeks - 12 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.

## 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.

### 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.

## 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.

### 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.

## MCELLBI H196B Honors Research 1 - 4 Units

Terms offered: Spring 2020, Spring 2016, Spring 2015

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.

### 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.

## MCELLBI 197 Supervised Internship 0.5 Units

Terms offered: Fall 2016

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

### 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:** 6 weeks - 8 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.

## MCELLBI 198 Directed Group Study 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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

### 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.

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

Terms offered: Fall 2023, Fall 2020, Spring 2020

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

### 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

12 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.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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 - 2 hours of lecture and 4 hours of discussion per week

### Additional Details

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

**Grading:** Letter grade.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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

## MCELLBI 201A CRISPR Gene Editing, Stem Cell and Genomic Analysis 6 Units

Terms offered: Summer 2025 Second 6 Week Session, Summer 2024 Second 6 Week Session

This course seeks to develop students' foundation in critical lab skills and introduce them to the fundamental principles and technologies driving modern biomedical research. After completing MCELLBI 201A, students will have a firm understanding of CRISPR gene editing, cell culture, and genomic analysis. Students will learn the fundamentals of hypothesis-driven research, obtain critical thinking skills for data interpretation, and deliver effective written and oral reports of their results.

### Rules & Requirements

**Prerequisites:** BIOLOGY 1A and MCELLBI 102 or equivalent courses

**Credit Restrictions:** Students will receive no credit for MCELLBI 201A after completing MCELLBI 201A. A deficient grade in MCELLBI 201A may be removed by taking MCELLBI 201A.

### Hours & Format

**Summer:** 6 weeks - 4 hours of lecture and 18 hours of laboratory per week

### Additional Details

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

**Grading:** Letter grade.

**Instructors:** He, Luo

## MCELLBI 201B CRISPR Gene Editing, Stem Cell and Genomic Analysis 4 Units

Terms offered: Fall 2025, Fall 2024

This course seeks to build upon students' foundations set in MCELLBI 201A, in which they were introduced to the fundamental principles and technologies driving modern biomedical research. MCELLBI 201B aims to develop students' skills in bioinformatics and quantitative data analysis. After completing this course, students will understand the RNA-Seq and ChIP-Seq pipelines and carry out their own analyses. Students will continue to learn the fundamentals of experimental design, obtain critical thinking skills for data interpretation, and deliver effective presentations on their results.

### Rules & Requirements

**Prerequisites:** MCELLBI 201A

**Credit Restrictions:** Students will receive no credit for MCELLBI 201B after completing MCELLBI 201B. A deficient grade in MCELLBI 201B may be removed by taking MCELLBI 201B.

### 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/Graduate

**Grading:** Letter grade.

**Instructor:** Ingolia

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

Terms offered: Fall 2025, Spring 2025, Fall 2024, Fall 2023

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.

### 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:** NEU C272/PHYSICS C218

## MCELLBI 206 Physical Biochemistry 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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

### 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.

## MCELLBI 210 Advanced Biochemistry and Molecular Biology: Macromolecular Reactions and the Cell 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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



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

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

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

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

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

Terms offered: Spring 2020, 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.

### 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

## MCELLBI C216 Microbial Diversity Workshop 1 Unit

Terms offered: Fall 2025, Fall 2024, Fall 2022

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.

### 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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

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

Terms offered: Spring 2025, Spring 2024, Fall 2023

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

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

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

Terms offered: Spring 2025, Spring 2024, Fall 2023

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

### **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

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

Terms offered: Fall 2022, Fall 2021, Spring 2021

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.

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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

### **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

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

Terms offered: Spring 2023, Fall 2022, Spring 2022

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.

### **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

## **MCELLBI 218U Research Review in Biochemistry and Molecular Biology: Epigenetic Gene Regulation 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Discussion of recent advances in the mechanism of epigenetic modifications on mammalian gene regulation and developing tools for precision editing of epigenetic modifications for controlling gene expression.

### **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:** Nunez

## **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.

### **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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

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

### **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

## **MCELLBI 219A Structural Membrane Biology 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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



## MCELLBI 219B Regulation of Translation 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Understanding the molecular basis and physiological role of translational regulation in gene expression with an emphasis on global profiling and functional genomics.

### 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

## MCELLBI 219H Research Review in Biochemistry and Molecular Biology: Molecular and Cell Biology of *Listeria monocytogenes* Pathogenesis 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Discussion of recent research on the genetics, cell biology, and immunology of the model facultative intracellular bacterial pathogen,

### 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

## MCELLBI 219K Research Review in Chemical Biology, Synthetic Biology, Organic Chemistry and Biophysics 2 Units

Terms offered: Spring 2021, Spring 2002, Fall 2001

Discussion of recent research on chemical biology, synthetic biology, organic chemistry and biophysics.

### 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:** Schepartz

## MCELLBI 219S Research Review in Biochemistry and Molecular Biology: Structural Biology of Signaling and Replication 2 Units

Terms offered: Spring 2024, Fall 2023, Spring 2023

Mechanisms and structure in DNA replication and eukaryotic cell signaling.

### 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

## MCELLBI 219U Research Review in Biochemistry and Molecular Biology: Single Molecule Biophysics 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

## MCELLBI 219Y Research Review in Biochemistry and Molecular Biology: Regulation of HIV Gene Expression 2 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023

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.

### 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

## MCELLBI 219Z Research Review in Biochemistry and Molecular Biology: Polymerase and RNA Biochemistry and Biology 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Emphasizes eukaryotic retroelement reverse transcriptases and retroelement mobility.

### 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

## MCELLBI 220 Therapeutic Modalities 4 Units

Terms offered: Spring 2025, Spring 2024

This class is designed to introduce graduate students to a range of therapeutic modalities that are in development or use. It will focus on small molecules, genomic therapies (including genome editing), and biologics. This class will present different applications of small molecules, RNA or DNA therapeutics, and biologics and discuss both advantages and challenges in their clinical use.

### Rules & Requirements

**Prerequisites:** For MCB students, MCELLBI 200A and MCELLBI 200B are prerequisites for this class. Students outside of MCB should check with the head instructor whether they have the required background to follow this class most productively

**Credit Restrictions:** Students will receive no credit for MCELLBI 220 after completing MCELLBI 220. A deficient grade in MCELLBI 220 may be removed by taking MCELLBI 220.

### 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:** Olzmann

## MCELLBI 227 Science Writing and Professional Development 2 Units

Terms offered: Fall 2025, Fall 2024

The overarching goal of this course is to provide students with professional skills in scientific reading, scientific writing, creating a CV or resume and cover letters and understanding the structures of academic institutions and biotech companies. In addition, the class will provide career advice for students entering the academic or biotech work places.

### Rules & Requirements

**Prerequisites:** This course will be limited to students enrolled in the MCB Master of Biotechnology program

### 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:** Letter grade.

**Instructor:** Beatty

## MCELLBI 229A Research Review in Viruses as Models for Eukaryote Gene Expression and Replication 2 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023

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

### 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

**Formerly known as:** Molecular and Cell Biology 218E

## MCELLBI 229B Research Review in Molecular Therapeutics: Imaging Single Molecules: Fashion or Game Changer? 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

**Formerly known as:** Molecular and Cell Biology 249L

## MCELLBI 229C Research Review in Molecular Therapeutics: Structure and Function of RNA 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

RNA structure, folding, and function. Specific topics include ribozyme mechanisms, RNA-mediated translation initiation, and protein targeting and secretion.

### 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

**Formerly known as:** Molecular and Cell Biology 219J

## MCELLBI 229D Research Review in Molecular Therapeutics: Diseases/Retina 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Evaluation of current research in molecular mechanisms underlying diseases of the retina.

### 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

**Formerly known as:** Molecular and Cell Biology 269U

## MCELLBI 229E Research Review in Molecular Therapeutics: The Protein Folding Problem 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Protein structure, stability, design, and the pathway of protein folding.

### 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

**Formerly known as:** Molecular and Cell Biology 218R

## MCELLBI 229F Research Review in Molecular Therapeutics: Virus-Host Interactions 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Understanding the creative strategies viruses use to manipulate gene expression in host cells, with a focus on RNA-based regulation of gene expression.

### 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

**Formerly known as:** Molecular and Cell Biology 219G

## MCELLBI 229G Mapping Metabolic Drivers of Disease using Chemoproteomic and Metabolomic Platforms 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

**Formerly known as:** Molecular and Cell Biology 218A

## **MCELLBI 229H Research Review in Molecular Therapeutics: Mechanisms of lipid homeostasis and lipotoxicity 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Discussion of recent literature and original research. Current research examines the cell biology of lipid homeostasis, including the mechanisms that regulate lipid droplet biogenesis, oxidative lipid damage, and ferroptosis.

### **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:** Olzmann

**Formerly known as:** Molecular and Cell Biology 239A

## **MCELLBI 229I Research Review in Molecular Therapeutics: Regulation of the Cell Cycle 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research.

### **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

**Formerly known as:** Molecular and Cell Biology 239B

## **MCELLBI 229J Research Review in Understanding and Exploiting Complex Biological Processes and Machines 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Covers aspects of ribosome engineering, organelle imaging and interactions, protein delivery, and cell signaling.

### **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:** Schepartz

**Formerly known as:** Molecular and Cell Biology 218N

## **MCELLBI 229K Research Review in Molecular Therapeutics: Eukaryotic Gene Expression 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Protein-DNA interactions and the control of gene expression in eukaryotes.

### **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

**Formerly known as:** Molecular and Cell Biology 219F

## MCELLBI 229L Research Review in Molecular Therapeutics: Structure and Function of the Human Epigenome 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Research focuses on (i) understanding the interplay between regulatory information encoded in the primary sequence of the human genome and epigenomic information inscribed by the joint action of trans-acting factors, chromatin remodelers, modifiers, and readers that yields a particular functional state in primary cells of the immune and central nervous systems; (ii) leveraging this understanding to engineer novel architectures for targeted epigenome editors customized for use in these and other clinically relevant human cell types; (iii) establishing preclinical proof-of-concept for the use of the resulting epigenome-editing molecular therapeutics in ex vivo and in vivo models of autoimmune and neurologic disease.

### 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:** Urnov

**Formerly known as:** Molecular and Cell Biology 249AA

## MCELLBI 229M Research Review in Molecular Therapeutics: CRISPR Enzyme Delivery Technology 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

The molecular engineering of novel delivery technology to facilitate therapeutic genome editing. Delivery of pre-formed CRISPR ribonucleoprotein enzymes is a central focus, and progress in the field will be covered via research presentations as well as reviews of recent literature.

### 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:** Wilson

**Formerly known as:** Molecular and Cell Biology 218G

## MCELLBI 229N Research Review in Molecular Therapeutics: Molecular and Cellular Mechanisms of Nutrient Sensing 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

**Formerly known as:** Molecular and Cell Biology 218Z

## MCELLBI 230 Advanced Cell and Developmental Biology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course will discuss modern concepts of cell and developmental biology, with a strong emphasis on regulatory mechanisms at different length-scales (intermolecular, intracellular and intercellular). It will cover methods of quantitative, single-cell, and organismal biology in cell lines, stem cells, and model organisms. A solid foundation of core cell biology concepts, such as the cell cycle, cytoskeleton, or vesicle transport, is strongly recommended.

### 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.



## 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.

### 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.

## MCELLBI 236 Advanced Mammalian Physiology 5 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022

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.

### 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.

## MCELLBI 237L Advanced Physical Biology of the Cell 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2022

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.

### 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

## 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.

### 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

## MCELLBI 238 Stem Cell Research and Gene Therapy: Questions, Solutions and Current Frontiers 1 Unit

Terms offered: Fall 2023, Fall 2022

This lecture series will cover modern approaches to stem cell biology, regenerative medicine and gene therapy. Lectures will include a broad introduction to the day's topic, followed by in depth discussion of one specific recent example- preferably from the speaker's own laboratory- that addresses an imminent question in the field. Relevant research articles will be assigned as background reading. Students are expected to become thoroughly familiar with these materials prior to each class meeting.

### 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.

**Instructor:** Hockemeyer

## MCELLBI 239BB Research Review in Cell and Developmental Biology: Mechanics and Dynamics of Cell Movements 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

## MCELLBI 239C The Regulation of Meiotic Gene Expression and Cellular Morphogenesis 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

## MCELLBI 239D Research Review in Cell and Developmental Biology: Glial Cell Biology 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of relevant literature and discussion of ongoing research: cytoskeletal regulation and mRNA transport in glia; organelle biogenesis and homeostasis, including of Golgi outposts; myelination in learning and behavior; gliovascular development; biophysics of liquid condensates; mechanisms of neurological disease.

### 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:** Fu

## **MCELLBI 239EE Research Review in Cell and Developmental Biology: Cell Morphogenesis 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research.

### **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

## **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.

### **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

## **MCELLBI 239FF Research Review in Cell and Developmental Biology: Signal Transduction and Tumor Suppressor Genes 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research.

### **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

## **MCELLBI 239G Research Review in Cell and Developmental Biology: Mitochondrial biology 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 239HH Research Review in Cell and Developmental Biology: Mechanisms of Control of Growth and Cell Proliferation 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Identifying pathways that restrict growth and cell proliferation in vivo.

### **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

## **MCELLBI 239I Research Review in Cell and Developmental Biology: Cytoskeleton and Cell Motility 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research.

### **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

## **MCELLBI 239J Research Review in Cell and Developmental Biology: Steroid Hormone and Growth Factor Action 2 Units**

Terms offered: Fall 2023, Spring 2023, Fall 2022

Review of current literature and discussion of original research.

### **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

## **MCELLBI 239K Research Review in Cell and Developmental Biology: Secretion and Cell Membrane Assembly 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Cell surface growth with emphasis on the unicellular eukaryote *S. cerevisiae*.

### **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

## **MCELLBI 239KK Research Review in Cell and Developmental Biology: Assembly and Subcellular Organization of Bacterial Organelles 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research.

### **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

## **MCELLBI 239M Research Review in Cell and Developmental Biology: MicroRNA Functions in Cancer Development, Mouse Tumor Models 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Malignant transformation represents the endpoint of successive genetic lesions that confer uncontrolled proliferation and survival, unlimited replicative potential, and invasive growth.

### **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

## **MCELLBI 239O Research Review in Cell and Developmental Biology: Cancer Biology 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Inheritance, chromatin structure, gene expression, and the organization of chromosomes in the nucleus.

### **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

## **MCELLBI 239P Research Review in Cell and Developmental Biology: Energy Metabolism and Aging 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 239Q Research Review in Cell and Developmental Biology: Regulation of Cell Polarity in Drosophila 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Mechanisms underlying the establishment and maintenance of cellular organization in epithelia and other cell types.

### **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

## **MCELLBI 239R Research Review in Cell and Developmental Biology: Telomere Biology of Human Stem Cells 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 239S Research Review in Cell and Developmental Biology: Organ Formation and Function in Zebrafish 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Current research examines the control mechanisms of how cells behave, how cells talk to one another, and how cells sense, change, and maintain their space in the context of organogenesis.

### **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:** Swinburne

## **MCELLBI 239T Research Review in Cell and Developmental Biology: The Cell Biology of Fertilization 2 Units**

Terms offered: Fall 2023, Spring 2023, Fall 2022

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.

### **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



## **MCELLBI 239U Research Review in Cell and Developmental Biology: The Cytoskeleton and Morphogenesis 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of current research.

### **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

## **MCELLBI 239V Research Review in Cell and Developmental Biology: Molecular Mechanisms of Transduction in Touch and Pain Receptors 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of current research.

Current research focuses on elucidating the molecular mechanisms of somatosensory mechanotransduction.

### **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

## **MCELLBI 239W Research Review in Cell and Developmental Biology: Leech Embryology and Development 2 Units**

Terms offered: Fall 2023, Spring 2023, Fall 2022

Review of current literature and discussion of original research.

### **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

## **MCELLBI 239Z Research Review in Cell and Developmental Biology: Chromosome Remodeling and Reorganization During Meiosis 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

How chromosomes are reorganized during meiosis to accomplish the pairing, recombination, and segregation leading up to successful gamete production.

### **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

## MCELLBI 240 Advanced Genetic Analysis 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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

## MCELLBI C242 CTEG Evolution, Genetics, and Genomics Seminar 1 Unit

Terms offered: Fall 2025, Spring 2025, Fall 2024

This graduate seminar consists of weekly presentations from Berkeley graduate students as well as outside speakers on topics surrounding evolution, genetics, and genomics. Many labs spread across different departments have research programs focused on evolution, genetics, and genomics. However, it can be challenging to keep abreast of this research and to identify potential collaborations due to the dispersion of labs across different departments and specialties. The Center for Theoretical and Evolutionary Genetics (CTEG) is an informal group of labs that collectively work on genetics and genomics. The seminar seeks to provide a common space for graduate students to present their research and learn about the research of their colleagues.

### Rules & Requirements

**Prerequisites:** Graduate standing

**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.

**Instructors:** Sudmant, Moorjani

**Also listed as:** INTEGBI C242

## 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.

### 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

## 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.

### 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

## **MCELLBI 249A Research in Genetics and Development: From Sequence to Function in Transcription Factors 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

This course explores experimental and computational approaches to studying the sequence to function relationships of intrinsically disordered proteins. Emphasis on the activation domains of transcription factors. High-throughput experiments, machine learning, evolutionary comparisons, and all atom simulations will be discussed. Additional emphasis will be placed on characterizing the functional consequences of patient mutations in activation domains.

### **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:** Staller

## **MCELLBI 249BB Research Review in Genetics and Development: Aging and Protein Homeostasis 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 249C Research Review in Genetics and Development: Nucleic Acid-Protein Interactions and Control of Gene Expression 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Biochemical and molecular genetic aspects of eukaryotic messenger RNA splicing and transposition, with an emphasis on as an experimental system.

### **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

## **MCELLBI 249D Research Review in Genetics and Development: Mechanisms of Genetic Regulation in Yeast 2 Units**

Terms offered: Fall 2023, Spring 2023, Fall 2022

Genes, gene products and molecular mechanisms that control cell types in the unicellular eukaryote .

### **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

## **MCELLBI 249F Research Review in Genetics and Development: Neuronal Development 2 Units**

Terms offered: Spring 2025, Fall 2024, Spring 2024

Molecular and genetic approaches to the problem of how neurons develop, with emphasis on and .

### **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

## **MCELLBI 249G Research Review in Genetics and Development: Developmental and Evolutionary Genetics 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

We study how genes control pattern formation during development and pattern modification during evolution.

### **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

## **MCELLBI 249H Investigating Cellular Aging and Chromosome Segregation during Gametogenesis 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 249HH Research Review in Genetics and Development: Human Population Genetics and Evolutionary Biology 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 249I Research Review in Genetics and Development: RNA Systems Biology 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

How does the sequence of an RNA determine its post-transcriptional regulation? Genomic and systems biology investigations of alternative splicing, translation, and other post-transcriptional regulatory processes.

### **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:** Lareau

## **MCELLBI 249J Research Review in Genetics and Development: Developmental and Molecular Genetics of *C. elegans* 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Molecular and genetical analysis of sex determination and dosage compensation in the nematode .

### **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

## **MCELLBI 249K Research Review in Genetics and Development: Animal Origins 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Evaluation of current research on choanoflagellates, sponges, and animal origins. Intended to complement ongoing research for graduate students.

### **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

## **MCELLBI 249M Research Review in Genetics and Development: *Saccharomyces Cerevisiae* Microtubule Cytoskeleton 2 Units**

Terms offered: Fall 2023, Spring 2023, Fall 2022

Review of current literature and discussion of current research.

### **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

## MCELLBI 249MM Physical Biology of Living Organisms 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

## MCELLBI 249O Research Review in Genetics and Development: Genome Sequences 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Biochemistry, cancer biology and virology, cell biology, computational biology, genetics, microbiology, molecular and cell physiology.

### 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

## MCELLBI 249P Research Review in Genetics and Development: Evolution of Genome Structure and Cellular Diversity 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research in the evolution of genome structure, aging, and cellular and organismal diversity.

### 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:** Sudmant

## MCELLBI 249Q Research Review in Genetics and Development: Computational Genomics 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Recent developments in computational methods for genomics and their application for understanding the structure and function of genes encoded in completely sequenced genomes.

### 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



## **MCELLBI 249R Research Review in Genetics and Development: Vertebrate development and tissue regeneration 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Topics on gene regulatory network control of neural crest cell differentiation during development, vertebrate evolution, and tissue regeneration will be discussed.

### **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:** Martik

## **MCELLBI 249T Research Review in Genetics, Genomics and Development: Evolution of Genomes 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Comparative analysis of eukaryotic genomes to inform the origins and diversification of animals and plants.

### **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

## **MCELLBI 249V Research Review in Genetics and Development: Induction in Vertebrate Development and ES Cell Differentiation 2 Units**

Terms offered: Fall 2023, Spring 2023, Fall 2022

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.

### **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

## **MCELLBI 249W Research Review in Genetics and Development: Archaeal Genetics and Methane Metabolism 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 249Y Research Review in Genetics and Development: Mechanisms of Gene Control in Vertebrate Animals 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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).

### **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

## **MCELLBI 249Z Research Review in Genetics and Development: Chromosome Structure and Integrity, Genome Evolution 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Use of genetic, cell biological, and biochemical approaches in budding yeast to understand genome integrity, genome evolution, and most recently desiccation tolerance.

### **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

## **MCELLBI 250 Advanced Immunology 4 Units**

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### **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.

## **MCELLBI 251 The Regulation of Immune System Development and Function 1 Unit**

Terms offered: Spring 2022, Spring 2021, Fall 2020

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.

### **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

## **MCELLBI 259A Mycobacterium Tuberculosis (Mtb) 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 259C Research Review in Immunology and Pathogenesis: Nuclear Receptor-Mediated Regulation of Neuroinflammation 2 Units**

Terms offered: Fall 2024, Spring 2024, Fall 2023

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?

### **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

## **MCELLBI 259D Research Review in Immunology and Pathogenesis: Mycobacterial Biology and Host-Pathogen Interactions 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 259E Research Review in Immunology and Pathogenesis: Regulation of T Cell Receptor Genes Expression 2 Units**

Terms offered: Spring 2024, Fall 2023, Spring 2023

Molecular biology of T cell receptor genes and their transcription controlling proteins/genes. Programmed cell death during thymocyte differentiation.

### **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

## **MCELLBI 259F Research Review in Immunology and Pathogenesis: Natural Killer (NK) Cell and T Cell Receptors 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Molecular and biological basis for recognition by natural killer cells and T cells.

### **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

## **MCELLBI 259G Research Review in Immunology and Pathogenesis: T Cell Development 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Molecular and cellular aspects of thymocyte differentiation.

### **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

## **MCELLBI 259H Research Review in Immunology and Pathogenesis: B Cell Differentiation 2 Units**

Terms offered: Fall 2023, Fall 2022, Fall 2021

Molecular basis of terminal B cell differentiation. Role of transcription factors in B cell activation.

### **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

## **MCELLBI 259J Research Review in Immunology and Pathogenesis: Immune Evasion by Viruses 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

The mechanisms used by viruses to counteract the pressure of the immune system.

### **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

## **MCELLBI 259K Research Review in Immunology and Pathogenesis: Epigenetic Control for Regulatory T Cell Function in Cancer and Autoimmunity 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### **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

## **MCELLBI 259M Research Review in Immunology and Pathogenesis: Innate Immunity and Innate Control of Adaptive Immunity 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Innate immunity and innate control of adaptive immunity.

### **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

## **MCELLBI 259N Research Review in Immunology and Pathogenesis: Immunology, Microbiology, and Genetics of Bacterial Pathogenesis 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Role of innate host responses in defense against intracellular bacterial pathogens.

### **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

## **MCELLBI 259O Research Review in Immunology and Pathogenesis: Circadian rhythms in Parasitic Diseases 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

We will discuss circadian rhythms research, at the behavioral, tissue and molecular scales. Our main focus is the circadian regulation of gene expression and its impact in host physiology. We will also focus on malaria and sleeping sickness infections, understanding the clinical aspects, the immune response to parasites and the vector transmission.

### **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:** Rijo-Ferreira

## MCELLBI 259P Research Review in Immunology and Pathogenesis: Cellular barriers to retroviral infection 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Cellular biology and genetics of retroviral infection and cellular antiviral mechanisms. Functional genomics approaches in key host/virus interactions.

### 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:** OhAinle

## MCELLBI C260 Molecular and Cellular Neurobiology 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2015

This course covers molecular and cellular aspects of cellular excitability (including membrane potential, action potential generation, spike propagation, and ion channel structure and function), synaptic transmission and plasticity, and sensory systems. Primary reading material will be research papers. We will provide references to textbook chapters for background and review. This will be an interactive course in which you will be expected to be an active participant.

### Rules & Requirements

**Prerequisites:** NEU 100A or equivalent undergraduate-level molecular and cellular neuroscience course

**Credit Restrictions:** Students will receive no credit for NEU C260 after completing MCELLBI 260, or MCELLBI C261.

### 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.

**Formerly known as:** Molecular and Cell Biology C260/Neuroscience C260

**Also listed as:** NEU C260

## MCELLBI 269C Research Review in Neurobiology: Molecular Mechanisms of Neuronal Plasticity 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

## MCELLBI 269D Research Review in Neurobiology: Signaling Within and Between Neurons 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of recent research in molecular mechanisms involved in intracellular and extracellular signaling in the nervous system.

### 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



## **MCELLBI 269E Molecular and Biophysical Neuroscience 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of research in molecular and biophysical aspects of sensory transduction and electrical signaling in the nervous system.

### **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

## **MCELLBI 269F Optogenetic Dissection of Neural Circuits 2 Units**

Terms offered: Spring 2025, Fall 2024, Spring 2024

Research review in neurobiology. Review of recent optogenetic strategies for dissecting neural connectivity, function, and dysfunction in the rodent and primate brain.

### **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

## **MCELLBI 269G Research Review in Development and Application of Advanced Methods for In Vivo Imaging 2 Units**

Terms offered: Spring 2025, Fall 2024, Spring 2024

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.

### **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

## **MCELLBI 269I Research Review in Neurobiology: Stem Cells and Gene Therapy in the Nervous System 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

The basic investigation of neural differentiation of stem cells, as well as the use of stem cells and gene delivery for neuroregeneration.

### **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

## MCELLBI 269J Research Review in Neurobiology: Taste Recognition in *Drosophila* 2 Units

Terms offered: Fall 2023, Spring 2023, Fall 2022

The molecular and cellular basis of taste perception in the model organism .

### 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

## MCELLBI 269K Research Review in Neurobiology: Instructive Cues for Neural Form and Function 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Molecular and circuit studies of the mechanisms that specify synaptic properties and how these properties bias the timescales of neuronal computation.

### 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:** Gomez

## MCELLBI 269M Research Review in Neurobiology: Insect Neurophysiology 2 Units

Terms offered: Fall 2024, Spring 2024, Fall 2023

*Drosophila* mutants that have behavioral abnormalities to unravel new and basic features of nervous system structure and function.

### 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

## MCELLBI 269N Research Review in Neurobiology: Synaptic and Circuit Mechanisms that Support Spatial Navigation 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Research in the Fisher laboratory focuses on spatial navigation in fruit flies in order to understand how nervous systems flexibly process information. Our research combines in vivo electrophysiology, 2-photon imaging, advanced genetic approaches and quantitative behavioral analysis to understand how the fly's brain constructs and maintains a sense of direction under ever-changing conditions.

### 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:** Fisher

## **MCELLBI 269O Research Review in Neurobiology: Neural Circuits for Sensory Processing and Behavior 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Microcircuitry of the cerebral cortex that underlies sensory processing and adaptive behavior.

### **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

## **MCELLBI 269P Research Review in Neurobiology: Visual Neuroscience 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Mechanisms for visual object representation including recognition, memory, segmentation, tracking, 3D representation, and embedding into meaningful scenes. Understanding the function of feedforward and feedback pathways in vision.

### **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:** Tsao

## **MCELLBI 269Q Research Review in Neurobiology: Sensory Processing and Plasticity in Cerebral Cortex 2 Units**

Terms offered: Spring 2025, Fall 2024, Spring 2024

How the cerebral cortex processes sensory input and stores information about the sensory world. We focus on the rat's primary somatosensory (S1) cortex.

### **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

## **MCELLBI 269R Research Review in Neurobiology: Potassium Channels and Synaptic Plasticity 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research.

### **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

## **MCELLBI 269T Research Review in Neurobiology: Processing of Visual Information in the Mammalian Brain 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

Review of current literature and discussion of original research.

### **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

## **MCELLBI 269W Research Review in Neurobiology: Neural Activity Affecting the Assembly of Neural Circuits 2 Units**

Terms offered: Fall 2025, Spring 2025, Fall 2024

How neural activity affects the assembly of neural circuits.

### **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

## **MCELLBI 275 Therapeutics Development in Biotech: Financing, Regulation and Social Ethics 2 Units**

Terms offered: Fall 2025, Fall 2024

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. Students will hear from lecturers with expertise ranging from molecular biology to clinical trial design and interpretation and be given an integrated overview of a complex area. Students will actively participate in experiential learning about relevant topics and presenting their findings in class, which will deepen understanding. There will be interactive elements, using a Socratic discussion format. Students are expected to participate actively.

### **Rules & Requirements**

**Prerequisites:** Students must be enrolled in the Master of Biotechnology program

### **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:** Letter grade.

**Instructor:** Schaletzky

## **MCELLBI 276 Sample Management, Drug Discovery and Lab Automation 3 Units**

Terms offered: Spring 2025

Automation plays an increasing role in academic and biotech labs. High-Throughput Screening (HTS) leverages screening of large libraries for activity against biological targets for drug discovery, enabled by automation, miniaturized assays and large-scale data analysis. Students learn process automation and hands-on training on sample management and liquid handling robotics. Students conduct a primary screen and follow up hits through dose response, using LIMS/Sample Management/Sample Tracking/Equipment Validation/QC and data analysis and interpretation. Students will understand what is required to run a HTS experiment, use robotics, data processing and control software, and learn how automation can help with accuracy and precision.

### **Rules & Requirements**

**Prerequisites:** This course will be limited to students enrolled in the MCB Master of Biotechnology program

### **Hours & Format**

**Fall and/or spring:** 11 weeks - 2 hours of lecture and 4 hours of laboratory per week

### **Additional Details**

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

**Grading:** Letter grade.

## MCELLBI C277 Communicating Quantitative Information 2 Units

Terms offered: Fall 2021, 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.

### 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

## MCELLBI 279 Master of Biotechnology Internship 4 - 8 Units

Terms offered: Spring 2025

This course synthesizes conceptual and technical knowledge students gained throughout the Master of Biotechnology program, challenging them to tackle an internship project under the supervision of their internship mentor and instructor. Abstract concepts are grounded in real-world problems that students address as part of their internship. MCB279 develops students' advanced research skills. They work with their mentor and the instructor to identify a question to address, devise a plan to interrogate it, and successfully execute their plan. The internship trains students to work collaboratively with others towards a shared mission and to think critically and creatively to apply their training to meet the needs of their host company or lab.

### Rules & Requirements

**Prerequisites:** Students must be enrolled in the Master of Biotechnology program

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

### Hours & Format

**Fall and/or spring:** 15 weeks - 12-24 hours of internship per week

### Additional Details

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

**Grading:** Letter grade.

## MCELLBI 280A Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2022, 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.

### 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.

## 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.

### 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.

## MCELLBI 280C Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2022, Spring 2021, Spring 2016

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.

### 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.

## MCELLBI 280D Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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.

## 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.

### 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.

## 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.

### 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.



## MCELLBI 288 Data Science for Molecular and Cell Biology 3 Units

Terms offered: Spring 2022, Spring 2021, Spring 2020

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.

### 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 - 4 hours of lecture per week

### Additional Details

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

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

**Instructors:** Rokhsar, Eisen

## MCELLBI 289 Master of Biotechnology Capstone Course 5 Units

Terms offered: Spring 2025

This capstone course fosters collaborative learning by bringing together students each week to discuss their internship project that they have been working on individually or in small groups under the supervision of their internship mentor. Students are encouraged to apply critical thinking skills to evaluate other projects and to provide constructive feedback. Students will work towards a final written report and oral presentation. They will identify and present a technology overview, explanation of unmet need, a central working hypothesis, a plan to test said hypothesis, execution of their plan, and a final research product. The final presentation will be in a poster presentation format.

### Rules & Requirements

**Prerequisites:** MCELLBI 201A and MCELLBI 201B. Students must be enrolled in the Master of Biotechnology program

### Hours & Format

**Fall and/or spring:** 15 weeks - 5 hours of seminar per week

### Additional Details

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

**Grading:** Letter grade.

**Instructor:** Luo

## MCELLBI 290 Graduate Seminar 1 Unit

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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.

## MCELLBI 291A Introduction to Research 2 - 12 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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.

## MCELLBI 291B Introduction to Research 2 - 12 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023  
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.

### 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.

## MCELLBI 292 Research 3 - 12 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024  
Individual research under the supervision of a faculty member.

### 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.

## 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.

### 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.

## MCELLBI 293A Research Seminar 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023  
Seminar on presentation and evaluation of results in area of student's individual research interests.

### 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.

## MCELLBI 293C Responsible Conduct in Research 1 Unit

Terms offered: Spring 2025, Spring 2024, Fall 2023  
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.

### 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

## 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.

### 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

## 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.

### 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

## 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.

### 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.

## MCELLBI 294 Current Topics in Biomedical Sciences 1 Unit

Terms offered: Fall 2025, Fall 2022, Fall 2021

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.

### 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.

## MCELLBI 295 Careers for Life Sciences Ph.D's 1 Unit

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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.

## 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.

### 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.

## MCELLBI C296 Doctoral Seminar in Computational Biology 2 Units

Terms offered: Spring 2024, Fall 2022, Fall 2021

This 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, microbiome data analysis, 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.

### 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

## MCELLBI 375 Pedagogy for MCB Graduate Student Instructors 2 Units

Terms offered: Prior to 2007

This course introduces new graduate student instructors to effective teaching methods that they can use in their MCB courses. Through readings, discussions and demonstrations, students will learn how to engage and motivate students, facilitate active participation, plan a class period, and write exam or practice problems. Emphasis will be placed on science education literature and proven practical techniques. We will also provide support and solutions for dealing with difficult situations that may come up during the semester.

### Rules & Requirements

**Prerequisites:** Appointment as graduate student instructor or consent of instructor

### Hours & Format

**Fall and/or spring:** 10 weeks - 1 hour 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.

**Instructors:** Ball, Beatty, Barnes

## MCELLBI 380 Teaching of Molecular and Cell Biology 1 - 2 Units

Terms offered: Fall 2022, Spring 2016, Fall 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.

### 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.

## MCELLBI 481B Instrumentation in Molecular and Cell Biology: Transmission Electron Microscopy 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Individualized laboratory instruction.

### 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

## MCELLBI 481C Instrumentation in Molecular and Cell Biology: Scanning Electron Microscopy 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Individualized laboratory instruction.

### 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

## 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.

### 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.

## 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.

### 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.

## UGBA C5 Introduction to Entrepreneurship 2 Units

Terms offered: Fall 2022, Fall 2021, Fall 2020

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.

### 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

## UGBA 10X Foundations of Business 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

This team-taught introductory course to the four-year Spieker Undergraduate Business Program is grounded in the Haas Defining Leadership Principles. Covering business fundamentals, teamwork, and critical thinking, the course explores contemporary business topics along with their historical and conceptual foundations, and their social and psychological implications. The course includes two weekly lectures and one small section meeting, featuring hands-on individual and group exercises for practical application of the concepts. Regular guest speakers connect students to real-world business problems.

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/Undergraduate

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

## UGBA C12 The Berkeley Changemaker 2 - 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025, Spring 2024, Fall 2023, Summer 2023 Second 6 Week Session  
Berkeley Changemaker impact occurs across many fronts: scientific, artistic, social, and entrepreneurial. This course helps students identify as a Berkeley Changemaker and learn the critical thinking, communication, and collaboration skills to become one. Combining disciplines across UC Berkeley, the course also helps launch the Berkeley Discovery arc. Students develop their own leadership styles and discover how they can create and lead diverse teams to act upon the world. Values in Berkeley's DNA like Questioning the Status Quo and going Beyond Yourself support students in leading from whatever position they occupy, preparing them to leave their mark on campus, in their communities, or beyond. More at: <http://changemaker.berkeley.edu>.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-2 hours of lecture and 0-1.5 hours of discussion per week

#### Summer:

6 weeks - 6-6 hours of lecture and 0-0 hours of discussion per week

8 weeks - 4-4 hours of lecture and 0-3 hours of discussion 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.

**Also listed as:** L & S C12



## UGBA 13 Berkeley Changemaker: Human Health 2 Units

Terms offered: Spring 2024, Fall 2022

Do you wonder how you might play a part in changing human health and improving the lives of others? Find your path with Berkeley Changemaker: Human Health. In this course you will apply the core principles of the Berkeley Changemaker curriculum by Critically exploring a full understanding of an important human health issue, Collaborating with diverse colleagues on a project team to investigate solutions using gold-standard discovery techniques, and Communicating what you've learned and providing thoughtful feedback to your classmates. Each week you will also research and then have a curated conversation with a changemaking expert on a range of human health topics, from startup solutions, to healthcare economics, to health equity issues.

### 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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

## UGBA 24 Freshman Seminars 1 Unit

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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.

## UGBA 39AC Philanthropy: A Cross-Cultural Perspective 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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

## UGBA 39E Freshman/Sophomore Seminar 2 - 4 Units

Terms offered: Fall 2025, Fall 2024, Spring 2024

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.

### 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

## UGBA 78G Developing Global Leadership Expertise 2 Units

Terms offered: Prior to 2007

This course is required for all freshmen in the Global Management Program at the Haas School of Business and limited to those students as well. The objective of this course is to provide students with an introduction to the type of leadership skills required to be a successful cross-cultural leader in today's increasingly complex global marketplace. The goal is for each student to begin developing a personalized global leadership "toolkit" that will continue to evolve over the next few years in the Global Management Program and ultimately as a business decision-maker with fiduciary responsibilities.

### 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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

## UGBA 84 Sophomore Seminar 1 or 2 Units

Terms offered: Prior to 2007

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.

### Rules & Requirements

**Prerequisites:** At discretion of instructor

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

### Hours & Format

#### Fall and/or spring:

5 weeks - 3-6 hours of seminar per week  
10 weeks - 1.5-3 hours of seminar per week  
15 weeks - 1-2 hours of seminar per week

#### Summer:

6 weeks - 2.5-5 hours of seminar per week  
8 weeks - 1.5-3.5 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.

## UGBA 88 Data and Decisions 2 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025

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 gleaned 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.

### Rules & Requirements

**Prerequisites:** One semester of Calculus (Math 16A or Math 51).

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

#### 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.

**Instructor:** Miller

## UGBA C95B Introduction to the Biotechnology Field and Industry 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.

### 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

**Formerly known as:** Molecular and Cell Biology C95B/Undergrad.  
Business Administration C95B

**Also listed as:** MCELLBI C75

## UGBA 96 Lower Division Special Topics in Business Administration 1 - 4 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Fall 2024

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.

### 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.

## UGBA 98 Directed Group Study 1 - 4 Units

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.

### 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

## UGBA 100 Business Communication 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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.

## UGBA 101A Microeconomic Analysis for Business Decisions 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025

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.

### Rules & Requirements

**Prerequisites:** Economics 1, Mathematics 1A (through Summer 2025) or 51 (as of Fall 2025) or 16A, Statistics W21, 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.

## UGBA 101B Macroeconomic Analysis for Business Decisions 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Spring 2025

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.

### Rules & Requirements

**Prerequisites:** Economics 1, Mathematics 1A or 16A, Statistics W21, 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 required, with common exam group.

**Formerly known as:** Business Administration 111

## UGBA 102A Financial Accounting 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Spring 2025

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.

### 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.

## UGBA 102B Managerial Accounting 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Spring 2025

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.

### 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.

## UGBA 103 Introduction to Finance 4 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Summer 2025 Second 6 Week Session

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.

### 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.

## UGBA 104 Introduction to Business Analytics 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025

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.

### Rules & Requirements

**Prerequisites:** Mathematics 1B or 16B, Statistics W21, 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 - 2.5-7.5 hours of lecture and 2.5-0 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

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

## UGBA 105 Leading People 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Spring 2025

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.

### 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 - 1.5-3 hours of lecture and 1.5-0 hours of discussion per week

**Summer:**  
6 weeks - 4-8 hours of lecture and 4-0 hours of discussion per week  
8 weeks - 3-6 hours of lecture and 3-0 hours of discussion per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/ Undergraduate

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

## UGBA 106 Marketing 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Summer 2025 Second 6 Week Session

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.

### 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.

## UGBA 107 The Social, Political, and Ethical Environment of Business 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Spring 2025

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.

### 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.

## UGBA 117 Special Topics in Economic Analysis and Policy 1 - 4 Units

Terms offered: Summer 2025 Second 6 Week Session, Spring 2025, Fall 2018

A variety of topics in economic analysis and policy with emphasis on current problems and research.

### 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

## UGBA 118 International Trade 3 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022

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.

### 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.



## UGBA 120AA Intermediate Financial Accounting 1 4 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Fall 2024

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").

### 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.

## UGBA 120AB Intermediate Financial Accounting 2 4 Units

Terms offered: Summer 2025 First 6 Week Session, Spring 2025, Summer 2024 First 6 Week Session

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.

### 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.

## UGBA 120B Advanced Financial Accounting 4 Units

Terms offered: Summer 2025 Second 6 Week Session, Fall 2024, Summer 2024 Second 6 Week Session

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.

### 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.

## UGBA 121 Federal Income Tax Accounting 4 Units

Terms offered: Summer 2025 Second 6 Week Session, Spring 2025, Summer 2024 Second 6 Week Session

Determination of individual and corporation tax liability; influence of federal taxation on economic activity; tax considerations in business and investment decisions.

### 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.

## UGBA 122 Financial Information Analysis 4 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Summer 2025 Second 6 Week Session

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.

### 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.

## UGBA 123 Operating and Financial Reporting Issues in the Financial Services Industry 3 Units

Terms offered: Fall 2023, Fall 2022, Fall 2021

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.

### Rules & Requirements

**Prerequisites:** Students are encouraged to complete UGBA 102A or to possess a basic understanding about how financial statements are prepared

### 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.

## UGBA 125 Ethics in Accounting 3 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022

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.

### 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.

## UGBA 126 Auditing 4 Units

Terms offered: Summer 2025 First 6 Week Session, Fall 2024, Summer 2024 First 6 Week Session

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.

### 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.

## UGBA 127 Special Topics in Accounting 1 - 4 Units

Terms offered: Fall 2024, Spring 2023, Spring 2022

A variety of topics in accounting with emphasis on current problems and research.

### 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.

## UGBA 128 Strategic Cost Management 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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.

## UGBA 131 Corporate Finance and Financial Statement Analysis 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025

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.

### 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

## UGBA 131A Corporate Strategy and Valuation 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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.

## UGBA 132 Financial Institutions and Markets 3 Units

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.

### 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

## UGBA 133 Investments 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Fall 2024

Sources of and demand for investment capital, operations of security markets, determination of investment policy, and procedures for analysis of securities.

### 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.

## UGBA 134 Introduction to Financial Engineering 3 Units

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.

### 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.

## UGBA 135 Personal Financial Management 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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

## UGBA 136F Behavioral Finance 3 Units

Terms offered: Summer 2025 Second 6 Week Session, Summer 2024 Second 6 Week Session, Summer 2023 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.

### 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.

## UGBA 137 Special Topics in Finance 1 - 4 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025

A variety of topics in finance with emphasis on current problems and research.

### 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

## UGBA 141 Production and Operations Management 2 - 3 Units

Terms offered: Fall 2024, Fall 2022, Spring 2022

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.

### 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

## UGBA 142 Advanced Business Analytics 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2024

Successful business analysts, managers, and executives are increasingly required to make data-driven decisions to run their businesses, rather than rely on experience and intuition alone. This course teaches the latest data analytic methods and decision methods now used by leading-edge business practitioners, going deep to understand their technical inner workings and going broad to realize their practical business applications. Topics include: data analysis/business decision methodology; data analytic methods, including machine learning and other approaches; introduction to R software for data analysis; real-world/real-data business practicum across a variety of industries.

### Rules & Requirements

**Prerequisites:** Undergraduate Business Administration 104, Data Science C100, or equivalent

### 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.

## UGBA 143 Game Theory and Business Decisions 3 Units

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.

### 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.

## UGBA 146 Project Management 2 Units

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 First 6 Week Session, Summer 2023 First 6 Week Session

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.

### 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.

## UGBA 147 Special Topics in Operations and Information Technology Management 1 - 4 Units

Terms offered: Summer 2023 First 6 Week Session, Summer 2022 First 6 Week Session, Spring 2022

A variety of topics in manufacturing and information technology with emphasis on current problems and research.

### 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.

## UGBA 150 Leading High Impact Teams 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

This course helps students hone and develop the leadership skills needed to lead dynamic, complex, global teams. Globalization, rapid technological change, and a shift towards an innovation-based economy have resulted in more dynamic, distributed, cross-functional, as well as demographically and culturally diverse teams. Students will learn to create team developmental plans and accountability, coach teams through challenges, encourage teams to recognize and avoid bias and misattributions, and lead from a distance and across boundaries.

### 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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).



## UGBA 151 Management of Human Resources 3 Units

Terms offered: Spring 2022, Spring 2021, Spring 2020

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.

### 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

## UGBA 151A People Analytics 2 Units

Terms offered: Prior to 2007

This course focuses on measuring and analyzing the costs and benefits of human capital investments by providing students with the ability to develop, analyze and use information to assess and measure employee and organizational performance. The course will show participants how to develop and make critical recommendations on such information to senior management, as well as helping to increase their presence and credibility with key decision makers. On successful completion, students will have the skills necessary to formulate both qualitative and quantitative recommendations for key management decisions affecting employees.

### Hours & Format

**Fall and/or spring:** 8 weeks - 4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA 152 Negotiation and Conflict Resolution 3 Units

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Summer 2025 Second 6 Week Session

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).

### 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

## UGBA 154 Power and Politics in Organizations 3 Units

Terms offered: Summer 2025 Second 6 Week Session, Summer 2024 Second 6 Week Session, Fall 2023

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.

### 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.

## UGBA 155 Leadership 3 Units

Terms offered: Summer 2023 First 6 Week Session, Summer 2022 First 6 Week Session, Summer 2021 First 6 Week Session

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.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for UGBA 155 after completing UGBA W155. A deficient grade in UGBA 155 may be removed by taking UGBA W155.

### 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.

## UGBA 155N The Nature of Leadership 6 Units

Terms offered: Not yet offered

In today's fast-changing world, leadership requires adaptability, creativity, and resilience. "The Nature of Leadership" immerses students in the intersection of leadership, nature, and art. This experiential course explores emotional intelligence, systems thinking, and innovation inspired by the natural world. Through virtual sessions and in-country experiences across rural Spain, students engage in hands-on art practice, creative workshops, and community interactions. Site visits explore how rural communities have rebuilt economies through creativity, art, and sustainability. The course culminates in an artistic leadership project, preparing students to lead with empathy and a connection to the environment.

### Hours & Format

**Summer:** 6 weeks - 18 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA C155 Leadership: Purpose, Authority, and Empowerment 3 Units

Terms offered: Summer 2023 10 Week Session, Summer 2022 10 Week Session, Summer 2021 10 Week Session

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.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for UGBA C155 after completing UGBA W155. A deficient grade in UGBA C155 may be removed by taking UGBA W155.

### Hours & Format

**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. Alternative to final exam.

**Also listed as:** UGIS C151

## UGBA 156 Berkeley Changemaker: Living with Agency 2 Units

Terms offered: Spring 2025, Spring 2024

What does it mean to "live with agency"? This course emphasizes the Berkeley Changemaker pillars of critical thinking, effective communication, and productive collaboration. You will combine critical examination of evidence-based, multi-disciplinary research and theories with personal self-reflection. These are interwoven with implementable strategies, directly applicable to the business context, to help you develop a sharper sense of who you want to be along with tools to make that happen. Frequent guest speakers, simulations, and discussions allow you to learn from others as you expand your network. L&S/UGBA C12/C196C is not a prerequisite but is highly recommended since this course complements and builds on that class.

### 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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

## UGBA 157 Special Topics in the Management of Organizations 1 - 4 Units

Terms offered: Spring 2025, Spring 2024, Fall 2023

A variety of topics in organizational behavior and industrial relations with emphasis on current problems and research.

### 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

## UGBA 159 Becoming a Changemaker 2 Units

Terms offered: Fall 2025, Spring 2025, Spring 2024

This course inspires, trains and equips participants to convert raw energy and enthusiasm for creating a better world into real leadership skills and mindsets which will empower you to create positive change at an individual, organizational and societal level. Anchored in change leadership and bringing together the fields of entrepreneurship, innovation, leadership & social impact, the course is focused on moving from ideas to action; gaining inspiration from diverse changemakers across roles and sectors; learning how to navigate, shape and lead change to thrive amidst uncertainty; and helping you become the kind of leader our companies, our communities and our world need right now.

### 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.

## UGBA 160 Customer Insights 3 Units

Terms offered: Fall 2025, Fall 2024, Spring 2024

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.

### 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.

## UGBA 161 Market Research: Tools and Techniques for Data Collection and Analysis 3 Units

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.

### 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.

## UGBA 162 Brand Management and Strategy 3 Units

Terms offered: Summer 2024 Second 6 Week Session, Spring 2022, Fall 2020

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.

### 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

## UGBA 162A Product Branding and Branded Entertainment 2 Units

Terms offered: Fall 2022, Fall 2021, Fall 2020

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.

### 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.

## UGBA 164 Marketing Strategy 3 Units

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.

### 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.

## UGBA 165 Advertising Strategy 3 Units

Terms offered: Summer 2022 First 6 Week Session, Summer 2021 First 6 Week Session, Summer 2020 First 6 Week Session

Basic concepts and functions of advertising in the economy; consumer motivation; problems in utilizing advertising and measuring its effectiveness.

### 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

## UGBA 167 Special Topics in Marketing 1 - 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

A variety of topics in marketing with emphasis on current problems and research.

### 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

## UGBA 168B International Marketing 3 Units

Terms offered: Fall 2025, Spring 2025, Spring 2015

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.

### Hours & Format

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

**Summer:** 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.

## UGBA 169 Pricing 3 Units

Terms offered: Fall 2024, Summer 2024 Second 6 Week Session, Spring 2024

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.

### 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.

## UGBA 171 Tech and the City: How to Get Urban Innovation Right 3 Units

Terms offered: Spring 2024, Spring 2022

This course critically examines how new technologies and business models impact cities, and identifies the approaches that produce not only the best business outcomes, but also the most equitable and sustainable outcomes. To begin, we explore what makes cities such compelling laboratories for technology innovation, learn from past attempts at "smart city" interventions, and discuss how technologists can identify more effective solutions to today's urban challenges. We'll then hear from a variety of cutting edge practitioners, including venture investors, startup founders, government officials, tech journalists and community organizers about the unique opportunities and challenges of building an urban tech startup today.

### 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.

## UGBA C172 History of American Business 3 Units

Terms offered: Spring 2022, Spring 2021, Spring 2019

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.

### 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

## UGBA 173 Competitive Strategy 2 - 3 Units

Terms offered: Fall 2025, Summer 2025, Fall 2024

This course takes the perspective of the executive responsible for developing a firm's strategy, and focuses on forms of competitive advantage at the firm level. Topics include industry and competitive analysis; business scope (horizontal and vertical scope); make vs buy decision-making and related tradeoffs; network effects and complementors; disruption and response; non-market factors such as regulatory barriers to entry; and risks to sustaining returns. This course will build on concepts covered in various UGBA Core classes.

### Rules & Requirements

**Prerequisites:** 101A or equivalent

### Hours & Format

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

### Summer:

3 weeks - 10-15 hours of lecture per week

6 weeks - 5-7.5 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

**Instructor:** Metzler

**Formerly known as:** Undergrad. Business Administration 115

## UGBA 174 Leading Strategy Implementation 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for UGBA 174 after completing BUS ADM 190.

### 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:** Undergrad. Business Administration 119

## UGBA 175 Legal Aspects of Management 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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



## UGBA 176 Innovations in Communications and Public Relations 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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.

## UGBA 177 Special Topics in Business and Public Policy 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

A variety of topics in business and public policy with emphasis on current problems and research.

### 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

## UGBA 178 Introduction to International Business 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Fall 2024

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.

### 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.

## UGBA 179 International Consulting for Small and Medium-Sized Enterprises 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2022

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.

### 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.

## UGBA 179G GMP Capstone: International Team Project 3 Units

Terms offered: Prior to 2007

This course is required for all juniors in the Global Management Program at the Haas School of Business and limited to those students as well.

This is an experiential learning course where students will work on a live project with a company, covering both the revenue and cost sides of the business model. The course will provide students insider access to company executives and information while also giving them the opportunity to contribute meaningfully to the company's bottom-line performance. In the process, students will acquire skills and knowledge across the following three key categories: Cross-Cultural Competence, International Sales & Marketing, International Finance & Supply Chain Management.

### 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.

## UGBA 180 Introduction to Real Estate and Urban Land Economics 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

The nature of real property; market analysis; construction cycles; mortgage lending; equity investment; metropolitan growth; urban land use; real property valuation; public policies.

### Rules & Requirements

**Prerequisites:** Economics 1, Mathematics 16A or 1A, or equivalents

### 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 180

## UGBA 183 Introduction to Real Estate Finance 3 Units

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.

### 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

## UGBA 184 Urban and Real Estate Economics 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2016

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.

### 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.

## UGBA 187 Special Topics in Real Estate Economics and Finance 1 - 4 Units

Terms offered: Fall 2010, Fall 2009

A variety of topics in real estate economics and finance with emphasis on current problems and research.

### 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.

## UGBA 190C Collaborative Innovation 4 Units

Terms offered: Spring 2022, 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.

### 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

## UGBA 190D Innovation and Design Thinking in Business 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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.

## UGBA 190S Strategy for the Information Technology Firm 2 - 3 Units

Terms offered: Prior to 2007

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.

### 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.

## UGBA 190T Special Topics in Innovation and Design 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### 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.

## UGBA 191C Communication for Leaders 2 Units

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.

### 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.

## UGBA 191I Improvisational Leadership 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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.

## UGBA 191L Leadership Communication 1 - 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

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

## UGBA 191P Leadership and Personal Development 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

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.

### Hours & Format

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

**Summer:** 6 weeks - 4 hours of lecture and 4 hours of laboratory per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA 192A Leading Nonprofit and Social Enterprises 3 Units

Terms offered: Fall 2025, Fall 2023, Spring 2022

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.

### 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

## UGBA 192AC Social Movements and Social Media 3 Units

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.

### 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

## UGBA 192B Strategic Philanthropy 2 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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.

## UGBA 192E Social Entrepreneurship 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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.

## UGBA 192F Edible Education 3 Units

Terms offered: Prior to 2007

This course is a lecture series that explores the food system and its critical role in our culture, well-being and survival. Students will develop food-systems intelligence—a personal understanding of how the diverse facets of the food system relate to one another, especially one's own role as a participant in the food system and how individual and collective choices, actions, policies and public and private interests affect it. The course explores personal ethics, complex systems, entrepreneurial agency, and ways to develop a multi-sector perspective to food-systems change making. Students will develop plans at an individual, local, national, or global scale to improve, and possibly transform our food system.

### 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.

## UGBA 192G Strategic Approaches for Global Social Impact 2 Units

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.

### 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.

## UGBA 192H Managing Human Rights in Business 2 Units

Terms offered: Spring 2023, Spring 2021

This course, one of the first of its kind offered at a business school, will prepare students for the growing field of practice at the intersection of business and human rights. Students will gain an overview of the international human rights framework and global business and human rights standards and guidelines; analyze the ways in which companies can impact human rights, and to assess the degree to which companies are and should be responsible for human rights impacts; learn to manage a company's human rights impacts as corporate human rights managers, external consultants, or civil society advocates; and practice the communication skills necessary to successfully address human rights issues within a complex multinational corporation.

### 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.



## UGBA 192ID Impact Startup Disco 1 Unit

Terms offered: Spring 2025, Spring 2024, Spring 2023

This is a high-octane, single weekend course (plus one intro day) for students interested in meeting other innovators and getting hands-on experience developing a new impact startup concept. All “social and environmental” impact themes are welcome. The course is inspired by other “hackathon” and startup weekend formats. A structured roadmap helps guide students through a sprint formation and ideation process. All students will be asked to submit an idea during the week prior to the class. After a peer vote selects the top ideas, teams are organically formed during the first session. At the end of the course, each team will present their validated concept and their next steps plan to a panel of impact venture experts.

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA 192L Applied Impact Evaluation 2 Units

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.

### 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.

## UGBA 192MC Management Consulting Skills for Social Impact 2 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course provides a basic understanding of what consultants do and how they do it, and how consulting skills can be applied to thorny problems of social impact. Students will: 1) gain a broad understanding of the management consulting industry, the various consulting models, and how consultants can generate value for their clients in the social sector; 2) learn and practice structured approaches to problem solving used by leading management consultancies; and 3) understand other skills required in management consulting for social impact – such as communicating persuasively and managing projects and client relationships – as well as some of the ethical issues that consultants often face working in the social sector.

### Hours & Format

**Fall and/or spring:**

12 weeks - 2.5 hours of lecture per week

15 weeks - 2 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

**Grading/Final exam status:** Letter grade. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

## UGBA 192N Topics in Social Sector Leadership 1 - 5 Units

Terms offered: Spring 2022, Fall 2019, Spring 2019

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.

### 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.

## UGBA 192P Sustainable Business Consulting Projects 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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.

## UGBA 192PF Plant Futures: Introduction to Plant-Centric Food Systems 3 Units

Terms offered: Spring 2025

Available to students across all UCs, Plant Futures: Introduction to Plant-Centric Food Systems fosters interdisciplinary connection while providing a systems-view exploration of both the challenges and emergent solutions and opportunities within our current food system. Through a mix of synchronous and asynchronous modular content, covering Climate & Environment, Health & Nutrition, Animal Welfare, Social Impacts, Innovation, Policy & Law, Behavioral Change, Media, and Plant-Forward Cooking, you'll engage with esteemed experts, express your unique perspective through written assignments and guided discussions, and apply your learnings and ideas by working with your peers on innovative projects aimed at advancing plant-centric food systems.

### 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.

## UGBA 192S Business and Sustainability 2 Units

Terms offered: Summer 2024 First 6 Week Session, Summer 2023 First 6 Week Session, Summer 2022 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"?

### 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.

## UGBA 192T Topics in Responsible Business 1 - 4 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025

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.

### 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 - 2-8 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA C192R Business, Sustainability, and Society 3 Units

Terms offered: Summer 2025 Second 6 Week Session, Summer 2024 Second 6 Week Session, Summer 2022 8 Week Session, Summer 2021 8 Week Session

As corporations have grown in influence, concerns over their impact on people and the planet have also grown, pushing sustainability, corporate social responsibility, and the wider impact of business into the spotlight. This course focuses on business ethics, supply chains, resource constraints, labor issues, innovation, and environmental externalities, as well as the internal challenges, competitive pressures, external stakeholders, and other issues that businesses must consider while trying to act responsibly.

### Hours & Format

#### 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, with common exam group.

**Instructor:** Rochlin

**Also listed as:** ENE,RES C192

## UGBA 193B Energy & Civilization 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022

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.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for UGBA 193B after completing L & S 126. A deficient grade in UGBA 193B may be removed by taking 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.

## UGBA 193C Practical Training 0.5 Units

Terms offered: Summer 2014 10 Week Session, Summer 2013 10 Week Session, Summer 2012 10 Week Session

A structured reflective experience on the applied aspects of Business Administration in a professional off-campus environment. The self-selected experience from a CPT employer is designed to provide students with opportunities to make connections between the theory and practice of academic study and the practical application of that study in a real world setting. This applied course is intended for students to enhance their academics through their experience with the experiential learning activity of their choice.

### Rules & Requirements

**Repeat rules:** Course may be repeated for credit without restriction. Students may enroll in multiple sections of this course within the same semester.

### 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. Alternative to final exam.

## UGBA 193I Business Abroad 4 - 6 Units

Terms offered: Summer 2019 8 Week Session, Summer 2018 Second 6 Week Session, Summer 2017 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.

### 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.

## UGBA 194 Undergraduate Colloquium on Business Topics 1 Unit

Terms offered: Spring 2025, Spring 2024, Spring 2023

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.

### 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.

## UGBA 194S Sports Management 2 Units

Terms offered: Spring 2025

This course focuses on key issues and influencers within the sports industry, with an emphasis on college athletics. Subjects research, review and discuss topics in law, marketing, finance, and management; issues range from pending NCAA lawsuits, naming rights, conference television agreements, multi-media rights, and athletic facility financing, to coaching and player / student-athlete experiences. Students have the opportunity to engage with sports industry professionals and guest speakers on a variety of present day issues.

### 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.

## UGBA 195A Entrepreneurship 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Whether you have an idea for a business right now, are interested in being an entrepreneur in the future, or want to build entrepreneurial skills to be an innovator at an established company, this course will cover the topics you need to know to succeed. The course takes students through the entire new venture process including how to: evaluate new business ideas, get customers to buy your product, validate that your business is scalable and profitable, pitch to investors/raise capital, scale and exit a business, and beyond. Through a group project, students create their own venture and learn by doing what entrepreneurs actually do. Each week students also get insights from successful entrepreneur/investor guest speakers.

### 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.

## UGBA 195B Startup and Small-Business Consulting 2 Units

Terms offered: Fall 2021

This course is designed to provide students with an understanding of the concepts and principles for consulting with startups and small businesses. Students will work in self-created teams of 3-4 and can either bid for projects provided by the instructor, or source their own project so long as it fits the course criteria. Course time will include guest lecturers and consulting skills workshops. Student teams will be expected to meet together and with the client outside of class time.

### 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.

## UGBA 195M M.E.T. Innovation and Entrepreneurship Immersion 2 Units

Terms offered: Prior to 2007

This course is an experiential capstone for seniors in the M.E.T. program. The pedagogical objective is to consolidate and build upon the learning over the four years in the program through a week-long immersion, in which the students will be visiting another leading technology cluster domestically or internationally. The purpose is to expose them to companies and approaches for pursuing innovation and entrepreneurship differently from the California Bay Area, to both integrate and expand the concepts and skills they've accumulated in their curriculum.

### Hours & Format

**Fall and/or spring:** 8 weeks - 1 hour of lecture and 6 hours of fieldwork per week

**Summer:** 8 weeks - 1 hour of lecture and 6 hours of fieldwork 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.

## UGBA 195P Entrepreneurship: How to Successfully start a New Business 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

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.

### 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.

## UGBA 195S Entrepreneurship To Address Global Poverty 3 Units

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.

### 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.

## UGBA 195T Topics in Entrepreneurship 1 - 3 Units

Terms offered: Summer 2025, Spring 2025, Spring 2024

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.

### 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

**Summer:** 3 weeks - 5-15 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA C195C Life Sciences, Business, and Entrepreneurship Capstone Course 4 Units

Terms offered: Prior to 2007

Blended lecture / Project-based course where student teams build out a business plan for a mock biotech company, demonstrating advanced knowledge in therapeutics and business development. Throughout the course student teams will work toward a final project in which they will identify and present a technology overview, disease overview and explanation of unmet need, a development plan, a commercialization plan, risk mitigation strategy, and financials. Class will include field trips, guest lectures, and a pitch competition with prize.

### Rules & Requirements

**Prerequisites:** Students must be in their fourth and final year of the Life Sciences, Business, and Entrepreneurship Program in order to enroll in this class

### Hours & Format

**Fall and/or spring:** 15 weeks - 4 hours of lecture per week

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

**Instructors:** Schaletzky, Dillin

**Also listed as:** MCELLBI C175

## UGBA 196 Special Topics in Business Administration 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024

Study in various fields of business administration. Topics will vary from year to year and will be announced at the beginning of each semester.

### 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

## UGBA 196SA Business Models for Sustainability 3 Units

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 First 6 Week Session, Summer 2023 First 6 Week Session

This course explores the ways in which business, social and environmental sustainability are intertwined. The course maps how business can play a definitive role in addressing the problems of sustainability, primarily with regard to climate change. The course examines a range of approaches to developing business models in the context of sustainability, the actions that business can take to improve environmental outlook, and the emergence of a sustainability-aware economy.

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA 196SB Innovation and Entrepreneurship for Sustainability 3 Units

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 First 6 Week Session, Summer 2023 First 6 Week Session

This course is an optimistic take on the daunting issues of environmental and social sustainability, primarily through the lens of innovation and entrepreneurship, and maps how new business creation can play a definitive role in addressing the social and environmental problems of sustainability. In terms of balance, the course starts with a primer on the fundamentals of innovation and entrepreneurship (the first 20% of the course) before moving on to the core topic of sustainability entrepreneurship (80% of the course).

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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



## UGBA 196SC Investing for Sustainability 3 Units

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 First 6 Week Session, Summer 2023 Second 6 Week Session

This course examines how capital markets and the investment industry are responding to the growth in social and environmental sustainability, both as a financial risk to investment opportunities and increased public awareness in the role of financial markets and investment in social and environmental issues. The course includes 1) an introduction to capital markets including institutional investment, public finance and private capital, and 2) an examination of the rise of sustainability-related investing including environmental, social and governance investing, mission-related investment, venture capital impact investing, blended finance and shareholder activism on issues ranging from climate change to diversity, equity and inclusion.

### Hours & Format

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

### Additional Details

**Subject/Course Level:** Undergrad. Business Administration/  
Undergraduate

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

## UGBA C196C The Berkeley Changemaker 2 - 3 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Spring 2025, Fall 2023, Summer 2023 Second 6 Week Session, Spring 2023

Berkeley Changemaker impact occurs across many fronts: scientific, artistic, social, and entrepreneurial. This course helps students identify as a Berkeley Changemaker and learn the critical thinking, communication, and collaboration skills to become one. Combining disciplines across UC Berkeley, the course also helps launch the Berkeley Discovery arc. Students develop their own leadership styles and discover how they can create and lead diverse teams to act upon the world. Values in Berkeley's DNA like Questioning the Status Quo and going Beyond Yourself support students in leading from whatever position they occupy, preparing them to leave their mark on campus, in their communities, or beyond. More at: <http://changemaker.berkeley.edu>.

### Rules & Requirements

**Credit Restrictions:** Students will receive no credit for UGBA C196C after completing UGBA C12. A deficient grade in UGBA C196C may be removed by taking UGBA C12.

### Hours & Format

**Fall and/or spring:** 15 weeks - 2-2 hours of lecture and 0-1.5 hours of discussion per week

### Summer:

6 weeks - 6-6 hours of lecture and 0-0 hours of discussion per week

8 weeks - 4-4 hours of lecture and 0-3 hours 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:** Undergrad. Business Administration C112/Letters and Science C112

**Also listed as:** L & S C196C

## UGBA 198 Directed Study 1 - 4 Units

Terms offered: Spring 2025, Spring 2016, Fall 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.

### 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

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

Terms offered: Fall 2025, Spring 2025, Fall 2024

Enrollment restrictions apply.

### 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