Molecular and Cell Biology

Bachelor of Arts (BA)

The undergraduate major in Molecular and Cell Biology (MCB) focuses on the study of molecular structures and processes of cellular life and their roles in the function, reproduction, and development of living organisms. This covers a broad range of specialized disciplines, such as biochemistry, microbiology, biophysics, molecular biology, genetics, cell physiology, cell anatomy, immunology, and neurobiology. The types of living organisms from which the departmental faculty draws its working materials are as diverse as its disciplinary concentrations, ranging from viruses and microbes through plants, roundworms, annelids, arthropods, and mollusks, to fish, amphibia, and mammals.

There are five emphases (concentrations) in MCB:

- Biochemistry and Molecular Biology
- Cell and Developmental Biology
- Genetics, Genomics, and Development
- Immunology and Pathogenesis
- Neurobiology

All of the emphases except Neurobiology have two tracks to choose from. Some tracks only differ slightly and some give a whole different perspective on the emphasis. For help deciding your emphasis please see a staff or peer advisor in MCB!

Declaring the Major

Students can receive pre-major advising at any time from staff or peer advisors. MCB is not an impacted major. Therefore, the major will accept any interested student who meets the minimum course and GPA requirements and is realistically able to complete the major requirements during the student's time at UC Berkeley.

In order to declare the MCB major, students must have completed or be enrolled in BIOLOGY 1A (http://guide.berkeley.edu/archive/2019-20/search/?P=BIOLOGY%201A)/BIOLOGY 1AL (http://guide.berkeley.edu/archive/2019-20/search/?P=BIOLOGY%201AL) (C or better on first Bio 1A midterm) and CHEM 3B (http://guide.berkeley.edu/archive/2019-20/search/?P=CHEM%203B) (past the early drop deadline), have at least a 2.0 overall GPA, a 2.0 GPA in the courses taken for the major, a 2.0 GPA in any upper division courses taken for the major, and know which emphasis they will declare. Intended MCB students are not required to have completed the math, physics, or Bio 1B requirements at the time of declaration (though these requirements must be met in order to graduate).

To start the major declaration process, students must fill out the MCB major declaration form online (https://mcb.berkeley.edu/undergrad/declaring).

Once the declaration form has been processed, students will receive an email with instructions to schedule an appointment to meet with a staff advisor. Advising appointments take place in the Undergraduate Advising Office in 3060 Valley Life Sciences Building. Students should bring a printed copy of their Academic Summary in CalCentral to their advising appointment to discuss their academic plan. See full instructions on the MCB Declaration page (https://mcb.berkeley.edu/undergrad/declaring).

General Guidelines

In addition to the University, campus, and college requirements, listed on the College Requirements tab, students must fulfill requirements specific to their major program and declared emphasis.

1. All courses taken to fulfill the major requirements below must be taken for letter-graded credit.
2. No more than one upper division course may be used to simultaneously fulfill requirements for a student's major and minor programs. Double majors and simultaneous degrees are limited to a two-course overlap.
3. Students must maintain a minimum grade point average (GPA) of at least a 2.0 GPA overall, a 2.0 GPA in the required major coursework (lower and upper division), and a 2.0 GPA in the upper division coursework for the major.

For information regarding residency requirements and unit requirements, please see the College Requirements tab.

Lower Division Requirements for All Emphases

Please note the alternative chemistry sequence for BMB Track 2.

MATH 10A & MATH 10B	Methods of Mathematics: Calculus, Statistics, and Combinatorics and Methods of Mathematics: Calculus, Statistics, and Combinatorics [1]	4-8
or MATH 1A/1B	Calculus	
CHEM 1A & 1AL	General Chemistry and General Chemistry Laboratory [2]	5
CHEM 3A & 3AL	Chemical Structure and Reactivity and Organic Chemistry Laboratory [3]	5
CHEM 3B & 3BL	Chemical Structure and Reactivity and Organic Chemistry Laboratory [3]	5
BIOLOGY 1A & 1AL	General Biology Lecture and General Biology Laboratory	5
BIOLOGY 1B	General Biology Lecture and Laboratory	4
PHYSICS 8A & PHYSICS 8B	Introductory Physics and Introductory Physics [4]	8
BMB Track 2 Alternative Chem sequence:		
Students in the Biochemistry & Molecular Biology emphasis track 2 must take the following chemistry sequence:		
CHEM 1A & 1AL	General Chemistry and General Chemistry Laboratory	5
CHEM 1B	General Chemistry	4
CHEM 12A & CHEM 12B	Organic Chemistry and Organic Chemistry	10

[1] For alternative Math sequences please contact an MCB advisor at mcbuao@berkeley.edu

[2] CHEM 4A (http://guide.berkeley.edu/archive/2019-20/search/?P=CHEM%204A) may be taken place of CHEM 1A (http://guide.berkeley.edu/archive/2019-20/search/?P=CHEM%201A) and CHEM 1AL (http://guide.berkeley.edu/archive/2019-20/search/?P=CHEM%201AL).

[3] CHEM 12A and CHEM 12B may be taken place of CHEM 3A/CHEM 3AL and CHEM 3B/CHEM 3BL.

[4] PHYSICS 7A and PHYSICS 7B can be taken in place of PHYSICS 8A and PHYSICS 8B.

Upper Division Requirements by Emphasis

MCB has five emphases (concentrations):

- Biochemistry and Molecular Biology (p.)
- Cell and Developmental Biology (p.)
- Genetics, Genomics, and Development (p.)
- Immunology and Pathogenesis (p.)
- Neurobiology (p. 2)

All of these emphases except neurobiology have two tracks that students can choose from.

Biochemistry and Molecular Biology

Track 1

MCELLBI C100A/ CHEM C130	Biophysical Chemistry: Physical Principles and the Molecules of Life	4
MCELLBI 100B	Biochemistry: Pathways, Mechanisms, and Regulation	4
MCELLBI 110	Molecular Biology: Macromolecular Synthesis and Cellular Function	4
MCELLBI 140 or MCELLBI C1	General Genetics Microbial Genomics and Genetics	4
MCELLBI/CHEM C110L	General Biochemistry and Molecular Biology Laboratory	4
One BMB Elective (see below)		4

TRACK 2

MCELLBI C100A/ CHEM C130	Biophysical Chemistry: Physical Principles and the Molecules of Life	4
CHEM 130B	Biophysical Chemistry	3
CHEM 135	Chemical Biology	3
MCELLBI 130 or MCELLBI 14	Cell and Systems Biology General Genetics	4
MCELLBI C110L	General Biochemistry and Molecular Biology Laboratory	4
One BMB Elective (see below)		

Cell and Developmental Biology

Track 1

MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
MCELLBI 104	Genetics, Genomics, and Cell Biology	4
MCELLBI 130	Cell and Systems Biology	4
MCELLBI 133L	Physiology and Cell Biology Laboratory	4
Two CDB Electives from List A (see below)		6-8

Track 2

MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
MCELLBI 104	Genetics, Genomics, and Cell Biology	4
MCELLBI 136	Physiology	4
MCELLBI 133L	Physiology and Cell Biology Laboratory	4
Two CDB Electives from List B (see below)		6-8

Genetics, Genomics, and Development

TRACK 1

MCELLBI C100A/ CHEM C130	Biophysical Chemistry: Physical Principles and the Molecules of Life	4
MCELLBI 110	Molecular Biology: Macromolecular Synthesis and Cellular Function	4
MCELLBI 140	General Genetics	4
MCELLBI 140L	Genetics Laboratory	4
One GGD Elective, from List A or List B (see below)		3-4
One GGD Elective from List B (see below)		3-4

Track 2

MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
MCELLBI 104 or MCELLBI 14	Genetics, Genomics, and Cell Biology General Genetics	4
MCELLBI 141	Developmental Biology	4
MCELLBI 140L	Genetics Laboratory	4
One GGD Elective from List A or List B (see below)		3-4
One GGB Elective from List B (see below)		3-4

Immunology and Pathogenesis

TRACK 1

MCELLBI C100A/ CHEM C130	Biophysical Chemistry: Physical Principles and the Molecules of Life	4
MCELLBI 110	Molecular Biology: Macromolecular Synthesis and Cellular Function	4
MCELLBI 104 or MCELLBI 14	Genetics, Genomics, and Cell Biology General Genetics	4
MCELLBI 150	Molecular Immunology	4
MCELLBI 150L	Immunology Laboratory	4
One IMM Elective from List C (see below)		3-4

Track 2

MCELLBI 102	Survey of the Principles of Biochemistry and Molecular Biology	4
MCELLBI 104 or MCELLBI 14	Genetics, Genomics, and Cell Biology General Genetics	4
MCELLBI 150	Molecular Immunology	4
MCELLBI 150L	Immunology Laboratory	4
One IMM Elective from List A (see below)		3-4
One IMM Elective from List B (see below)		3-4

Neurobiology

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

MCELLBI 104	Genetics, Genomics, and Cell Biology	4
MCELLBI 160	Cellular and Molecular Neurobiology	4
MCELLBI 161	Circuit, Systems and Behavioral Neuroscience	4
MCELLBI 160L	Neurobiology Laboratory	4
or MCELLBI 163L	Mammalian Neuroanatomy Lab	
One NEU Elective (see below)		3-4

Upper Division Electives by Emphasis (Concentration)

The electives for each emphasis (concentration) are listed below:

- Biochemistry and Molecular Biology (p.)
- Cell and Developmental Biology (p.)
- Genetics, Genomics, and Development (p.)
- Immunology and Pathogenesis (p.)
- Neurobiology (p.)

Biochemistry and Molecular Biology (both tracks, minimum of one course)

CHEM 113	Advanced Mechanistic Organic Chemistry	3
CHEM 115	Organic Chemistry--Advanced Laboratory Methods	4
CHEM 130B	Biophysical Chemistry	3
ESPM C148/ NUSCTX C114	Pesticide Chemistry and Toxicology	3
MATH 110	Linear Algebra	4
MATH 127	Mathematical and Computational Methods in Molecular Biology	4
MCELLBI/ PLANTBI C103	Bacterial Pathogenesis	3
MCELLBI/ PLANTBI C112	General Microbiology	4
MCELLBI/ PLANTBI C114	Introduction to Comparative Virology	4
MCELLBI/ PLANTBI C116	Microbial Diversity	3
MCELLBI 130	Cell and Systems Biology	4
MCELLBI 132	Biology of Human Cancer	4
MCELLBI/ PLANTBI C134	Chromosome Biology/Cytogenetics	3
MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MCELLBI 136	Physiology	4
MCELLBI 137L	Physical Biology of the Cell	4
MCELLBI 141	Developmental Biology	4
MCELLBI 143	Evolution of Genomes, Cells, and Development	3
MCELLBI/ PLANTBI C148	Microbial Genomics and Genetics	4
MCELLBI 149	The Human Genome	3
MCELLBI 150	Molecular Immunology	4
MCELLBI 160	Cellular and Molecular Neurobiology	4
MCELLBI 161	Circuit, Systems and Behavioral Neuroscience	4
MCELLBI 165	Neurobiology of Disease	3
MCELLBI 166	Biophysical Neurobiology	3
PHYSICS 112	Introduction to Statistical and Thermal Physics	4
PHYSICS 177	Principles of Molecular Biophysics	3
PLANTBI 135	Physiology and Biochemistry of Plants	3
PLANTBI 150	Plant Cell Biology	3
PLANTBI 160	Plant Molecular Genetics	3
PB HLTH 141	Introduction to Biostatistics	5
Students who complete math requirements other than MATH 10A/ MATH 10B are eligible to choose from the following courses.		
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4
or PB HLTH W142	Introduction to Probability and Statistics in Biology and Public Health	
STAT 131A	Statistical Methods for Data Science	4

Cell and Developmental Biology

CDB ELECTIVE LIST A (Track 1, minimum of one course)

MCELLBI/ PLANTBI C103	Bacterial Pathogenesis	3
MCELLBI/ PLANTBI C112	General Microbiology	4
MCELLBI/ PLANTBI C114	Introduction to Comparative Virology	4
MCELLBI/ PLANTBI C116	Microbial Diversity	3
MCELLBI 132	Biology of Human Cancer	4
MCELLBI/ PLANTBI C134	Chromosome Biology/Cytogenetics	3
MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MCELLBI 136	Physiology	4
MCELLBI 137L	Physical Biology of the Cell	4
MCELLBI 141	Developmental Biology	4
MCELLBI 143	Evolution of Genomes, Cells, and Development	3
MCELLBI/ PLANTBI C148	Microbial Genomics and Genetics	4
MCELLBI 149	The Human Genome	3
MCELLBI 150	Molecular Immunology	4
MCELLBI 160	Cellular and Molecular Neurobiology	4
MCELLBI 161	Circuit, Systems and Behavioral Neuroscience	4
MCELLBI 165	Neurobiology of Disease	3
MCELLBI 166	Biophysical Neurobiology	3

CDB Elective List B (Track 2, minimum of one course)

MCELLBI/ PLANTBI C103	Bacterial Pathogenesis	3
MCELLBI/ PLANTBI C112	General Microbiology	4
MCELLBI/ PLANTBI C114	Introduction to Comparative Virology	4
MCELLBI/ PLANTBI C116	Microbial Diversity	3
MCELLBI 130	Cell and Systems Biology	4
MCELLBI 132	Biology of Human Cancer	4
MCELLBI/ PLANTBI C134	Chromosome Biology/Cytogenetics	3

MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MCELLBI 137L	Physical Biology of the Cell	4
MCELLBI 141	Developmental Biology	4
MCELLBI 143	Evolution of Genomes, Cells, and Development	3
MCELLBI/ PLANTBI C148	Microbial Genomics and Genetics	4
MCELLBI 149	The Human Genome	3
MCELLBI 150	Molecular Immunology	4
MCELLBI 160	Cellular and Molecular Neurobiology	4
MCELLBI 161	Circuit, Systems and Behavioral Neuroscience	4
MCELLBI 165	Neurobiology of Disease	3
MCELLBI 166	Biophysical Neurobiology	3
INTEGBI 103LF	Invertebrate Zoology with Laboratory	5
INTEGBI 104LF	Natural History of the Vertebrates with Laboratory	5
INTEGBI 117 & 117LF	Medical Ethnobotany and Medical Ethnobotany Laboratory (Both courses must be taken to count as an elective.)	4
INTEGBI 123AL	Exercise and Environmental Physiology with Laboratory	5
INTEGBI 131	General Human Anatomy	3
INTEGBI 137	Human Endocrinology	4
INTEGBI 140	Biology of Human Reproduction	4
INTEGBI C143A/ PSYCH C113	Biological Clocks: Physiology and Behavior	3
INTEGBI C143B/ PSYCH C116	Hormones and Behavior	3
INTEGBI 148	Comparative Animal Physiology	3
NUSCTX 103	Nutrient Function and Metabolism	3
NUSCTX 108A	Introduction and Application of Food Science	3
NUSCTX 110	Toxicology	4
NUSCTX 160	Metabolic Bases of Human Health and Diseases	4
NUSCTX 161A	Medical Nutrition Therapy	4
PLANTBI 135	Physiology and Biochemistry of Plants	3
PLANTBI 150	Plant Cell Biology	3
PLANTBI 160	Plant Molecular Genetics	3
PSYCH 110	Introduction to Biological Psychology	3
PSYCH C113/ INTEGBI C143A	Biological Clocks: Physiology and Behavior	3
PSYCH C116/ INTEGBI C143B	Hormones and Behavior	3
PB HLTH 141	Introduction to Biostatistics	5
PB HLTH 150B	Human Health and the Environment in a Changing World	3
PB HLTH 162A	Public Health Microbiology	4
Students who completed math requirements other than Math 10A/10B are eligible to use the following courses as an elective:		
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4
STAT 131A	Statistical Methods for Data Science	4

Genetics, Genomics, and Development (both tracks, minimum of two courses: one from List A and one from List B *or* both from List B)

GGD Elective List A

CHEM 113	Advanced Mechanistic Organic Chemistry	3
CHEM 115	Organic Chemistry--Advanced Laboratory Methods	4
CHEM 130B	Biophysical Chemistry	3
ESPM C148/ NUSCTX C114	Pesticide Chemistry and Toxicology	3
ESPM 162	Bioethics and Society	4
INTEGBI 160	Evolution	4
MATH 110	Linear Algebra [1]	4
MCELLBI 100B	Biochemistry: Pathways, Mechanisms, and Regulation	4
MCELLBI/ PLANTBI C103	Bacterial Pathogenesis	3
MCELLBI/ PLANTBI C112	General Microbiology	4
MCELLBI/ PLANTBI C114	Introduction to Comparative Virology	4
MCELLBI/ PLANTBI C116	Microbial Diversity	3
MCELLBI 130	Cell and Systems Biology	4
MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MCELLBI 136	Physiology	4
MCELLBI 150	Molecular Immunology	4
MCELLBI 160	Cellular and Molecular Neurobiology	4
MCELLBI 161	Circuit, Systems and Behavioral Neuroscience	4
MCELLBI 165	Neurobiology of Disease	3
MCELLBI 166	Biophysical Neurobiology	3
NUSCTX C114/ ESPM C148	Pesticide Chemistry and Toxicology	3
PHYSICS 112	Introduction to Statistical and Thermal Physics [1]	4
PLANTBI 135	Physiology and Biochemistry of Plants	3
PLANTBI 150	Plant Cell Biology	3

GGD ELECTIVE LIST B

BIO ENG 131	Introduction to Computational Molecular and Cell Biology [1]	4
BIO ENG 143	Computational Methods in Biology	4
BIO ENG 144	Introduction to Protein Informatics [1]	4
ESPM 108B	Environmental Change Genetics	3
INTEGBI 161	Population and Evolutionary Genetics	4
INTEGBI 162	Ecological Genetics	4
INTEGBI 163	Molecular and Genomic Evolution	3
MATH 127	Mathematical and Computational Methods in Molecular Biology [1]	4
MCELLBI 132	Biology of Human Cancer	4
MCELLBI/ PLANTBI C134	Chromosome Biology/Cytogenetics	3
MCELLBI 137L	Physical Biology of the Cell	4
MCELLBI 141	Developmental Biology (for track 1 students only)	4
MCELLBI 143	Evolution of Genomes, Cells, and Development	3

MCELLBI/ PLANTBI C148	Microbial Genomics and Genetics	4
MCELLBI 149	The Human Genome	3
PLANTBI/ MCELLBI C134	Chromosome Biology/Cytogenetics	3
PLANTBI 160	Plant Molecular Genetics	3
PB HLTH 141	Introduction to Biostatistics	5
PB HLTH 256	Human Genome, Environment and Public Health	4
STAT 134	Concepts of Probability [1]	4
Students who completed math requirements other than Math 10A/10B are eligible to use the following courses as an elective:		
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4
STAT 131A	Statistical Methods for Data Science	4

Immunology & Pathogenesis

IMM Elective List A (Track 2, minimum of one course)

MCELLBI/ PLANTBI C103	Bacterial Pathogenesis	3
MCELLBI/ PLANTBI C112	General Microbiology	4
MCELLBI/ PLANTBI C114	Introduction to Comparative Virology	4

IMM ELECTIVE LIST B (TRACK 2, MINIMUM OF one COURSE)

MCELLBI 130	Cell and Systems Biology	4
MCELLBI 132	Biology of Human Cancer	4
MCELLBI/ PLANTBI C134	Chromosome Biology/Cytogenetics	3
MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MCELLBI 136	Physiology	4
MCELLBI 141	Developmental Biology	4
MCELLBI 143	Evolution of Genomes, Cells, and Development	3
MCELLBI 149	The Human Genome	3
MCELLBI 160	Cellular and Molecular Neurobiology	4
MCELLBI 161	Circuit, Systems and Behavioral Neuroscience	4
MCELLBI 250	Advanced Immunology	4

IMM ELECTIVE LIST C (Track 1, minimum of one course)

BIO ENG 131	Introduction to Computational Molecular and Cell Biology	4
MCELLBI 100B	Biochemistry: Pathways, Mechanisms, and Regulation	4
MCELLBI/ PLANTBI C103	Bacterial Pathogenesis	3
MCELLBI/ PLANTBI C112	General Microbiology	4
MCELLBI/ PLANTBI C114	Introduction to Comparative Virology	4
MCELLBI 130	Cell and Systems Biology	4
MCELLBI 132	Biology of Human Cancer	4
MCELLBI/ PLANTBI C134	Chromosome Biology/Cytogenetics	3
MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MCELLBI 141	Developmental Biology	4
MCELLBI 149	The Human Genome	3
MCELLBI 250	Advanced Immunology	4

Neurobiology (minimum one course)

BIO ENG 121	BioMEMS and Medical Devices	4
COG SCI/ PSYCH C127	Cognitive Neuroscience	3
INTEGBI 139	The Neurobiology of Stress	4
INTEGBI C143A/ PSYCH C113	Biological Clocks: Physiology and Behavior	3
INTEGBI C143B/ PSYCH C116	Hormones and Behavior	3
INTEGBI C144/ ESPM C126	Animal Behavior	4
MATH 110	Linear Algebra	4
MATH 127	Mathematical and Computational Methods in Molecular Biology	4
MATH 128A	Numerical Analysis	4
MATH 128B	Numerical Analysis	4
MCELLBI 130	Cell and Systems Biology	4
MCELLBI 132	Biology of Human Cancer	4
MCELLBI 135A	Topics in Cell and Developmental Biology: Molecular Endocrinology	3
MCELLBI 136	Physiology	4
MCELLBI 137L	Physical Biology of the Cell	4
MCELLBI 141	Developmental Biology	4
MCELLBI 150	Molecular Immunology	4
MCELLBI 160L	Neurobiology Laboratory (allowed only if MCB 163 is used as lab requirement)	4
MCELLBI 163L	Mammalian Neuroanatomy Lab (allowed only if MCB 160L is used as lab requirement)	4
MCELLBI 165	Neurobiology of Disease	3
MCELLBI 166	Biophysical Neurobiology	3
PHYSICS 112	Introduction to Statistical and Thermal Physics	4
PSYCH 117	Human Neuropsychology	3
PB HLTH 141	Introduction to Biostatistics	5
Students who completed math requirements other than Math 10A/10B are eligible to use the following courses as an elective:		
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4
STAT 131A	Statistical Methods for Data Science	4

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

For detailed lists of courses that fulfill college requirements, please review the College of Letters & Sciences (http://guide.berkeley.edu/archive/2019-20/undergraduate/colleges-schools/letters-science) page in this Guide. For College advising appointments, please visit the L&S Advising (https://ls.berkeley.edu/advising/about-undergraduate-advising-services) Pages.

University of California Requirements

Entry Level Writing (http://writing.berkeley.edu/node/78)

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.

American History and American Institutions (http://guide.berkeley.edu/archive/2019-20/undergraduate/colleges-schools/letters-science/american-history-institutions-requirement)

The American History and Institutions requirements are based on the principle that a US resident graduated from an American university, should have an understanding of the history and governmental institutions of the United States.

Berkeley Campus Requirement

American Cultures (http://americancultures.berkeley.edu/students/courses)

All undergraduate students at Cal need to take and pass this 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 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 (http://guide.berkeley.edu/archive/2019-20/undergraduate/colleges-schools/letters-science/quantitative-reasoning-requirement)

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

Foreign Language (http://guide.berkeley.edu/archive/2019-20/undergraduate/colleges-schools/letters-science/foreign-language-requirement)

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.

Reading and Composition (http://guide.berkeley.edu/archive/2019-20/undergraduate/colleges-schools/letters-science/reading-composition-requirement)

In order to provide a solid foundation in reading, writing, and critical thinking the College requires two semesters of lower division work in composition in sequence. Students must complete parts A & B reading and composition courses by the end of their second semester and a second-level course by the end of their fourth semester.

College of Letters & Science 7 Course Breadth Requirements

Breadth Requirements (http://guide.berkeley.edu/archive/2019-20/undergraduate/colleges-schools/letters-science/#breadthrequirementstext)

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 here for four years. In general, there is no need to be concerned about this requirement, unless you 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 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 BA 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.

Sample four-year plans are available on the Molecular & Cell Biology department website for each emphasis (concentration):

- Biochemistry and Molecular Biology
- Cell and Developmental Biology
- Genetics, Genomics, and Development
- Immunology and Pathogenesis
- Neurobiology

Mission

The Department of Molecular and Cell Biology (MCB) is a large department that is subdivided into five divisions: Biochemistry, Biophysics, and Structural Biology (BBS); Cell and Developmental Biology (CDB); Genetics, Genomics and Development (GGD); Immunology and Pathogenesis (IMMP); and Neurobiology (NEU). All MCB students complete the same lower division coursework to gain critical training in biology, mathematics, chemistry, and physics. All or most lower division coursework is completed before major declaration. Upon declaring the major, MCB students choose an emphasis, or specialization, which determines the upper division core courses they will take and elective choices from which they will choose. Students can choose among several areas of specialization; emphases are broadly defined along divisional lines and allow students to focus on a more defined topic within MCB. MCB students who elect to participate in independent research may choose from sponsoring research laboratories within any MCB division, or in laboratories outside the department (other Berkeley departments, LBNL, CHORI, UCSF, biotechnology companies). The MCB major provides excellent preparation for many careers and postbaccalaureate training programs, including graduate programs and health-related professional programs (e.g., medicine, dentistry, optometry, pharmacy), science writing, law school, biotechnology, teaching, and academic research.

Learning Goals for the Major

1. Describe basic biological concepts and principles.
2. Appreciate the different levels of biological organization, from molecules to ecosystems.
3. Understand that biology has a chemical, physical, and mathematical basis.
4. Explain the importance of the scientific method to understanding natural phenomena.
5. Effectively communicate scientific data and ideas, both orally and in writing.
6. Critically evaluate data, develop a hypothesis, and design experiments to address an interesting and novel problem.
7. Demonstrate advanced knowledge in a specialized field of molecular and cell biology.

MCB offers three types of undergraduate advising: staff advisers, faculty advisors, and peer advisors.

Staff Advisers

Staff academic advisors are trained to support students and assist them in successfully completing their MCB major. They are excellent resources for questions concerning administration and academics, or finding out about other available services. Students should see a staff adviser for the following:

- Ask questions about major requirements.
- Ask advice about schedule planning.
- Declare the MCB major.
- Consult about research opportunities, graduate and professional schools, career opportunities, scholarships, and internships.
- Get information and course control numbers (CCN's) for independent research.
- Request general assistance, advice or information.
- Find out about upcoming events and programs.

Staff advisers are primarily available for drop-in advising, though limited appointments are available for more complex issues such as probation, academic difficulty, and readmission. If students would like to schedule an appointment, they should call 510-643-8895 during drop-in advising hours.

The general email address is mcbuao@berkeley.edu which is checked daily, Monday through Friday, so students will receive an answer to questions within one business day.

Faculty Advisers

Faculty advisors are MCB professors assigned to advise students about the MCB department, its courses, its research, and other academic issues. Students typically first meet with a faculty advisor when they declare an MCB major. Students should see their faculty advisers for the following:

- Receive guidance toward achieving academic and career goals.
- Ask questions about the content of MCB courses.
- Ask questions about biological research and about the field of biology in general.
- Ask for recommendations on which graduate schools to attend.
- Review and approve major declaration plan after speaking with a UAO staff adviser.

For a list of advisors and their office hours, please see the department's website (http://mcb.berkeley.edu/undergrad/advising/advising-office/advising-services). Office hours listed are designated for drop-in advising unless otherwise noted. Faculty adviser office hours are effective from the first day of instruction until the final day of instruction for the fall and spring semesters. Faculty advisers are not available for office hours during winter or summer break. Students may refer to staff drop-in advising hours during summer sessions and non-instructional periods.

Peer Adviser Walk-in Services (PAWS)

Peer advisers are junior and senior MCB majors who volunteer their time to complement the UAO advising services by sharing their knowledge of and experience with lower division requirements and upper division classes, experience with student groups on campus, preparation for life beyond the BA, and use of various campus resources. To see the schedule and more information about who the peer advisers are and which courses they have taken, click here (https://mcb.berkeley.edu/undergrad/PAWS).

Undergraduate Research

Under the guidance of a faculty member and/or research mentor, undergraduates in the MCB major may have the opportunity to work in a laboratory to gain valuable experience in scientific research. Interested students must take the initiative to make such arrangements. Over forty percent of MCB majors work in a lab to gain

valuable experience in scientific research. To get started, students should talk with classmates, peer advisers, a staff undergraduate adviser, graduate student instructors (GSIs), and faculty about their interest in learning more about laboratory research. For more information on research, see How to Find a Lab Position (http://mcb.berkeley.edu/undergrad/research/research/lab).

Benefits of research:

- Science is a way to figure things out, so doing research will aid students in other aspects of their life. Students will ask and answer open ended questions and link seemingly disconnected pieces of information to find results that were not predicted.
- Explore things at the cutting edge and that no one has explored before.
- Learn tenacity, problem solving, and to be critical about the details because things have to be reproducible.
- Solve mysteries and experience the excitement of discovery.

Students may receive academic credit for their work by enrolling in an independent study course: MCELLBI 99/MCELLBI 199 or MCELLBI H196A/MCELLBI H196B. Enrollment applications are due in the Undergraduate Advising Office by the fifth week of each semester.

Honors Program

The MCB honors program offers exceptional senior students recognition for outstanding academic achievement and excellence in research. To graduate with honors in the major, students must satisfy the following:

1. Complete at least two credited semesters of research including four to eight units of MCELLBI H196A and/or MCELLBI H196B (Honors Research).
2. Have a cumulative Berkeley grade point average (GPA) of at least 3.5 in all work completed at UC Berkeley.
3. Have at least a 3.5 GPA in the MCB major requirements or 3.5 GPA in MCB upper division courses.
4. Present their research in an approved forum, such as an MCB symposium, the Undergraduate Poster Session, or other scientific meeting.
5. Write an honors thesis approved by an MCB faculty sponsor.

Additional information on the honors program is available in the Undergraduate Affairs Office and on the MCB website (http://mcb.berkeley.edu/undergrad/major/honors-program/honors).

Other Research Opportunities

For additional resources for information regarding research opportunities, please see the links below:
Undergraduate Research Apprentice Program (URAP) (http://research.berkeley.edu/urap)
Scholarship Connection (http://scholarships.berkeley.edu)
Summer Research Opportunities (http://mcb.berkeley.edu/undergrad/research/research/summer-research)
Office of Research (http://vcresearch.berkeley.edu/faculty-expertise)

Funding for Student Research

There are a variety of ways to support your research. The department recommends attending a workshop at the Office of Undergraduate Research (http://research.berkeley.edu) or looking for funding opportunities on their website (http://research.berkeley.edu/opportunities) or the Scholarship Connection website (http://scholarships.berkeley.edu).

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

MCELLBI 15 Current Topics in the Biological Sciences 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Students in this course will critically examine modern methods of biological investigations and their social implications. Relevant literature will be used to present basic biological concepts that address the cultural, technological and health aspects of current topics in the biological sciences. Designing and evaluating scientific questions will be stressed.
Current Topics in the Biological Sciences: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Matsui

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

MCELLBI C31 Big Ideas in Cell Biology 3 Units

Terms offered: Spring 2014, Spring 2012
An introduction for students who do not intend to major in biology but who wish to satisfy their breadth requirement in Biological Sciences. Some major concepts of modern biology, ranging from the role of DNA and the way cells communicate, to interactions of cells and creatures with their environment, will be discussed without jargon and with attention to their relevance in contemporary life and culture.
Big Ideas in Cell Biology: Read More [+]
Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Wilt

Also listed as: L & S C30X

Big Ideas in Cell Biology: Read Less [-]

MCELLBI 32 Introduction to Human Physiology 3 Units

Terms offered: Fall 2020, Summer 2020 8 Week Session, Fall 2019
A comprehensive introduction to human biology. The course will concentrate on basic mechanisms underlying human life processes, including cells and membranes; nerve and muscle function; cardiovascular, respiratory, renal, and gastrointestinal physiology; metabolism, endocrinology, and reproduction.
Introduction to Human Physiology: Read More [+]

Rules & Requirements

Prerequisites: One year high school or college chemistry

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Ball

Introduction to Human Physiology: Read Less [-]

MCELLBI 32L Introduction to Human Physiology Laboratory 2 Units

Terms offered: Fall 2020, Summer 2020 Second 6 Week Session, Fall 2019
Experiments and demonstrations are designed to amplify and reinforce information presented in 32. Exercises include investigations into the structure and function of muscle, nerve, cardiovascular, renal, respiratory, endocrine, and blood systems.
Introduction to Human Physiology Laboratory: Read More [+]

Rules & Requirements

Prerequisites: 32 or may be taken concurrently

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Ball

Introduction to Human Physiology Laboratory: Read Less [-]

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

Terms offered: Spring 2020, Spring 2019, Spring 2018
Innovations in bioengineering and use of stem cells will significantly impact our ability to combat human disease, genetic disorders and physiological dysfunction. An understanding of human stem cell biology will be critical to make informed decisions on our health and public policy.
Stem Cell Biology, Ethics and Societal Impact: Read More [+]

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Firestone, Ball

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

MCELLBI 41 Genetics and Society 3 Units

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

Rules & Requirements

Prerequisites: Primarily for students not specializing in biology

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

Hours & Format

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

Summer:
6 weeks - 7.5 hours of lecture per week
8 weeks - 6 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Genetics and Society: Read Less [-]

MCELLBI C44 Biology for Voters 3 Units

Terms offered: Spring 2017, Spring 2015, Spring 2014
This is a Discovery Course for non-Biology majors designed to introduce lower-division college students to biology through the lens of the contemporary problems facing people, the planet and the species of the planet. Modern genetic contributions will be presented on such issues as genetic engineering of plants and animals, the emergence of new pathogens, the role of genetic variation among individuals, and the extent to which DNA is and isn't destiny. Each week will close with the presentation and discussion of a defining biological challenge facing the world.
Biology for Voters: Read More [+]
Objectives & Outcomes

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Rine, Urnov

Also listed as: L & S C30Y

Biology for Voters: Read Less [-]

MCELLBI 50 The Immune System and Disease 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Course will discuss how the immune system resolves, prevents, or causes disease. A general overview of the immune system will be covered in the first five weeks followed by five weeks discussing infectious diseases including anthrax, mad cow, herpes, malaria, tuberculosis, and HIV. In addition, other lectures will focus on current immunology topics including vaccines, autoimmunity, allergy, transplantation, and cancer.
The Immune System and Disease: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Beatty

The Immune System and Disease: Read Less [-]

MCELLBI 55 Plagues and Pandemics 3 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Discussion of how infectious agents cause disease and impact society at large. We will examine historical and current examples of plagues and pandemics and consider the question of what we should do to ameliorate the impact of infectious disease in the future. The course is intended for non-majors and will begin by briefly providing necessary background in microbiology and immunology. The primary focus in each subsequent week, however, will be on discussing a particular infectious disease. The course will be broad in scope covering biological, historical, ethical and social implications of each disease.
Plagues and Pandemics: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Beatty, Vance

Plagues and Pandemics: Read Less [-]

MCELLBI C61 Brain, Mind, and Behavior 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Introduction to human brain mechanisms of sensation, movement, perception, thinking, learning, memory, and emotion in terms of anatomy, physiology, and chemistry of the nervous system in health and disease. Intended for students in the humanities and social sciences and others not majoring in the biological sciences.
Brain, Mind, and Behavior: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Presti

Also listed as: PSYCH C61

Brain, Mind, and Behavior: Read Less [-]

MCELLBI W61 Brain, Mind, and Behavior 3 Units

Terms offered: Summer 2020 First 6 Week Session, Summer 2019 First 6 Week Session, Summer 2018 First 6 Week Session
This course deals with the structure and function of the human nervous system, with an emphasis on how brain physiology and chemistry are related to human behavior. This is a comprehensive introduction to the exciting field of contemporary neuroscience for students of all backgrounds and interests, including those from the humanities and social sciences, as well as physical and biological sciences. The Final Examination will be administered in a proctored setting. See Schedule of Classes for meeting information. This course is web-based.
Brain, Mind, and Behavior: Read More [+]
Rules & Requirements

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

Hours & Format

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

Online: This is an online course.

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Presti

Brain, Mind, and Behavior: Read Less [-]

MCELLBI C62 Drugs and the Brain 3 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
The history, chemical nature, botanical origins, and effects on the human brain and behavior of drugs such as stimulants, depressants, psychedelics, analgesics, antidepressants, antipsychotics, steroids, and other psychoactive substances of both natural and synthetic origin. The necessary biological, chemical, and psychological background material for understanding the content of this course will be contained within the course itself.
Drugs and the Brain: Read More [+]
Rules & Requirements

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Presti

Also listed as: L & S C30T

Drugs and the Brain: Read Less [-]

MCELLBI 63 Introduction to Functional Neuroanatomy 3 Units

Terms offered: Summer 2020 Second 6 Week Session, Summer 2019 Second 6 Week Session, Summer 2018 Second 6 Week Session
This course emphasizes beginning anatomy of the brain and spinal cord to individuals interested in understanding the dynamics of motor and sensory functions in the human body. Students in the Departments of Education, Psychology, and Integrative Biology, as well as students interested in medicine and the life sciences, are especially encouraged to attend.
Introduction to Functional Neuroanatomy: Read More [+]

Rules & Requirements

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

Hours & Format

Summer:
4 weeks - 12 hours of lecture per week
6 weeks - 7.5 hours of lecture per week
8 weeks - 6 hours of lecture per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Introduction to Functional Neuroanatomy: Read Less [-]

MCELLBI 63L Introduction to Neuroanatomy Lab 2 Units

Terms offered: Summer 2019 Second 6 Week Session
This lab course is an introduction to mammalian neuroanatomy for non-MCB majors. We will do dissections, explore physical anatomical models, and observe microscopic structures within preserved brain slices from a variety of mammalian species. The hands-on exploration of anatomy is key to understanding how the different functional regions of the nervous system are interconnected. Besides gaining a better understanding of anatomy, you will gain important scientific skills such as conducting parts of a neurological exam, fluorescent and light microscopy, reading MRI scans and conducting fine dissections. The course will culminate with a group project using the online Allen Brain Atlas to investigate a novel scientific question.
Introduction to Neuroanatomy Lab: Read More [+]

Rules & Requirements

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

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

Hours & Format

Summer: 6 weeks - 8 hours of laboratory per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Ball

Introduction to Neuroanatomy Lab: Read Less [-]

MCELLBI C64 Exploring the Brain: Introduction to Neuroscience 3 Units

Terms offered: Summer 2020 8 Week Session, Summer 2019 8 Week Session, Summer 2018 8 Week Session
This course will introduce lower division undergraduates to the fundamentals of neuroscience. The first part of the course covers basic membrane properties, synapses, action potentials, chemical and electrical synaptic interactions, receptor potentials, and receptor proteins. The second part of the course covers networks in invertebrates, memory and learning behavior, modulation, vertebrate brain and spinal cord, retina, visual cortex architecture, hierarchy, development, and higher cortical centers.
Exploring the Brain: Introduction to Neuroscience: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Caporale

Also listed as: PSYCH C64

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

MCELLBI 84B Sophomore Seminar 1 or 2 Units

Terms offered: Fall 2013, Spring 2013, Fall 2012
Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.
Sophomore Seminar: Read More [+]
Rules & Requirements

Prerequisites: At discretion of instructor

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

Hours & Format

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

Summer:
6 weeks - 4-6 hours of seminar per week
8 weeks - 3-4 hours of seminar per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Sophomore Seminar: Read Less [-]

MCELLBI 88 Immunotherapy of Cancer: Success and Failures 2 Units

Terms offered: Spring 2018, Spring 2017
We will work with a variety of datasets that describe a molecular view of cells and how they divide. We will learn about the processes that cause cells to become specialized (differentiate) and to give rise to cancer (transform). We will analyze data on genetic mutations in cancer that distinguish tumor cells from normal cells. We will learn how mutations are detected by the immune system and the basis of cancer immunotherapy. Finally we will analyze data on clinical trials of cancer immunotherapy to define the correlates of success in curing the disease. The students are expected to gain an understanding of data that reveals the basics of cell physiology and cancer, how immunotherapies of cancer work and their current limitations.
Immunotherapy of Cancer: Success and Failures: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Shastri

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

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

Terms offered: Fall 2020, Fall 2019, Fall 2018
The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.
Freshman Seminars: Biochemistry and Molecular Biology: Read More [+]
Rules & Requirements

Prerequisites: Open to freshmen only

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

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

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

Terms offered: Spring 2018, Fall 2017, Fall 2016
The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.
Freshman Seminars: Cell and Developmental Biology: Read More [+]
Rules & Requirements

Prerequisites: Open to freshmen only

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

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

MCELLBI 90C Freshman Seminars: Genetics and Development 1 Unit

Terms offered: Fall 2019, Fall 2018, Fall 2016
The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.
Freshman Seminars: Genetics and Development: Read More [+]
Rules & Requirements

Prerequisites: Open to freshmen only

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

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

MCELLBI 90D Freshman Seminars: Immunology 1 Unit

Terms offered: Fall 2020, Fall 2019, Fall 2018
The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.
Freshman Seminars: Immunology: Read More [+]
Rules & Requirements

Prerequisites: Open to freshmen only

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Freshman Seminars: Immunology: Read Less [-]

MCELLBI 90E Freshman Seminars: Neurobiology 1 Unit

Terms offered: Fall 2020, Spring 2020, Fall 2019
The Berkeley Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester. Final assessment to be decided by the instructor when the class is offered.
Freshman Seminars: Neurobiology: Read More [+]
Rules & Requirements

Prerequisites: Open to freshmen only

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Freshman Seminars: Neurobiology: Read Less [-]

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

Terms offered: Spring 2019
This course offers an introduction to the field of biotechnology and will cover the history of the field, its impact on medicine and society, key methodologies, important therapeutic areas, and the range of career options available in the biopharmaceutical industry. In addition to lectures on innovation and entrepreneurship, students will hear from lecturers with expertise ranging from molecular biology to clinical trial design and interpretation. Several case studies of historically impactful scientists, entrepreneurs, and biotherapeutic companies will be presented. Students will work in teams to create and develop novel biotechnology company ideas to present in class. Intended for students interested in the Biology +Business program.
Introduction to the Biotechnology Field and Industry: Impact, History, Therapeutics R&D, Entrepreneurship and Careers: Read More [+]
Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Kirn, Lasky

Also listed as: UGBA C95B

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

MCELLBI C96 Studying the Biological Sciences 1 Unit

Terms offered: Fall 2020, Fall 2019, Fall 2018
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.
Studying the Biological Sciences: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Matsui

Also listed as: INTEGBI C96/PLANTBI C96

Studying the Biological Sciences: Read Less [-]

MCELLBI 98 Directed Group Study 1 - 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Lectures and small group discussions focusing on topics of interest, varying from semester to semester.
Directed Group Study: Read More [+]
Rules & Requirements

Prerequisites: Freshmen and sophomores only

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Directed Group Study: Read Less [-]

MCELLBI 99 Supervised Independent Study 1 - 4 Units

Terms offered: Spring 2012, Fall 2009, Spring 2009
Supervised Independent Study: Read More [+]
Rules & Requirements

Prerequisites: 3.3 GPA and consent of instructor

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

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

Hours & Format

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

Summer:
8 weeks - 1.5-7.5 hours of independent study per week
10 weeks - 1.5-6 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Supervised Independent Study: Read Less [-]

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

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course surveys cellular metabolism with a focus on the underlying bioenergetics, mechanisms, and chemistry. Lectures will cover major principles in the biochemistry of metabolism and also highlight selected topics including signaling, transport, metabolic engineering, and human diseases related to metabolic dysfunction. The course is designed for majors in the biochemistry and molecular biology, genetics and development, or immunology emphases.
Biochemistry: Pathways, Mechanisms, and Regulation: Read More [+]
Rules & Requirements

Prerequisites: C100A/Chemistry C130

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Savage, Zoncu, Marletta

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Thermodynamic and kinetic concepts applied to understanding the chemistry and structure of biomolecules (proteins, DNA, and RNA). Molecular distributions, reaction kinetics, enzyme kinetics. Bioenergetics, energy transduction, and motor proteins. Electrochemical potential, membranes, and ion channels.
Biophysical Chemistry: Physical Principles and the Molecules of Life: Read More [+]

Rules & Requirements

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Also listed as: CHEM C130

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

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

Terms offered: Fall 2020, Summer 2020 8 Week Session, Spring 2020
A comprehensive survey of the fundamentals of biological chemistry, including the properties of intermediary metabolites, the structure and function of biological macromolecules, the logic of metabolic pathways (both degradative and biosynthetic) and the molecular basis of genetics and gene expression.
Survey of the Principles of Biochemistry and Molecular Biology: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Survey of the Principles of Biochemistry and Molecular Biology: Read Less [-]

MCELLBI C103 Bacterial Pathogenesis 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course for upper division and graduate students will explore the molecular and cellular basis of microbial pathogenesis. The course will focus on model microbial systems which illustrate mechanisms of pathogenesis. Most of the emphasis will be on bacterial pathogens of mammals, but there will be some discussion of viral and protozoan pathogens. There will be an emphasis on experimental approaches. The course will also include some aspects of bacterial genetics and physiology, immune response to infection, and the cell biology of host-parasite interactions.
Bacterial Pathogenesis: Read More [+]
Rules & Requirements

Prerequisites: MCELLBI 100, 102 or consent of instructor

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

Bacterial Pathogenesis: Read Less [-]

MCELLBI 104 Genetics, Genomics, and Cell Biology 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
This course will introduce students to key concepts in genetic analysis, eukaryotic cell biology, and state-of-the-art approaches in genomic medicine. Lectures will highlight basic knowledge of cellular processes with the basis for human diseases, particularly cancer. Prerequisite courses will have introduced students to the concepts of cells, the central dogma of molecular biology, and gene regulation. Emphasis in this course will be on eukaryotic cell processes, including cellular organization, dynamics, and signaling.
Genetics, Genomics, and Cell Biology: Read More [+]
Rules & Requirements

Prerequisites: 102

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Genetics, Genomics, and Cell Biology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Molecular biology of prokaryotic and eukaryotic cells and their viruses. Mechanisms of DNA replication, transcription, translation. Structure of genes and chromosomes. Regulation of gene expression. Biochemical processes and principles in membrane structure and function, intracellular trafficking and subcellular compartmentation, cytoskeletal architecture, nucleocytoplasmic transport, signal transduction mechanisms, and cell cycle control.
Molecular Biology: Macromolecular Synthesis and Cellular Function: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

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

MCELLBI C110L General Biochemistry and Molecular Biology Laboratory 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Experimental techniques of biochemistry and molecular biology, designed to accompany the lectures in Molecular and Cell Biology 100B and 110.
General Biochemistry and Molecular Biology Laboratory: Read More [+]
Rules & Requirements

Prerequisites: 110 (may be taken concurrently)

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Also listed as: CHEM C110L

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

MCELLBI C112 General Microbiology 4 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
This course will explore the molecular bases for physiological and biochemical diversity among members of the two major domains, Bacteria and Archaea. The ecological significance and evolutionary origins of this diversity will be discussed. Molecular, genetic, and structure-function analyses of microbial cell cycles, adaptive responses, metabolic capability, and macromolecular syntheses will be emphasized.
General Microbiology: Read More [+]
Rules & Requirements

Prerequisites: Biology 1A and 1B

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Ryan

Also listed as: PLANTBI C112

General Microbiology: Read Less [-]

MCELLBI C112L General Microbiology Laboratory 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Experimental techniques of microbiology designed to accompany the lecture in C112 and C148. The primary emphasis in the laboratory will be on the cultivation and physiological and genetic characterization of bacteria. Laboratory exercises will include the observation, enrichment, and isolation of bacteria from selected environments.
General Microbiology Laboratory: Read More [+]
Rules & Requirements

Prerequisites: C112 (may be taken concurrently)

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Komeili, Traxler

Also listed as: PLANTBI C112L

General Microbiology Laboratory: Read Less [-]

MCELLBI C114 Introduction to Comparative Virology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course will provide a comparative overview of virus life cycles and strategies viruses use to infect and replicate in hosts. We will discuss virus structure and classification and the molecular basis of viral reproduction, evolution, assembly, and virus-host interactions. Common features used during virus replication and host cellular responses to infection will be covered. Topics also included are common and emerging virus diseases, their control, and factors affecting their spread.
Introduction to Comparative Virology: Read More [+]

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Glaunsinger

Also listed as: ESPM C138/PLANTBI C114

Introduction to Comparative Virology: Read Less [-]

MCELLBI C116 Microbial Diversity 3 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
This course for upper-division and graduate students will broadly survey myriad types of microbial organisms, both procaryote and eucaryote, using a phylogenetic framework to organize the concept of "biodiversity." Emphasis will be on the evolutionary development of the many biochemical themes, how they mold our biosphere, and the organisms that affect the global biochemistry. Molecular mechanisms that occur in different lineages will be compared and contrasted to illustrate fundamental biological strategies. Graduate students additionally should enroll in C216, Microbial Diversity Workshop.
Microbial Diversity: Read More [+]

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Coates

Formerly known as: 116

Also listed as: PLANTBI C116

Microbial Diversity: Read Less [-]

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

Terms offered: Fall 2019, Spring 2019, Fall 2018
The prevailing mutation theory holds that 3-6 gene mutations convert normal to cancer cells. But, this theory does not explain why cancers: 1) are autonomous and immortal – unlike any conventional mutations; 2) have individual clonal karyotypes and parallel clonal transcriptomes – much like conventional species; 3) Carcinogens generate cancer only after conspicuous latent periods of years to decades – but mutations change phenotypes immediately; 4) are at once clonal and heterogeneous within clonal margins; and 5) form metastatic and drug-resistant subspecies with variant karyotypes. To explain these unexplained characteristics, this course tests a new theory that carcinogenesis is a form of speciation.
The Cancer Karyotype: What it is and What it Does: Read More [+]
Rules & Requirements

Prerequisites: 102. 104 recommended

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Duesberg

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

MCELLBI 130 Cell and Systems Biology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course will provide a detailed discussion of a wide range of topics in cell biology emphasizing experimental approaches and key experiments that have provided important insights. The course is aimed at conveying an understanding of how cellular structure and function arise as a result of the properties of cellular macromolecules. An emphasis will be placed on the dynamic nature of cellular organization and will include a description of physical properties of cells (dimensions, concepts of free energy, diffusion, biophysical properties). Students will be introduced to quantitative aspects of cell biology and a view of cellular function that is based on integrating multiple pathways and modes of regulation (systems biology).
Cell and Systems Biology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Formerly known as: Molecular and Cell Biology 130A

Cell and Systems Biology: Read Less [-]

MCELLBI 132 Biology of Human Cancer 4 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
The course is designed for students interested in learning about the molecular and cell biology of cancer and how this knowledge is being applied to the prevention, diagnosis and therapy of cancer. Topics covered include tumor pathology and epidemiology; tumor viruses and oncogenes; intracellular signaling; tumor suppressors; multi-step carcinogenesis and tumor progression; genetic instability in cancer; tumor-host interactions; invasion and metastasis; tumor immunology; cancer therapy.
Biology of Human Cancer: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Formerly known as: 135G

Biology of Human Cancer: Read Less [-]

MCELLBI 133L Physiology and Cell Biology Laboratory 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Experimental analyses of central problems in cell biology and physiology using modern techniques, including DNA cloning and protein biochemistry, fluorescence microscopy of the cytoskeleton and organelles, DNA transfection and cell cycle analysis of cultured mammalian cells, RNA interference and drug treatments to analyze ion channel function in cell contractility and intracellular signaling, and somatosensation.
Physiology and Cell Biology Laboratory: Read More [+]
Rules & Requirements

Prerequisites: MCELLBI 104 recommended (may be taken concurrently)

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Physiology and Cell Biology Laboratory: Read Less [-]

MCELLBI C134 Chromosome Biology/ Cytogenetics 3 Units

Terms offered: Spring 2019, Spring 2018, Spring 2016
Survey of behavior, structure, and function of chromosomes with emphasis on behavior in model organisms. Topics include mitosis, meiosis, chromosome aberrations, genome function, dosage compensation, transposons, repetitive DNA, and modern cytological imaging.
Chromosome Biology/Cytogenetics: Read More [+]
Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Dernburg, Karpen

Also listed as: PLANTBI C134

Chromosome Biology/Cytogenetics: Read Less [-]

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

Terms offered: Fall 2020, Fall 2019, Fall 2018
Molecular mechanisms by which hormones elicit specific responses and regulate gene expression; hormone-receptor interaction; synthesis, transport and targeting of hormones, growth factors and receptors.
Topics in Cell and Developmental Biology: Molecular Endocrinology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Firestone

Topics in Cell and Developmental Biology: Molecular Endocrinology: Read Less [-]

MCELLBI 136 Physiology 4 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Principles of mammalian (primarily human) physiology emphasizing physical, chemical, molecular and cellular bases of functional biology. The following topics will be covered: cellular and membrane ion and nonelectrolyte transport; cell and endocrine regulation; autonomic nervous system regulation; skeletal, smooth and cardiac muscle; cardiovascular physiology; respiration; renal physiology; gastrointestinal physiology. Discussion section led by Graduate Student Instructor will review material covered in lecture.
Physiology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Summer:
6 weeks - 8 hours of lecture and 3 hours of discussion per week
8 weeks - 6 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Physiology: Read Less [-]

MCELLBI 137L Physical Biology of the Cell 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2017
Biology is being revolutionized by new experimental techniques that have made it possible to measure the inner workings of molecules, cells and multicellular organisms with unprecedented precision. The objective of this course is to explore this deluge of quantitative data through the use of biological numeracy. We will develop theoretical models that make precise predictions about biological phenomena. These predictions will be tested through the hands-on analysis of experimental data and by performing numerical simulations using Matlab. A laptop is required for this course, but no previous programming experience is required.
Physical Biology of the Cell: Read More [+]
Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Garcia

Physical Biology of the Cell: Read Less [-]

MCELLBI 140 General Genetics 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
An in depth introduction to genes, their sexual and asexual transmission in individuals and populations, and gene regulation in prokaryotes and eukaryotes. Gene manipulation by recombination, molecular cloning and genome editing is presented in contexts ranging from fundamental mechanisms of chromosome biology to applications in development, aging and disease. Human genetic variation and quantitative evaluation are illuminated. Non-Mendelian and epigenetic modes of inheritance of transposable elements, prions and chromatin states are paired with discussions of groundbreaking technology rewriting the rules of how the genome is analyzed, with attention to the ethical considerations ranging from the history of eugenics to modern controversies.
General Genetics: Read More [+]
Rules & Requirements

Prerequisites: Biology 1A and 1AL

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

General Genetics: Read Less [-]

MCELLBI 140L Genetics Laboratory 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Experimental techniques in classical and molecular genetics.
Genetics Laboratory: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Genetics Laboratory: Read Less [-]

MCELLBI 141 Developmental Biology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
An introduction to principles and processes of embryonic and post-embryonic development, stressing mechanisms of cell and tissue interactions, morphogenesis and regulation of gene expression.
Developmental Biology: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Formerly known as: 131

Developmental Biology: Read Less [-]

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

Terms offered: Fall 2016, Fall 2015, Fall 2014
This course is intended for upper-division undergraduates seeking an interactive course based on modern concepts in evolution and comparative genomics. The course will emphasize the contribution of molecular evolution to a series of seminal events in life's history: origin of life; origin of cells; origin of eukaryotes; origin of multicellularity; evolution of animal development; human origins.
Evolution of Genomes, Cells, and Development: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: King, Levine, Patel

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

MCELLBI C148 Microbial Genomics and Genetics 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Course emphasizes bacterial and archaeal genetics and comparative genomics. Genetics and genomic methods used to dissect metabolic and development processes in bacteria, archaea, and selected microbial eukaryotes. Genetic mechanisms integrated with genomic information to address integration and diversity of microbial processes. Introduction to the use of computational tools for a comparative analysis of microbial genomes and determining relationships among bacteria, archaea, and microbial eukaryotes.
Microbial Genomics and Genetics: Read More [+]
Rules & Requirements

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

Hours & Format

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

Summer:
8 weeks - 6 hours of lecture and 2 hours of discussion per week
10 weeks - 5 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Brenner, Taga

Also listed as: PLANTBI C148

Microbial Genomics and Genetics: Read Less [-]

MCELLBI 149 The Human Genome 3 Units

Terms offered: Fall 2020, Spring 2019, Spring 2018
This is an upper division course for majors in MCB with an interest in an in-depth exploration of the forces that shape the human genome and the human population, as well as the ways that human genetic information can be used in medicine, ancestry and forensics. The course will combine lectures and discussion of research papers.
The Human Genome: Read More [+]
Rules & Requirements

Prerequisites: MCB 140, MCB 104 or equivalent

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Eisen, Meyer, Rokhsar

The Human Genome: Read Less [-]

MCELLBI 150 Molecular Immunology 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Fundamentals of immunology with emphasis on biochemical and molecular approaches to study of the immune system and its application in medicine and biotechnology. Topics covered include description of the immune system, antibody and T-cell receptor structure and function, genes of the immunoglobulin superfamily, cells and molecular mediators that regulate the immune response, allergy, autoimmunity, immunodeficiency, tissue and organ transplants, and tumor immunology.
Molecular Immunology: Read More [+]

Rules & Requirements

Prerequisites: C100A/Chemistry C130, or 102

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Molecular Immunology: Read Less [-]

MCELLBI 150L Immunology Laboratory 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Experimental techniques in mammalian molecular biology and cellular immunology. Molecular techniques covered include PCR and recombinant DNA procedures such as gene cloning, gene transfer, DNA sequencing, Southern blot, and restriction mapping. Immunological techniques covered include cell culture and monoclonal antibody production, flow cytometry, ELISA, immunoprecipitation, and western blot.
Immunology Laboratory: Read More [+]

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Formerly known as: Microbiology 103L

Immunology Laboratory: Read Less [-]

MCELLBI 160 Cellular and Molecular Neurobiology 4 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Comprehensive introductory survey of cellular and molecular neuroscience, including cellular neurophysiology, ion channel function, synaptic function and plasticity, sensory transduction, and brain development. Includes introduction to molecular basis of neurological disease. Analysis from the level of molecules to cells to simple circuits.
Cellular and Molecular Neurobiology: Read More [+]

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

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

Cellular and Molecular Neurobiology: Read Less [-]

MCELLBI 160L Neurobiology Laboratory 4 Units

Terms offered: Fall 2020, Spring 2020, Spring 2019
Experimental analyses of properties and interactions of nerve cells and systems, illustrating principal features and current methods. Techniques employed include computer simulation of neuron properties, electrophysiological recording and stimulation of nerves and cells, digitally enhanced video imaging of outgrowth, fluorescence immunocytochemistry, analysis of sensory: CNS mapping, human-evoked potential recording, sensory psychophysics.
Neurobiology Laboratory: Read More [+]

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Neurobiology Laboratory: Read Less [-]

MCELLBI 161 Circuit, Systems and Behavioral Neuroscience 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Comprehensive survey of circuits and systems neuroscience, including sensory and motor systems, learning and memory, neuromodulatory systems and brain state and higher functions.
Biological and computational principles of neural circuit function. Analysis from the level of small circuits to behavior.
Circuit, Systems and Behavioral Neuroscience: Read More [+]
Rules & Requirements

Prerequisites: Molecular and Cell Biology 160

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Circuit, Systems and Behavioral Neuroscience: Read Less [-]

MCELLBI 163L Mammalian Neuroanatomy Lab 4 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017
Development, structure (gross and microscopic), and functional relationships of the mammalian nervous system.
Mammalian Neuroanatomy Lab: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Roelink, Lammel, Ball

Mammalian Neuroanatomy Lab: Read Less [-]

MCELLBI 165 Neurobiology of Disease 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
The molecular, cellular, and neural circuit basis of neurological disease. Includes neurochemistry and reward systems, neural development and its disorders, addiction, neurodegenerative and neuropsychiatric disorders. Students will read and discuss primary papers from the research literature.
Neurobiology of Disease: Read More [+]
Rules & Requirements

Prerequisites: Molecular and Cell Biology 160

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Caporale

Neurobiology of Disease: Read Less [-]

MCELLBI 166 Biophysical Neurobiology 3 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Electrochemistry and ion transport phenomena, equivalent circuits, excitability, action potentials, voltage clamp and the Hodgkin-Huxley model. Biophysical properties of ion channels. Statistical and electrophysiological models of synaptic transmission, Quantitative models for dendritic structure and neuronal morphogenesis. Sensory transduction, cellular networks as computational devices, information processing and transfer.
Biophysical Neurobiology: Read More [+]
Objectives & Outcomes

Course Objectives: 1)
Derive equations for Nernst and GHK membrane potential from fundamental physics concepts.
2)
Describe the experiments and theory underlying the Hodgkin-Huxley model.
3)
Understand biophysical properties of gating particles called ion channels.
4)
Apply and solve equivalent circuit models to describe resting and excitable cells, synaptic transmission and sensory transduction.
5)
Use Poisson, Gaussian and binomial distributions to analyze the gating of ion channels, synaptic transmission, and absolute sensitivity of vision.
6)
Model dendritic structure based on quantitative descriptors of shape and energy minimization theory.
7)
Explain experiments and models of sensory transduction, neuronal integration and lateral inhibition.

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Elul, Isacoff, Miller

Biophysical Neurobiology: Read Less [-]

MCELLBI 170L Molecular and Cell Biology Laboratory 4 Units

Terms offered: Summer 2020 First 6 Week Session, Summer 2019 First 6 Week Session
This laboratory class is designed for molecular biology, cell biology and genetics majors to give them an overview of techniques and applications done in these three fields. This is an intense lab class, and you have to be ready to work at a fast pace throughout the 6 weeks span of the course.
Molecular and Cell Biology Laboratory: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructor: Le Blanc

Molecular and Cell Biology Laboratory: Read Less [-]

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

Terms offered: Spring 2012, Spring 2007, Fall 2006
Course consists of a weekly three-hour training session that focuses on laboratory techniques, instructional aids, and problem solving, plus an additional three hour weekly laboratory where the UGSI is required to assist a GSI in the instruction of laboratory (answering questions, providing demonstrations, etc.).
Undergraduate Teaching of Biology 1A Laboratory: Read More [+]
Rules & Requirements

Prerequisites: Biology 1A, 1AL with a minimum grade of B. Appointment as a UGSI in biology by consent of instructor. Restricted to undergraduate students

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

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

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

Terms offered: Fall 2012, Fall 2011, Fall 2010
Course consists of a weekly three-hour training session that focuses on laboratory techniques, instructional aids, and problem solving, plus an additional three-hour weekly laboratory where the UGSI is required to assist a GSI in the instruction of laboratory (answering questions, providing demonstrations, etc.). Students will be graded on lecture and laboratory attendance and preparation of one quiz.
Undergraduate Teaching of Molecular and Cell Biology 32 Laboratory: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Summer:
6 weeks - 7.5-15 hours of session per week
8 weeks - 5.5-11 hours of session per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Undergraduate Teaching of Molecular and Cell Biology 32 Laboratory: Read Less [-]

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

Terms offered: Summer 2020 3 Week Session, Summer 2019 3 Week Session, Summer 2018 3 Week Session
This 3 week course will address topics in genome editing and CRISPR-Cas9 research, including basic and enhanced CRISPR methods, cellular repair mechanisms, regulation of gene expression, bioinformatics, applications to various organisms, and bioethics. Students will learn from a collection of local experts about ongoing campus research, and gain the background knowledge to understand current publications and applications of genome editing.
Intro to CRISPR: From Basic Biology to Genome Editing Technology: Read More [+]

Rules & Requirements

Prerequisites: BIOLOGY 1A or equivalent

Hours & Format

Summer: 3 weeks - 4 hours of lecture per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Hockemeyer, Wilson

Intro to CRISPR: From Basic Biology to Genome Editing Technology: Read Less [-]

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

Terms offered: Summer 2019 3 Week Session
This 3 week lab course will focus on applications of CRISPR technology as a platform for genome editing and functional genomics. The program will consist of a hands-on laboratory experience demonstrating how CRISPR systems work in situ, as well as use genome editing both in vitro and in vivo. Students will utilize fundamental molecular biology techniques and learn additional protocols specific to genome editing. Two bioinformatics based lessons will cover the essential programs and analyses used in the genome editing field. This course requires concurrent enrollment in a lecture component (MCELLBI N184), where lecturers will address topics in genome editing and CRISPR-Cas9 research.
Intro to CRISPR Lab: From Basic Biology to Genome Editing Technology: Read More [+]
Rules & Requirements

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

Hours & Format

Summer: 3 weeks - 14 hours of laboratory per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Instructors: Hockemeyer, Wilson

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

MCELLBI 191 Senior Research Thesis 3 Units

Terms offered: 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.
Senior Research Thesis: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor and departmental adviser

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

Hours & Format

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

Summer:
6 weeks - 23 hours of independent study per week
8 weeks - 17 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Senior Research Thesis: Read Less [-]

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

Terms offered: Fall 2018, Fall 2017
UGSIs will work under supervision of instructor and/or GSI. The UGSI will attend three hours of lecture per week where they will assist a GSI in instruction (answering questions, providing demonstrations, facilitating activities, etc.). In addition, UGSIs will meet with students from their section for zero to three hours of tutoring per week depending on the number of units. UGSIs do not evaluate students' work or assign grades. UGSIs will be graded on attendance and preparation of one lesson plan and one quiz. Required to attend any mandatory preparatory and review meetings.
Undergraduate Student Instructor for Molecular and Cell Biology Courses: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Undergraduate Student Instructor for Molecular and Cell Biology Courses: Read Less [-]

MCELLBI H196A Honors Research 1 - 4 Units

Terms offered: Fall 2015, Fall 2014, Spring 2014
Individual research and thesis preparation under the supervision of a faculty member. Acceptance to the Molecular and Cell Biology Honors Program is required. Contact the MCB Undergraduate Affairs Office, 3060 Valley Life Sciences Building, for application and details. Honor students must complete at least two semesters of research, taking a minimum of 4 units and a maximum of 8 units of H196A-196B. If desired, one semester of 199 can be used to replace H196A.
Honors Research: Read More [+]
Rules & Requirements

Prerequisites: Senior honors status and consent of instructor

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Honors Research: Read Less [-]

MCELLBI H196B Honors Research 1 - 4 Units

Terms offered: Spring 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.
Honors Research: Read More [+]
Rules & Requirements

Prerequisites: Senior honors status and consent of instructor

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

Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Honors Research: Read Less [-]

MCELLBI 197 Supervised Internship 1 Unit

Terms offered: Fall 2016
Supervised experience relevant to specific topics of biology in off-campus organizations. Written report and evaluation from internship supervisor required.
Supervised Internship: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Summer: 8 weeks - 6 hours of internship per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Supervised Internship: Read Less [-]

MCELLBI 198 Directed Group Study 1 - 4 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Lectures and small group discussions focusing on topics of interest, varying from semester to semester.
Directed Group Study: Read More [+]
Rules & Requirements

Prerequisites: Upper division standing

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Directed Group Study: Read Less [-]

MCELLBI 199 Supervised Independent Study and Research 1 - 4 Units

Terms offered: Spring 2020, Fall 2015, Spring 2015
Enrollment restrictions apply; see the Introduction to Courses and Curricula section of this catalog.
Supervised Independent Study and Research: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

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

Hours & Format

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

Summer:
6 weeks - 1-4 hours of independent study per week
8 weeks - 1-4 hours of independent study per week
10 weeks - 1-4 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Undergraduate

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

Supervised Independent Study and Research: Read Less [-]

MCELLBI 200A Fundamentals of Molecular and Cell Biology 3 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
The goal of this course is to provide graduate-level instruction on molecular and cellular biosciences from a highly-integrated systems perspective, rather than using a more classic, techniques-oriented format. A collection of approaches, and a focus on critical thinking and problem solving, will be used to show how fundamental, highly-significant biological problems are "cracked open." Reading will be assigned from a mix of classic and current peer-reviewed papers selected by the instructors.
Fundamentals of Molecular and Cell Biology: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

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

Fundamentals of Molecular and Cell Biology: Read Less [-]

MCELLBI 200B Fundamentals of Molecular and Cell Biology 3 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
The goal of this course is to provide graduate-level instruction on molecular and cellular biosciences from a highly-integrated systems perspective, rather than using a more classic, techniques-oriented format. A collection of approaches, and a focus on critical thinking and problem solving, will be used to show how fundamental, highly-significant biological problems are "cracked open." Reading will be assigned from a mix of classic and current peer-reviewed papers selected by the instructors.
Fundamentals of Molecular and Cell Biology: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

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

Fundamentals of Molecular and Cell Biology: Read Less [-]

MCELLBI C205 Modern Optical Microscopy for the Modern Biologist 3 Units

Terms offered: Not yet offered
This course is intended for graduate students in the early stages of their thesis research who are contemplating using modern microscopy tools as part of their work. It endeavors to cut through the confusion of the wide array of new imaging methods, with a practical description of the pros and cons of each. In addition to providing an intuitive physical understanding how these microscopes work, the course will offer hands on experience with cutting-edge microscopes where students will be able to see firsthand how different imaging modalities perform on their own samples, and where they will be able to access computational tools for the visualization and analysis of their data.
Modern Optical Microscopy for the Modern Biologist: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructors: Betzig, Ji

Formerly known as: Molecular and Cell Biology 205

Also listed as: PHYSICS C218

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

MCELLBI 206 Physical Biochemistry 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Application of modern physical concepts and experimental methods to the analysis of the structure, function, and interaction of large molecules of biological interest.
Physical Biochemistry: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Physical Biochemistry: Read Less [-]

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

Terms offered: Spring 2020, Spring 2019, Spring 2018
General course for first-year graduate students. Covers our current understanding of, methodological approaches for analyzing, and recent advances in the function of cellular macromolecules and macromolecular complexes in DNA replication, recombination, transposition and repair, gene expression and its regulation, mRNA splicing, genome organization, noncoding RNAs, signal transduction, protein synthesis, folding and degradation, growth control, and other life processes.
Advanced Biochemistry and Molecular Biology: Macromolecular Reactions and the Cell: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Formerly known as: 200

Advanced Biochemistry and Molecular Biology: Macromolecular Reactions and the Cell: Read Less [-]

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

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course will present the structure of proteins, nucleic acids, and oligosaccharides from the perspective of organic chemistry. Modern methods for the synthesis and purification of these molecules will also be presented.
Chemical Biology I - Structure, Synthesis and Function of Biomolecules: Read More [+]
Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Also listed as: CHEM C271A

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

MCELLBI C212B Chemical Biology II - Enzyme Reaction Mechanisms 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course will focus on the principles of enzyme catalysis. The course will begin with an introduction of the general concepts of enzyme catalysis which will be followed by detailed examples that will examine the chemistry behind the reactions and the three-dimensional structures that carry out the transformations.
Chemical Biology II - Enzyme Reaction Mechanisms: Read More [+]
Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Also listed as: CHEM C271B

Chemical Biology II - Enzyme Reaction Mechanisms: Read Less [-]

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

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course will build on the principles discussed in Chemical Biology I and II. The focus will consist of case studies where rigorous chemical approaches have been brought to bear on biological questions. Potential subject areas will include signal transduction, photosynthesis, immunology, virology, and cancer. For each topic, the appropriate bioanalytical techniques will be emphasized.
Chemical Biology III - Contemporary Topics in Chemical Biology: Read More [+]
Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Also listed as: CHEM C271C

Chemical Biology III - Contemporary Topics in Chemical Biology: Read Less [-]

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

Terms offered: Spring 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.
Protein Chemistry, Enzymology, and Bio-organic Chemistry: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

Hours & Format

Fall and/or spring:
10 weeks - 3 hours of lecture per week
15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Also listed as: CHEM C230

Protein Chemistry, Enzymology, and Bio-organic Chemistry: Read Less [-]

MCELLBI C216 Microbial Diversity Workshop 1 Unit

Terms offered: Fall 2020, Fall 2019, Fall 2018
This workshop for graduate students will parallel C116, Microbial Diversity, which should be taken concurrently. Emphasis in the workshop will be on review of research literature and formulation of paper pertinent to research in microbial diversity.
Microbial Diversity Workshop: Read More [+]

Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructor: Coates

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

Also listed as: PLANTBI C216

Microbial Diversity Workshop: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
We will discuss current research in the following three areas: 1) mapping metabolic drivers of human diseases using
chemoproteomic and metabolomic platforms; 2) expanding the druggable proteome through mapping and pharmacologically interrogating proteome-wide
hyper-reactive and ligandable hotspots; 3) mapping proteome-wide targets of environmental and pharmaceutical chemicals towards understanding novel
toxicological mechanisms.
Mapping Metabolic Drivers of Disease using Chemoproteomic and Metabolomic Platforms: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Nomura

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Biochemistry of Cu, Fe, Zn and Mn homeostasis and comparative genomics of algae, especially related to photosynthesis and chloroplast biology. Mechanisms of elemental
sparing, including responses to N, S, and P deficiency.
Research Review in Biochemistry and Molecular Biology: Trace Elements in the Plant Lineage: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Merchant

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Synthetic biology, metabolic engineering, systems biology, enzyme mechanism, and gene discovery.
Research Review in Biochemistry and Molecular Biology: Synthetic Biology and Cellular Enzymology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Chang

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
RNA elements involved in alternative splicing and other co-transcriptional mechanisms of regulation. Specific areas of interest include riboswitches and other structured RNA elements involved in gene regulation.
Research Review in Biochemistry and Molecular Biology: Gene Regulation at the RNA Level: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Hammond

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Recent developments in eukaryote viral and cellular regulation. New concepts in transcription and RNA replication, with particular emphasis on virus-cell interactions.
Research Review in Biochemistry and Molecular Biology: Viruses as Models for Eukaryote Gene Expression and Replication: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Botchan

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Our goals are to decipher the fundamental principles that govern substrate engagement, de-ubiquitylation, unfolding, and translocation by the proteasome.
Research Review in Biochemistry and Molecular Biology: Energy-dependent Proteases and Molecular Machines: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Martin

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The mechanism of protein synthesis in bacteria and human cells. Specific areas of interest include the structure and function of the ribosome and the regulation of protein synthesis.
Research Review in Biochemistry and Molecular Biology: Protein Synthesis in Bacteria and Mammals: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Cate

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research and literature topics in chemical biology and inorganic chemistry relevant to human health and disease and energy science will be discussed.
Research Review in Biochemistry and Molecular Biology: Chemical Biology and Inorganic Chemistry: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Chris Chang

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Transduction of cellular sequences and genetic regulation of transformation by oncogenic retroviruses as models for natural carcinogenesis, including a critical review of the current research.
Research Review in Biochemistry and Molecular Biology: Advanced 20th Century Perspectives on Cancer Cell Genetics: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Duesberg

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The use of genome engineering to study cellular signaling (especially ubiquitin-mediated signals) and develop potential new therapeutics and diagnostics will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.
Gene Editing for Fundamental Biology and Therapeutics: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Corn

Gene Editing for Fundamental Biology and Therapeutics: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
In our laboratory, we study mechanisms by which molecules are transported across lipid bilayer membranes. Current research efforts to understand mechanisms of protein translocation across intracellular organelles and transport of other biomolecules will be discussed.
Research Review in Molecular Mechanisms of Membrane Transport: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Park

Research Review in Molecular Mechanisms of Membrane Transport: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Topics at the interface of chemistry and biology with a particular focus on mechanisms of enzyme catalysis.
Research Review in Biochemistry and Molecular Biology: Chemical Biology and Enzymology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Marletta

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Molecular approaches to designing and deploying tools for voltage imaging and brain mapping.
Research Review in Biochemistry and Molecular Biology: Chemical Biology and Neuroscience: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructors: Miller, Evan

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Yildiz laboratory combines molecular biology and single molecule biophysical techniques to understand mechanisms that underlie cellular organization and motility. Specific focuses of the lab are to dissect 1) the mechanism of cytoplasmic dynein motility, 2) the regulation of intraflagellar transport, and 3) the protection and maintenance of mammalian telomeres.
Research Review in Biochemistry and Molecular Biology: Single Molecular Imaging of Macromolecular Enzymes: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Yildiz

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Protein structure, stability, design, and the pathway of protein folding.
Research Review in Biochemistry and Molecular Biology: The Protein Folding Problem: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Marqusee

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Structure-function studies of the cytoskeleton and large molecular machines by cryo-electron microscopy and image reconstruction.
Research Review in Biochemistry and Molecular Biology: Cryo-Electron Microscopy of Macromolecules: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Nogales

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Different methods for determining how the in situ structure and arrangement of macromolecular complexes influence cell morphology and
function will be discussed via literature review and implemented through lab-based research and discussions.
Electron Cryo-tomography of Macromolecular Complexes: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Davies

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

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

Terms offered: Fall 2014, Spring 2014, Fall 2013
Review of current literature and discussion of original research.
Research Review in Biochemistry and Molecular Biology: Biophysics of Macromolecule Transport Across Membranes: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Krantz

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Define how metabolic reactions function in the context of the cellular system in order to elucidate the so-called design principles of metabolic function.
Research Review in Biochemistry and Molecular Biology: Chemical Reactions of Metabolism: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Savage

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

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
In our laboratory, we study the molecular mechanisms of nutrient sensing and growth control. Specific areas of interest include the mTOR pathway, energy sensing, lysosomal biology and translational control.
Molecular and Cellular Mechanisms of Nutrient Sensing: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Zoncu

Molecular and Cellular Mechanisms of Nutrient Sensing: Read Less [-]

MCELLBI 219A Structural Membrane Biology 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
The mechanisms by which protein complexes use their structures to bud, bend, and sever membranes will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.
Structural Membrane Biology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Hurley

Structural Membrane Biology: Read Less [-]

MCELLBI 219B Regulation of Translation 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Understanding the molecular basis and physiological role of translational regulation in gene expression with an emphasis on global profiling and functional genomics.
Regulation of Translation: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Ingolia

Regulation of Translation: Read Less [-]

MCELLBI 219F Research Review in Biochemistry and Molecular Biology: Eukaryotic Gene Expression 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Protein-DNA interactions and the control of gene expression in eukaryotes.
Research Review in Biochemistry and Molecular Biology: Eukaryotic Gene Expression: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Tjian

Research Review in Biochemistry and Molecular Biology: Eukaryotic Gene Expression: Read Less [-]

MCELLBI 219G Virus-Host Interactions 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Understanding the creative strategies viruses use to manipulate gene expression in host cells, with a focus on RNA-based regulation of gene expression.
Virus-Host Interactions: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Glaunsinger

Virus-Host Interactions: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Discussion of recent research on the genetics, cell biology, and immunology of the model facultative intracellular bacterical pathogen,
Research Review in Biochemistry and Molecular Biology: Molecular and Cell Biology of Listeria monocytogenes Pathogenesis: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Portnoy

Research Review in Biochemistry and Molecular Biology: Molecular and Cell Biology of Listeria monocytogenes Pathogenesis: Read Less [-]

MCELLBI 219J Research Review in Biochemistry and Molecular Biology: Structure and Function of RNA 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
RNA structure, folding, and function. Specific topics include ribozyme mechanisms, RNA-mediated translation initiation, and protein targeting and secretion.
Research Review in Biochemistry and Molecular Biology: Structure and Function of RNA: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Doudna

Research Review in Biochemistry and Molecular Biology: Structure and Function of RNA: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Mechanisms and structure in DNA replication and eukaryotic cell signaling.
Research Review in Biochemistry and Molecular Biology: Structural Biology of Signaling and Replication: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Kuriyan

Research Review in Biochemistry and Molecular Biology: Structural Biology of Signaling and Replication: Read Less [-]

MCELLBI 219T Research Review in Biochemistry and Molecular Biology: Signal Transduction Mechanisms 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Discussion of recent research on various aspects of signal transduction mechanisms in eukaryotic cells, including G protein-coupled receptors, protein kinase cascades, synthesis and mobilization of lipid mediators, calcium sensing and response pathways, activation and inhibition of gene expression, and the biochemical basis of signal desensitization and physiological adaptation, with strong emphasis on genetic and molecular analysis of these systems, especially in the yeast
Research Review in Biochemistry and Molecular Biology: Signal Transduction Mechanisms: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Thorner

Research Review in Biochemistry and Molecular Biology: Signal Transduction Mechanisms: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Methods of single molecule manipulation and visualization that are used to characterize the structure and mechanochemical properties of translocating DNA binding protein such as RNA polymerase and to investigate the mechanical denaturation of single protein molecules will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.
Research Review in Biochemistry and Molecular Biology: Single Molecule Biophysics: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Bustamante

Research Review in Biochemistry and Molecular Biology: Single Molecule Biophysics: Read Less [-]

MCELLBI 219X Research Review in Biochemistry and Molecular Biology: Cell Surface Glycoconjugate Interactions 2 Units

Terms offered: Fall 2020, Spring 2018, Fall 2017
Investigations of cell surface glycoproteins as mediators of cell-cell interactions. Development of new methods for engineering cell surface structures.
Research Review in Biochemistry and Molecular Biology: Cell Surface Glycoconjugate Interactions: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Bertozzi

Research Review in Biochemistry and Molecular Biology: Cell Surface Glycoconjugate Interactions: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Regulation of HIV gene expression by viral proteins and cellular cofactors will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.
Research Review in Biochemistry and Molecular Biology: Regulation of HIV Gene Expression: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Zhou

Research Review in Biochemistry and Molecular Biology: Regulation of HIV Gene Expression: Read Less [-]

MCELLBI 219Z Research Review in Biochemistry and Molecular Biology: Telomere Synthesis and Dynamics 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Emphasizes a study of the replication of eukaryotic telomeric DNA. Special focus on techniques in protein biochemistry and molecular biology.
Research Review in Biochemistry and Molecular Biology: Telomere Synthesis and Dynamics: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Collins

Research Review in Biochemistry and Molecular Biology: Telomere Synthesis and Dynamics: Read Less [-]

MCELLBI 230 Advanced Cell Biology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Advanced treatment of topics in cell biology.
Advanced Cell Biology: Read More [+]
Rules & Requirements

Prerequisites: 130. Formal consent of instructors required, except for MCB graduate students and graduate students in the laboratories of MCB faculty

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Advanced Cell Biology: Read Less [-]

MCELLBI 231 Advanced Developmental and Stem Cell Biology 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2015
Principles of animal development will be set forth from the classical and recent experimental analysis of induction, localization, patterning mutants, axis formation, regional gene expression, and cell interactions. Early development of selected vertebrates and invertebrates will be examined, and emerging topics in microRNA and stem cell biology will be highlighted. A weekly discussion section with readings from the research literature is required.
Advanced Developmental and Stem Cell Biology: Read More [+]
Rules & Requirements

Prerequisites: Previous course in development (131 or equivalent) or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1-2 hours of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Advanced Developmental and Stem Cell Biology: Read Less [-]

MCELLBI 236 Advanced Mammalian Physiology 5 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Principles of mammalian (primarily human) physiology emphasizing physical, chemical, molecular, and cellular bases of functional biology. The following topics will be covered: cellular and membrane ion and nonelectrolyte transport; cell and endocrine regulation; autonomic nervous system regulation; skeletal, smooth, and cardiac muscle; cardiovascular physiology; respiration; renal physiology; gastrointestinal physiology. Discussion section will study advanced physiological topics, including: presentations by the faculty; problem sets; discussion of the primary literature and of reviews; two presentations by each student on topics in current physiological research.
Advanced Mammalian Physiology: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Advanced Mammalian Physiology: Read Less [-]

MCELLBI 237L Advanced Physical Biology of the Cell 4 Units

Terms offered: Spring 2020, Spring 2019
Biology is being revolutionized by new experimental techniques that have made it possible to measure the inner workings of molecules, cells and multicellular organisms with unprecedented precision. The objective of this course is to explore this deluge of quantitative data through the use of biological numeracy. We will develop theoretical models that make precise predictions about biological phenomena. These predictions will be tested through the hands-on analysis of experimental data and by performing numerical simulations using Matlab. A laptop is required for this course, but no previous programming experience is required.
Advanced Physical Biology of the Cell: Read More [+]
Hours & Format

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

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructor: Garcia

Advanced Physical Biology of the Cell: Read Less [-]

MCELLBI C237 Stem Cells and Directed Organogenesis 3 Units

Terms offered: Spring 2015, Spring 2014, Spring 2013
This course will provide an overview of basic and applied embryonic stem cell (ESC) biology. Topics will include early embryonic development, ESC laboratory methods, biomaterials for directed differentiation and other stem cell manipulations, and clinical uses of stem cells.
Stem Cells and Directed Organogenesis: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructor: Conboy

Also listed as: BIO ENG C218

Stem Cells and Directed Organogenesis: Read Less [-]

MCELLBI 239B Research Review in Cell and Developmental Biology: Regulation of the Cell Cycle 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Regulation of the Cell Cycle: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Rape

Research Review in Cell and Developmental Biology: Regulation of the Cell Cycle: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research in our laboratory is focused on the mechanics and dynamics of cell movements on the purified protein, single cell, and tissue levels. For these studies, we are developing new instruments to quantify cell and molecular mechanics bases on optical microscopy, force microscopy, and microfabrication.
Research Review in Cell and Developmental Biology: Mechanics and Dynamics of Cell Movements: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Fletcher

Research Review in Cell and Developmental Biology: Mechanics and Dynamics of Cell Movements: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The mechanisms that link cellular differentiation programs and dynamic gene regulation in complex eukaryotic systems remain mysterious. Such programs drive diverse and central biological processes including organismal development, immune function, disease progression, and meiosis. This course is focused on the molecular basis for the cellular remodeling accompanying meiosis, the highly conserved process by which gametes are produced.
The Regulation of Meiotic Gene Expression and Cellular Morphogenesis: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Brar

The Regulation of Meiotic Gene Expression and Cellular Morphogenesis: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Cell Morphogenesis: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Heald

Research Review in Cell and Developmental Biology: Cell Morphogenesis: Read Less [-]

MCELLBI 239F Research Review in Cell and Developmental Biology: Nucleocytoplasmic Transport 2 Units

Terms offered: Spring 2015, Fall 2014, Spring 2014
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Nucleocytoplasmic Transport: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Weis

Research Review in Cell and Developmental Biology: Nucleocytoplasmic Transport: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Signal Transduction and Tumor Suppressor Genes: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Luo

Research Review in Cell and Developmental Biology: Signal Transduction and Tumor Suppressor Genes: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Spring 2008
Review of relevant literature and discussion of current research: Mitochondrial dynamics, transport and inheritance; replication, segregation and distribution of mitochondrial genomes; underlying mechanisms of human mitochondrial disease.
Research Review in Cell and Developmental Biology: Mitochondrial biology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Lewis

Research Review in Cell and Developmental Biology: Mitochondrial biology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Identifying pathways that restrict growth and cell proliferation in vivo.
Research Review in Cell and Developmental Biology: Mechanisms of Control of Growth and Cell Proliferation: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Hariharan

Research Review in Cell and Developmental Biology: Mechanisms of Control of Growth and Cell Proliferation: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Cytoskeleton and Cell Motility: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Welch

Research Review in Cell and Developmental Biology: Cytoskeleton and Cell Motility: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Steroid Hormone and Growth Factor Action: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Firestone

Research Review in Cell and Developmental Biology: Steroid Hormone and Growth Factor Action: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Cell surface growth with emphasis on the unicellular eukaryote S. cerevisiae.
Research Review in Cell and Developmental Biology: Secretion and Cell Membrane Assembly: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Schekman

Research Review in Cell and Developmental Biology: Secretion and Cell Membrane Assembly: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Assembly and Subcellular Organization of Bacterial Organelles: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Komeili

Research Review in Cell and Developmental Biology: Assembly and Subcellular Organization of Bacterial Organelles: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Malignant transformation represents the endpoint of successive genetic lesions that confer uncontrolled proliferation and survival, unlimited replicative potential, and invasive growth.
Research Review in Cell and Developmental Biology: MicroRNA Functions in Cancer Development, Mouse Tumor Models: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: He

Research Review in Cell and Developmental Biology: MicroRNA Functions in Cancer Development, Mouse Tumor Models: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Inheritance, chromatin structure, gene expression, and the organization of chromosomes in the nucleus.
Research Review in Cell and Developmental Biology: Cancer Biology: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Karpen

Research Review in Cell and Developmental Biology: Cancer Biology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of current research. Current research focuses on regulation of energy metabolism and the effect of changes in energy metabolism induced by diet and exercise on age-associated functional decline of organisms.
Research Review in Cell and Developmental Biology: Energy Metabolism and Aging: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Titov

Research Review in Cell and Developmental Biology: Energy Metabolism and Aging: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Mechanisms underlying the establishment and maintenance of cellular organization in epithelia and other cell types.
Research Review in Cell and Developmental Biology: Regulation of Cell Polarity in Drosophila: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Bilder

Research Review in Cell and Developmental Biology: Regulation of Cell Polarity in Drosophila: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The goal of our laboratory is to understand the key functions of telomeres and telomerase in tissue homeostasis, tumorigenesis, and aging. To this end, we generate genetically engineered human pluripotent and adult stem cell models to measure telomere and telomerase function during cellular differentiation and tumor formation.
Research Review in Cell and Developmental Biology: Telomere Biology of Human Stem Cells: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Hockemeyer

Research Review in Cell and Developmental Biology: Telomere Biology of Human Stem Cells: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research in our lab is focused on the cell biology of mammalian fertilization. Our lab uses biophysical, biochemical, and molecular genetics methods to study sperm ion channels and transporters that regulate sperm motility, chemotaxis, and the acrosome reaction. A better understanding of these processes will eventually lead to the development of effective tools to control and preserve male fertility, improve the reproductive health of human population worldwide, and advance family planning.
Research Review in Cell and Developmental Biology: The Cell Biology of Fertilization: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Lishko

Research Review in Cell and Developmental Biology: The Cell Biology of Fertilization: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of current research.
Research Review in Cell and Developmental Biology: The Cytoskeleton and Morphogenesis: Read More [+]
Rules & Requirements

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

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

Hours & Format

Fall and/or spring: 15 weeks - 2-0 hours of seminar per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Drubin

Research Review in Cell and Developmental Biology: The Cytoskeleton and Morphogenesis: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of current research.
Current research focuses on elucidating the molecular mechanisms of somatosensory mechanotransduction.
Research Review in Cell and Developmental Biology: Molecular Mechanisms of Transduction in Touch and Pain Receptors: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Bautista

Research Review in Cell and Developmental Biology: Molecular Mechanisms of Transduction in Touch and Pain Receptors: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Cell and Developmental Biology: Leech Embryology and Development: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Weisblat

Research Review in Cell and Developmental Biology: Leech Embryology and Development: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
How chromosomes are reorganized during melosis to accomplish the pairing, recombinatin, and segregation leading up to successful gamete production.
Research Review in Cell and Developmental Biology: Chromosome Remodeling and Reorganization During Meiosis: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Dernburg

Research Review in Cell and Developmental Biology: Chromosome Remodeling and Reorganization During Meiosis: Read Less [-]

MCELLBI 240 Advanced Genetic Analysis 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Principles and practice of classical and modern genetic analysis as applied to eukaryotic organisms, including yeast, nematodes, , mice and humans; isolation and analysis of mutations; gene mapping; suppressor analysis; chromosome structure; control of gene expression; and developmental genetics.
Advanced Genetic Analysis: Read More [+]
Rules & Requirements

Prerequisites: Graduate standing with 110 or 140 or consent of instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructors: Koshland, Meyer

Advanced Genetic Analysis: Read Less [-]

MCELLBI C243 Seq: Methods and Applications 3 Units

Terms offered: Spring 2015, Spring 2014
A graduate seminar class in which a group of students will closely examine recent computational methods in high-throughput sequencing followed by directly examining interesting biological applications thereof.
Seq: Methods and Applications: Read More [+]
Rules & Requirements

Prerequisites: Graduate standing in Math, MCB, and Computational Biology; or consent of the instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructor: Pachter

Also listed as: MATH C243

Seq: Methods and Applications: Read Less [-]

MCELLBI C244 Discrete Mathematics for the Life Sciences 4 Units

Terms offered: Spring 2013
Introduction to algebraic statistics and probability, optimization, phylogenetic combinatorics, graphs and networks, polyhedral and metric geometry.
Discrete Mathematics for the Life Sciences: Read More [+]
Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Also listed as: MATH C239

Discrete Mathematics for the Life Sciences: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Central to the aging process is the unfolding of the proteome. Specific areas under study include cellular responses to protein misfolding and coordination of these responses across an organism.
Research Review in Genetics and Development: Aging and Protein Homeostasis: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Dillin

Research Review in Genetics and Development: Aging and Protein Homeostasis: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Biochemical and molecular genetic aspects of eukaryotic messenger RNA splicing and transposition, with an emphasis on as an experimental system.
Research Review in Genetics and Development: Nucleic Acid-Protein Interactions and Control of Gene Expression: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Rio

Research Review in Genetics and Development: Nucleic Acid-Protein Interactions and Control of Gene Expression: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Genes, gene products and molecular mechanisms that control cell types in the unicellular eukaryote .
Research Review in Genetics and Development: Mechanisms of Genetic Regulation in Yeast: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Rine

Research Review in Genetics and Development: Mechanisms of Genetic Regulation in Yeast: Read Less [-]

MCELLBI 249E Research Review in Genetics and Development: Molecular Genetics of Drosophila 2 Units

Terms offered: Spring 2005, Fall 2004, Spring 2004
Gene regulation and developmental neurobiology.
Research Review in Genetics and Development: Molecular Genetics of Drosophila: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: G. Rubin

Research Review in Genetics and Development: Molecular Genetics of Drosophila: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Molecular and genetic approaches to the problem of how neurons develop, with emphasis on and .
Research Review in Genetics and Development: Neuronal Development: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Garriga

Research Review in Genetics and Development: Neuronal Development: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
We study how genes control pattern formation during development and pattern modification during evolution.
Research Review in Genetics and Development: Developmental and Evolutionary Genetics: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Miller

Research Review in Genetics and Development: Developmental and Evolutionary Genetics: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
This course focuses on understanding 1) how cellular aging is affected during gametogenesis, the developmental program that produces gametes for sexual reproduction and 2) how chromosome segregation is regulated during meiosis, the specialized cell division that generates gametes.
Investigating Cellular Aging and Chromosome Segregation during Gametogenesis: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Unal

Investigating Cellular Aging and Chromosome Segregation during Gametogenesis: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research focuses on use of statistical and computational approaches to study questions in human genetics and evolutionary biology. This includes, but is not limited to, studying (1) how different evolutionary processes such as mutation rate evolve across primates, (2) when key events (such as introgression and adaptations) occurred in human history, and (3) how we can leverage large-scale datasets to identify genetic variants related to human adaptation and disease.
Research Review in Genetics and Development: Human Population Genetics and Evolutionary Biology: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Moorjani

Research Review in Genetics and Development: Human Population Genetics and Evolutionary Biology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Molecular and genetical analysis of sex determination and dosage compensation in the nematode .
Research Review in Genetics and Development: Developmental and Molecular Genetics of C. elegans: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Meyer

Research Review in Genetics and Development: Developmental and Molecular Genetics of C. elegans: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Evaluation of current research on choanoflagellates, sponges, and animal origins. Intended to complement ongoing research for graduate students.
Research Review in Genetics and Development: Animal Origins: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: King

Research Review in Genetics and Development: Animal Origins: Read Less [-]

MCELLBI 249L Imaging Single Molecules: Fashion or Game Changer? 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research review in genetics, genomics and development. We will explore how the detection of single particles
(DNA, RNA, proteins) can help with understanding cellular organization and
enzymatic processes dynamics and kinetics. Most of the experiments described will be drawn from the gene expression and nuclear organization
literature.
Imaging Single Molecules: Fashion or Game Changer?: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Darzacq

Imaging Single Molecules: Fashion or Game Changer?: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of current research.
Research Review in Genetics and Development: Saccharomyces Cerevisiae Microtubule Cytoskeleton: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Barnes

Research Review in Genetics and Development: Saccharomyces Cerevisiae Microtubule Cytoskeleton: Read Less [-]

MCELLBI 249MM Physical Biology of Living Organisms 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research review in genetics, genomics and development. In development a single cell goes through a series of repeated divisions and these cells read the program encoded in their DNA in order to become
familiar cell types such as those found in muscle, liver, or our brains. The goal of our lab is to uncover the rules behind these decisions with the objective of predicting and manipulating developmental programs from just
looking at DNA sequence. In order to reach this predictive understanding we
combine physics, synthetic biology, and new technologies to query and control developmental decisions in real time at the single cell level in the fruit fly embryo.
Physical Biology of Living Organisms: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Garcia

Physical Biology of Living Organisms: Read Less [-]

MCELLBI 249N Research Review in Genetics and Development: Gene Regulation 2 Units

Terms offered: Fall 2019, Fall 2018, Fall 2017
Current literature and research in gene regulation will be covered in research reports and reviews of the current literature and in discussion of current experiments in the field.
Research Review in Genetics and Development: Gene Regulation: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Levine

Research Review in Genetics and Development: Gene Regulation: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Biochemistry, cancer biology and virology, cell biology, computational biology, genetics, microbiology, molecular and cell physiology.
Research Review in Genetics and Development: Genome Sequences: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Eisen

Research Review in Genetics and Development: Genome Sequences: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Recent developments in computational methods for genomics and their application for understanding the structure and function of genes encoded in completely sequenced genomes.
Research Review in Genetics and Development: Computational Genomics: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Brenner

Research Review in Genetics and Development: Computational Genomics: Read Less [-]

MCELLBI 249S Research Review in Genetics and Development: Evolution of Development Mechanisms 2 Units

Terms offered: Fall 2020, Fall 2019, Spring 2019
Evolution of development mechanisms with a focus on the genes that regulate segmentation and regionalization of the body plan.
Research Review in Genetics and Development: Evolution of Development Mechanisms: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Patel

Research Review in Genetics and Development: Evolution of Development Mechanisms: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Comparative analysis of eukaryotic genomes to inform the origins and diversification of animals and plants.
Research Review in Genetics, Genomics and Development: Evolution of Genomes: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Rokhsar

Research Review in Genetics, Genomics and Development: Evolution of Genomes: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The Roelink laboratory is interested in the mechanisms of embryonic induction, the phenomenon in which a group of cells changes the developmental fate of neighboring cells via the release of inducers.
Research Review in Genetics and Development: Induction in Vertebrate Development and ES Cell Differentiation: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Roelink

Research Review in Genetics and Development: Induction in Vertebrate Development and ES Cell Differentiation: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Spring 2013
Discussions pertaining to the development of new genetic tools for archaeal model organisms with a particular emphasis on methane metabolizing archaea in order to characterize their physiology, evolution and metabolism.
Research Review in Genetics and Development: Archaeal Genetics and Methane Metabolism: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Nayak

Research Review in Genetics and Development: Archaeal Genetics and Methane Metabolism: Read Less [-]

MCELLBI 249X Research Review in Genetics and Development: Comparative Genomics and Computational Biology 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
The fundamental problem of comparative genomics: the determination of the origins and evolutionary history of the nucleotides in all extant genomes. My work incorporates various aspects of genomics, including the reconstruction of ancestral genomes (paleogenomics), the modeling of genome dynamics (phylogenomics and systems biology), and the assignment of function of genome elements (functional genomics and epigenomics).
Research Review in Genetics and Development: Comparative Genomics and Computational Biology: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Pachter

Research Review in Genetics and Development: Comparative Genomics and Computational Biology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
This course will focus on mechanisms of gene control in vertebrate animals, particularly in the area of vertebrate development. Amphibian egg formation, mesoderm induction, neural induction, and patterning of the nervous system at the molecular level. Control of transcription, post-transcriptional control of gene expression (including control of RNA turnover and RNA localization).
Research Review in Genetics and Development: Mechanisms of Gene Control in Vertebrate Animals: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Harland

Formerly known as: 218Y

Research Review in Genetics and Development: Mechanisms of Gene Control in Vertebrate Animals: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Use of genetic, cell biological, and biochemical approaches in budding yeast to understand genome integrity, genome evolution, and most recently desiccation tolerance.
Research Review in Genetics and Development: Chromosome Structure and Integrity, Genome Evolution: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Koshland

Research Review in Genetics and Development: Chromosome Structure and Integrity, Genome Evolution: Read Less [-]

MCELLBI 250 Advanced Immunology 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Molecular and cellular analysis of the immune response emphasizing concepts and methodology. Innate immunity, pathogen sensors, antibodies and T cell receptors, lymphocyte activation, tolerance and selection. Antigen processing, T cell subtypes, and T regulatory cells. NK cells, tumor surveillance, and AIDS.
Advanced Immunology: Read More [+]

Rules & Requirements

Prerequisites: 100, 110, 140, 150 or consent of instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Advanced Immunology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
This is an advanced seminar course which will consider current research questions and experimental approaches in molecular and cellular immunology. Each registrant will present a 30-minute research talk describing the problems they are studying, the approach they are taking, their preliminary data, and technical problems. Other course participants (including basic immunology faculty) will provide criticism and suggestions.
The Regulation of Immune System Development and Function: Read More [+]

Rules & Requirements

Prerequisites: 250 or consent of instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Winoto

The Regulation of Immune System Development and Function: Read Less [-]

MCELLBI 259A Mycobacterium Tuberculosis (Mtb) 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
The TB field has entered a new era with the convergence of genetic tools, genome sequencing, bioinformatics, advanced imaging techniques, animal models of infection, and high-throughput assays that allow us to study this multi-faceted interaction between Mtb and its host. We use all of these tools to probe the molecular and cellular events that enable M. tuberculosis to evade host defense mechanisms.
Mycobacterium Tuberculosis (Mtb): Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Cox

Mycobacterium Tuberculosis (Mtb): Read Less [-]

MCELLBI 259B Research Review in Immunology and Pathogenesis: Specificity of T Lymphocytes 2 Units

Terms offered: Spring 2019, Fall 2018, Spring 2018
Mechanisms of immune surveillance by T lymphocytes.
Research Review in Immunology and Pathogenesis: Specificity of T Lymphocytes: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Shastri

Research Review in Immunology and Pathogenesis: Specificity of T Lymphocytes: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
In this course we will discuss our research as well as recent literatures focusing on understanding of 1) How is homeostasis in the CNS regulated by innate immune functions of microglia? 2) How can we intervene in dysfunction of microglia-mediated immune functions using NRs signaling and transcription?
Research Review in Immunology and Pathogenesis: Nuclear Receptor-Mediated Regulation of Neuroinflammation: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Saijo

Research Review in Immunology and Pathogenesis: Nuclear Receptor-Mediated Regulation of Neuroinflammation: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
We will discuss macrophage biology and innate immunity in the context of infection with *Mycobacterium tuberculosis* through
discussion of current research from the Stanley Lab and both cutting edge and classic literature in relevant fields.
Research Review in Immunology and Pathogenesis: Mycobacterial Biology and Host-Pathogen Interactions: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Stanley

Research Review in Immunology and Pathogenesis: Mycobacterial Biology and Host-Pathogen Interactions: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Molecular biology of T cell receptor genes and their transcription controlling proteins/genes. Programmed cell death during thymocyte differentiation.
Research Review in Immunology and Pathogenesis: Regulation of T Cell Receptor Genes Expression: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Winoto

Research Review in Immunology and Pathogenesis: Regulation of T Cell Receptor Genes Expression: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Molecular and biological basis for recognition by natural killer cells and T cells.
Research Review in Immunology and Pathogenesis: Natural Killer (NK) Cell and T Cell Receptors: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Raulet

Research Review in Immunology and Pathogenesis: Natural Killer (NK) Cell and T Cell Receptors: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Molecular and cellular aspects of thymocyte differentiation.
Research Review in Immunology and Pathogenesis: T Cell Development: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Robey

Research Review in Immunology and Pathogenesis: T Cell Development: Read Less [-]

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

Terms offered: Fall 2020, Fall 2019, Fall 2018
Molecular basis of terminal B cell differentiation. Role of transcription factors in B cell activation.
Research Review in Immunology and Pathogenesis: B Cell Differentiation: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Sha

Research Review in Immunology and Pathogenesis: B Cell Differentiation: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The mechanisms used by viruses to counteract the pressure of the immune system.
Research Review in Immunology and Pathogenesis: Immune Evasion by Viruses: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Coscoy

Research Review in Immunology and Pathogenesis: Immune Evasion by Viruses: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Intersecting the fields of cancer biology, immunology, and epigenetics to strengthen our own immune defense mechanisms against our own cancers by reprogramming T cell function specifically within the tumor microenvironment.
Research Review in Immunology and Pathogenesis: Epigenetic Control for Regulatory T Cell Function in Cancer and Autoimmunity: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Dupage

Research Review in Immunology and Pathogenesis: Epigenetic Control for Regulatory T Cell Function in Cancer and Autoimmunity: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Innate immunity and innate control of adaptive immunity.
Research Review in Immunology and Pathogenesis: Innate Immunity and Innate Control of Adaptive Immunity: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Barton

Research Review in Immunology and Pathogenesis: Innate Immunity and Innate Control of Adaptive Immunity: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Role of innate host responses in defense against intracellular bacterial pathogens.
Research Review in Immunology and Pathogenesis: Immunology, Microbiology, and Genetics of Bacterial Pathogenesis: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Vance

Research Review in Immunology and Pathogenesis: Immunology, Microbiology, and Genetics of Bacterial Pathogenesis: Read Less [-]

MCELLBI C261 Cellular and Developmental Neurobiology 3 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
This course covers the molecular/cellular basis of neuron excitability (membrane potentials, action potential generation and propagation, ion channels), synaptic transmission and plasticity, sensory receptor function, and developmental neurobiology.
Cellular and Developmental Neurobiology: Read More [+]

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Also listed as: NEUROSC C261

Cellular and Developmental Neurobiology: Read Less [-]

MCELLBI C262 Circuit and Systems Neurobiology 3 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Advanced coverage of current research problems in systems-level neuroscience, and experimental and computational techniques used for these studies.
Circuit and Systems Neurobiology: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Also listed as: NEUROSC C262

Circuit and Systems Neurobiology: Read Less [-]

MCELLBI 269A Research Review in Neurobiology: Special Topics in Neuroplasticity 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Molecular and cellular studies of nerve growth, axon guidance, synaptic formation, and synaptic plasticity using electrophysiological and optical imaging techniques.
Research Review in Neurobiology: Special Topics in Neuroplasticity: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Poo

Research Review in Neurobiology: Special Topics in Neuroplasticity: Read Less [-]

MCELLBI 269B Research Review in Neurobiology: Synaptic Transmission and Neuromodulation 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Neurobiology: Synaptic Transmission and Neuromodulation: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Zucker

Research Review in Neurobiology: Synaptic Transmission and Neuromodulation: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research in our laboratory focuses on understanding how neurons use biochemical pathways to integrate diverse types of information in order to adjust synaptic strength and modulate neuronal excitability, and how these interactions go awry in disease. To investigate this we are taking a multi-disciplinary approach incorporating molecular, biochemical, imaging, and electrophysiological analyses in mouse and human cells.
Research Review in Neurobiology: Molecular Mechanisms of Neuronal Plasticity: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Bateup

Research Review in Neurobiology: Molecular Mechanisms of Neuronal Plasticity: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of recent research in molecular mechanisms involved in intracellular and extracellular signaling in the nervous system.
Research Review in Neurobiology: Signaling Within and Between Neurons: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Kramer

Research Review in Neurobiology: Signaling Within and Between Neurons: Read Less [-]

MCELLBI 269E Molecular and Biophysical Neuroscience 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of research in molecular and biophysical aspects of sensory transduction and electrical signaling in the nervous system.
Molecular and Biophysical Neuroscience: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Brohawn

Molecular and Biophysical Neuroscience: Read Less [-]

MCELLBI 269F Optogenetic Dissection of Neural Circuits 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Research review in neurobiology. Review of recent optogenetic strategies for dissecting neural connectivity, function, and dysfunction in the rodent and primate brain.
Optogenetic Dissection of Neural Circuits: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Lammel

Optogenetic Dissection of Neural Circuits: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Development and application of optical imaging methods for clearer, deeper, and faster imaging of biological tissue in vivo, including a critical review of the current research.
Research Review in Development and Application of Advanced Methods for In Vivo Imaging: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Ji

Research Review in Development and Application of Advanced Methods for In Vivo Imaging: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The basic investigation of neural differentiation of stem cells, as well as the
use of stem cells and gene delivery for neuroregeneration.
Research Review in Neurobiology: Stem Cells and Gene Therapy in the Nervous System: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Schaffer

Research Review in Neurobiology: Stem Cells and Gene Therapy in the Nervous System: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
The molecular and cellular basis of taste perception in the model organism .
Research Review in Neurobiology: Taste Recognition in Drosophila: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Scott

Research Review in Neurobiology: Taste Recognition in Drosophila: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Drosophila mutants that have behavioral abnormalities to unravel new and basic features of nervous system structure and function.
Research Review in Neurobiology: Insect Neurophysiology: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Tanouye

Research Review in Neurobiology: Insect Neurophysiology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Microcircuitry of the cerebral cortex that underlies sensory processing and adaptive behavior.
Research Review in Neurobiology: Neural Circuits for Sensory Processing and Behavior: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Adesnik

Research Review in Neurobiology: Neural Circuits for Sensory Processing and Behavior: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
How the cerebral cortex processes sensory input and stores information about the sensory world. We focus on the rat's primary somatosensory (S1) cortex.
Research Review in Neurobiology: Sensory Processing and Plasticity in Cerebral Cortex: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Feldman

Research Review in Neurobiology: Sensory Processing and Plasticity in Cerebral Cortex: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Neurobiology: Potassium Channels and Synaptic Plasticity: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Isacoff

Research Review in Neurobiology: Potassium Channels and Synaptic Plasticity: Read Less [-]

MCELLBI 269S Research Review in Neurobiology: Molecular Mechanisms of Olfaction 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Neurobiology: Molecular Mechanisms of Olfaction: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Ngai

Research Review in Neurobiology: Molecular Mechanisms of Olfaction: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Review of current literature and discussion of original research.
Research Review in Neurobiology: Processing of Visual Information in the Mammalian Brain: Read More [+]
Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Dan

Research Review in Neurobiology: Processing of Visual Information in the Mammalian Brain: Read Less [-]

MCELLBI 269U Research Review in Neurobiology: Diseases/Retina 2 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Evaluation of current research in molecular mechanisms underlying diseases of the retina.
Research Review in Neurobiology: Diseases/Retina: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Flannery

Research Review in Neurobiology: Diseases/Retina: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
How neural activity affects the assembly of neural circuits.
Research Review in Neurobiology: Neural Activity Affecting the Assembly of Neural Circuits: Read More [+]

Rules & Requirements

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

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Feller

Research Review in Neurobiology: Neural Activity Affecting the Assembly of Neural Circuits: Read Less [-]

MCELLBI C277 Communicating Quantitative Information 2 Units

Terms offered: Spring 2020, Spring 2019
This course will cover several aspects of communicating quantitative information, with a primary focus on visualizations for publications, presentations, and posters. Other topics include sharing of data and analyses, such as new publication models and interactive notebooks, as well as lifecycle data management and publication. Primary discussion will be on conceptual issues, and students will be expected to use various systems and resources as self-directed homestudy.
Communicating Quantitative Information: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of seminar and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructor: Brenner

Also listed as: PLANTBI C277

Communicating Quantitative Information: Read Less [-]

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

Terms offered: Spring 2012, Spring 2011, Spring 2010
The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbi ology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.
Selected Topics in Molecular and Cell Biology: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

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

Hours & Format

Fall and/or spring: 5 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

MCELLBI 280B Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2012, Spring 2011, Spring 2010
The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbi ology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.
Selected Topics in Molecular and Cell Biology: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing and consent of instructor

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

Hours & Format

Fall and/or spring: 5 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

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

Terms offered: Spring 2016, Spring 2012, Spring 2011
The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbi ology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.
Selected Topics in Molecular and Cell Biology: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing and consent of instructor

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

Hours & Format

Fall and/or spring: 5 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

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

Terms offered: Fall 2020, Fall 2019, Fall 2018
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, microbi ology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.
Selected Topics in Molecular and Cell Biology: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

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

Hours & Format

Fall and/or spring: 5 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

MCELLBI 280E Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Spring 2012, Spring 2011, Spring 2010
The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbi ology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.
Selected Topics in Molecular and Cell Biology: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing and consent of instructor

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

Hours & Format

Fall and/or spring: 5 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

MCELLBI 280F Selected Topics in Molecular and Cell Biology 1 Unit

Terms offered: Fall 2016, Spring 2012, Spring 2011
The course will focus on fundamental principles, essential concepts, and recent advances in select topics in molecular and cell biology. Topics include genomics and computational biology, molecular evolution, neurons and synapses, microbi ology and immunology, macromolecular structure and function, and scientific writing. Courses are taught in tandem and maybe taken individually.
Selected Topics in Molecular and Cell Biology: Read More [+]
Rules & Requirements

Prerequisites: Graduate standing and consent of instructor

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

Hours & Format

Fall and/or spring: 5 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Selected Topics in Molecular and Cell Biology: Read Less [-]

MCELLBI 288 Data Science for Molecular and Cell Biology 2 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Data science is rapidly becoming a critical skill for molecular and cell biologists. This course provides a survey of data science concepts and methods, including practical statistical inference and modeling, data visualization and exploration, elementary machine learning, and simulation. The course is practically oriented. Diverse real-world datasets, along with simulated data, will be used to develop skills and intuition.
Data Science for Molecular and Cell Biology: Read More [+]
Rules & Requirements

Prerequisites: Graduate standing in the biological sciences or permission from instructors. Prior introductory exposure to programming is desired, e.g., through Data Science 8, MCB Python “boot camp,” or self taught from introductory programming tutorials. Please see http://python.berkeley.edu/resources/ for suggested resources. No prior statistics is assumed. The course is not suitable for students with advanced training in statistics or machine learning

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructors: Rokhsar, Eisen

Data Science for Molecular and Cell Biology: Read Less [-]

MCELLBI 290 Graduate Seminar 1 Unit

Terms offered: Fall 2020, Spring 2020, Fall 2019
Graduate student presentations on selected research topics in molecular and cell biology. Several sections covering different topics offered each semester. Concurrent enrollment in more than one section is permitted. List of topics to be announced before each semester.
Graduate Seminar: Read More [+]
Rules & Requirements

Prerequisites: Graduate standing in the department or consent of instructor

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Graduate Seminar: Read Less [-]

MCELLBI 291A Introduction to Research 2 - 12 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Closely supervised experimental work under the direction of an individual faculty member; an introduction to experimental methods and research approaches in particular areas of molecular and cell biology.
Introduction to Research: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2-12 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade. This is part one of a year long series course. A provisional grade of IP (in progress) will be applied and later replaced with the final grade after completing part two of the series.

Introduction to Research: Read Less [-]

MCELLBI 291B Introduction to Research 2 - 12 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Closely supervised experimental work under the direction of an individual faculty member; an introduction to experimental methods and research approaches in particular areas of molecular and cell biology.
Introduction to Research: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2-12 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade. This is part two of a year long series course. Upon completion, the final grade will be applied to both parts of the series.

Introduction to Research: Read Less [-]

MCELLBI 292 Research 3 - 12 Units

Terms offered: Fall 2020, Spring 2020, Fall 2019
Individual research under the supervision of a faculty member.
Research: Read More [+]
Rules & Requirements

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

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Research: Read Less [-]

MCELLBI N292 Research 3 - 6 Units

Terms offered: Summer 2009 10 Week Session, Summer 2008 10 Week Session, Summer 2006 10 Week Session
Individual research under the supervision of a staff member.
Research: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

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

Hours & Format

Summer: 8 weeks - 3-6 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Research: Read Less [-]

MCELLBI 293A Research Seminar 2 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Seminar on presentation and evaluation of results in area of student's individual research interests.
Research Seminar: Read More [+]
Rules & Requirements

Prerequisites: Concurrent enrollment in 291A or 292

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Research Seminar: Read Less [-]

MCELLBI 293C Responsible Conduct in Research 1 Unit

Terms offered: Spring 2020, Spring 2019, Spring 2018
The purpose of this course is to ensure that research trainees receive ample training in Responsible Conduct in Research. Students also gain an understanding of federal, state, and UC Berkeley policies and resources available to further support their research endeavors.
Responsible Conduct in Research: Read More [+]

Rules & Requirements

Prerequisites: Consent of instructor

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Sharma

Responsible Conduct in Research: Read Less [-]

MCELLBI 293D Rigor and Reproducibility in Research 1 Unit

Terms offered: Prior to 2007
The purpose of this course is to ensure that research trainees receive training in Rigor and Reproducibility in Research. Students also gain an understanding of federal, state, and UC Berkeley policies and resources available to further support their research endeavors.
Rigor and Reproducibility in Research: Read More [+]

Rules & Requirements

Prerequisites: Consent of Instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Sharma

Rigor and Reproducibility in Research: Read Less [-]

MCELLBI 293R Responsible Conduct of Research Refresher 1 Unit

Terms offered: Prior to 2007
This refresher course will cover topics in responsible conduct in research drawing from case studies of the Association of American Medical Colleges and the NIH. Students will review case studies in preparation for class discussion. Required of all 4th year MCB graduate students funded on NIH training grants.
Responsible Conduct of Research Refresher: Read More [+]

Objectives & Outcomes

Course Objectives: Collaborative research including collaborations with industry
Data acquisition and laboratory tools; management, sharing and ownership
Mentor/mentee responsibilities and relationships
Policies regarding human subjects, live vertebrate animal subjects in research, and safe laboratory
practices
Research misconduct and policies for handling misconduct
Responsible authorship and publication
The scientist as a responsible member of society, contemporary ethical issues in biomedical research, and
the environmental and societal impacts of scientific research

Rules & Requirements

Prerequisites: Consent of instructor. Must be a 4th year MCB graduate student

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Sharma

Responsible Conduct of Research Refresher: Read Less [-]

MCELLBI 293S Foundations of Biostatistical Practice 1 Unit

Terms offered: Fall 2018, Spring 2018
This course is designed to introduce students to the foundations of statistics in the context of biological research. Rather than focusing on a catalog of specific methods (by essence non-exhaustive and rapidly outdated), the course emphasizes general concepts and approaches necessary for sound statistical practice. Topics covered include: exploratory data analysis (EDA); data visualization; inferential reasoning; models and assumptions; statistical computing; computationally reproducible research. The statistical methods and software are motivated by and illustrated on data structures that arise in current biological and medical research.
Foundations of Biostatistical Practice: Read More [+]
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Foundations of Biostatistical Practice: Read Less [-]

MCELLBI 294 Current Topics in Biomedical Sciences 1 Unit

Terms offered: Fall 2020, Spring 2020, Fall 2019
This course will discuss cutting-edge topics in biochemistry, structural biology, cell biology, developmental biology and genetics. Lectures will be given by internationally recognized biomedical scientists that visit the Molecular and Cell Biology Department and present work currently performed in their laboratories. The class will include topics ranging from structural analysis of important signaling molecules, live cell imaging and high resolution microscopy of critical cellular structures, to genetic dissection of essential signaling networks in cells and developmental pathways in multicellular organisms. It is the goal of this class to expose students to both the breadth and highest standards of current biomedical research.
Current Topics in Biomedical Sciences: Read More [+]
Rules & Requirements

Prerequisites: Molecular and Cell Biology graduate students only

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Current Topics in Biomedical Sciences: Read Less [-]

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

Terms offered: Spring 2020, Spring 2019, Spring 2018
This course is designed to assist graduate students in the biological sciences with planning their postgraduate careers. Weekly guest speakers will present their experiences on a variety of topics. Postdoctoral students are invited. Topics may include academia; job searches; setting up a laboratory; patent law/technology transfer; public policy/regulatory affairs; bioinformatics; science writing/technical support; forensic science; postdoctoral positions in industry; teaching, and other topics of interest.
Careers for Life Sciences Ph.D's: Read More [+]
Rules & Requirements

Prerequisites: Open to graduate and postdoctoral students

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Careers for Life Sciences Ph.D's: Read Less [-]

MCELLBI 296 Molecular and Cell Biology Colloquium 0.0 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Meetings for the presentation of original work by faculty, visiting lecturers, and graduate students.
Molecular and Cell Biology Colloquium: Read More [+]
Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of colloquium per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Molecular and Cell Biology Colloquium: Read Less [-]

MCELLBI C296 Doctoral Seminar in Computational Biology 2 Units

Terms offered: Fall 2019, Fall 2018
This one-year interactive seminar builds skills, knowledge and community in computational biology for first year PhD and second year Designated Emphasis students. Topics covered include concepts in human genetics/genomics, laboratory methodologies and data sources for computational biology, workshops/instruction on use of various bioinformatics tools, critical review of current research studies and computational methods, preparation for success in the PhD program and career development. Faculty members of the graduate program in computational biology and scientists from other institutions will participate. Topics will vary each semester.
Doctoral Seminar in Computational Biology: Read More [+]
Rules & Requirements

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

Hours & Format

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

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate

Grading: Letter grade.

Instructors: Moorjani, Rokhsar

Also listed as: CMPBIO C293

Doctoral Seminar in Computational Biology: Read Less [-]

MCELLBI 375 Pedagogy for MCB Graduate Student Instructors 2 Units

Terms offered: Not yet offered
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.
Pedagogy for MCB Graduate Student Instructors: Read More [+]
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

Pedagogy for MCB Graduate Student Instructors: Read Less [-]

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

Terms offered: Spring 2016, Fall 2015, Spring 2015
Teaching laboratories and/or discussions for Molecular and Cell Biology courses: analysis of specific format and problems. Two units of credit for those with 50% teaching appointment; one unit of credit for those with 25% teaching appointment.
Teaching of Molecular and Cell Biology: Read More [+]
Rules & Requirements

Prerequisites: Appointment as graduate student instructor or consent of instructor

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

Hours & Format

Fall and/or spring: 15 weeks - 0-1 hours of seminar per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Professional course for teachers or prospective teachers

Grading: Offered for satisfactory/unsatisfactory grade only.

Teaching of Molecular and Cell Biology: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Individualized laboratory instruction.
Instrumentation in Molecular and Cell Biology: Transmission Electron Microscopy: Read More [+]
Rules & Requirements

Prerequisites: Graduate standing; consent of instructor and sponsorship of a faculty member

Hours & Format

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

Summer:
6 weeks - 2.5-10 hours of independent study per week
8 weeks - 2-7.5 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Other professional

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructors: Dernburg, Karpen

Instrumentation in Molecular and Cell Biology: Transmission Electron Microscopy: Read Less [-]

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

Terms offered: Fall 2020, Spring 2020, Fall 2019
Individualized laboratory instruction.
Instrumentation in Molecular and Cell Biology: Scanning Electron Microscopy: Read More [+]

Rules & Requirements

Prerequisites: Graduate standing; consent of instructor and sponsorship of a faculty member

Hours & Format

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

Summer:
6 weeks - 2.5-10 hours of independent study per week
8 weeks - 2-7.5 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Other professional

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructors: Dernburg, Karpen

Instrumentation in Molecular and Cell Biology: Scanning Electron Microscopy: Read Less [-]

MCELLBI 601 Individual Study for Master's Students 1 - 8 Units

Terms offered: Fall 2006, Spring 2005, Spring 2001
Individual study for the comprehensive or language examinations in consultation with the field adviser.
Individual Study for Master's Students: Read More [+]

Rules & Requirements

Credit Restrictions: Course does not satisfy unit or residence requirements for master's degree.

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

Hours & Format

Fall and/or spring: 15 weeks - 1-8 hours of independent study per week

Summer: 8 weeks - 1.5-15 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate examination preparation

Grading: Offered for satisfactory/unsatisfactory grade only.

Individual Study for Master's Students: Read Less [-]

MCELLBI 602 Individual Study for Doctoral Students 1 - 8 Units

Terms offered: Spring 2006, Spring 2005, Fall 2004
Individual study in consultation with the major field adviser. Intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D.
Individual Study for Doctoral Students: Read More [+]

Rules & Requirements

Prerequisites: Restricted to Ph.D. candidates

Credit Restrictions: Course does not satisfy unit or residence requirements for doctoral degree.

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

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-8 hours of independent study per week
8 weeks - 1-8 hours of independent study per week

Additional Details

Subject/Course Level: Molecular and Cell Biology/Graduate examination preparation

Grading: Offered for satisfactory/unsatisfactory grade only.

Individual Study for Doctoral Students: Read Less [-]