Molecular and Cell Biology

Molecular and Cellular Biology, School of
Director of School: Milan Bagchi
School Office: 393 Morrill Hall, 505 South Goodwin Avenue, Urbana
Phone: 217-333-3166
www.mcb.illinois.edu
Subjects associated with this department include: Biophysics (BIOP) and Molecular and Cellular Biology (MCB).

MCB 100  Introductory Microbiology  credit: 3 hours.
Introduction to the principal activities and properties of microorganisms, including bacteria, yeasts, molds, and viruses; consideration of the role of natural processes, such as photosynthesis; and man's use and control of microorganisms in the production of antibodies and vaccines in industrial fermentations, in sanitation and public health, and in agriculture. Credit is not given for both MCB 100 and MCB 300. Prerequisite: There are no prerequisites for MCB 100, but some chemistry is recommended.

This course satisfies the General Education Criteria for a:
Nat Sci & Tech - Life Sciences

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<th>CRN</th>
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<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
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<tr>
<td>38678</td>
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<td>MWF</td>
<td>112 - Gregory Hall</td>
<td>Chapman, K</td>
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Nat Sci & Tech - Life Sciences course.

MCB 101  Intro Microbiology Laboratory  credit: 2 hours.
Laboratory introduction to the techniques employed in the investigation of microbial activities and properties; experiments designed to familiarize the student with the handling, identification, and characterization of microorganisms and their activities, particularly those of interest to man. Credit is not given for both MCB 101 and MCB 301. Prerequisite: Credit or concurrent registration in MCB 100.

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<tr>
<th>CRN</th>
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<th>Time</th>
<th>Days</th>
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<tr>
<td>38680</td>
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<td>08:00 AM - 09:50 AM</td>
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<td>Chapman, K</td>
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Students must register for both the lecture and one lab. Lab will meet beginning Monday, January 14, 2019. The first lecture will meet on Friday, January 18, 2019.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
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<th>Time</th>
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Students must register for both the lecture and one lab. Lab will meet beginning Monday, January 14, 2019. The first lecture will meet on Friday, January 18, 2019.

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<tr>
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<th>Time</th>
<th>Days</th>
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<th>Days</th>
<th>Location</th>
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Nat Sci & Tech - Life Sciences course.
Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019.

<table>
<thead>
<tr>
<th>Course</th>
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<th>Time</th>
<th>Day</th>
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<td>38415</td>
<td>ADH</td>
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<td>6 - Burrill Hall</td>
<td>Mehrten, B Reedy, M</td>
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James Scholars, and Nat Sci & Tech - Life Sciences course.
MCB 150 section ADH is the James Scholars Honors section. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019.

Restricted to James Scholars Program students.

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<tr>
<th>Course</th>
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<th>Location</th>
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<td>105 - Burrill Hall</td>
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<td>38410</td>
<td>ADM</td>
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Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019.
| 38411 | Discussion/ Recitation | ADN | 12:00 PM - 12:50 PM | W | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38412 | Discussion/ Recitation | ADO | 01:00 PM - 01:50 PM | W | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38413 | Discussion/ Recitation | ADP | 03:00 PM - 03:50 PM | W | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38414 | Discussion/ Recitation | ADQ | 04:00 PM - 04:50 PM | W | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38416 | Discussion/ Recitation | ADR | 05:00 PM - 05:50 PM | W | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38417 | Discussion/ Recitation | ADS | 09:00 AM - 09:50 AM | R | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38418 | Discussion/ Recitation | ADT | 10:00 AM - 10:50 AM | R | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38419 | Discussion/ Recitation | ADU | 11:00 AM - 11:50 AM | R | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Thursday evenings: February 7, March 7, and April 11, 2019. |

| 38420 | Discussion/ Recitation | ADV | 12:00 PM - 12:50 PM | R | 105 - Burrill Hall | Reedy, M |
| Nat Sci & Tech - Life Sciences course. |
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<th>Days</th>
<th>Location</th>
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<tr>
<td>38427</td>
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<td>38433</td>
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<td>38436</td>
<td>Laboratory</td>
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<td>T</td>
<td>413 - Burrill Hall</td>
<td>Reedy, M</td>
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MCB 151  **Molec & Cellular Laboratory**  credit: 1 hours.
Introductory laboratory course focusing on basic techniques in molecular and cellular biology. Credit is not given for MCB 151 for students majoring in Molecular and Cellular Biology, or Integrative Biology; Credit is not given for both MCB 151 and MCB 251. Prerequisite: Concurrent enrollment in MCB 150.
For further information: www.life.illinois.edu/mcb/151.
**MCB 198  Internship**  credit: 0 hours.
Full-time or part-time internship at another University or an off-campus medical facility, research institute or other approved institution. Approved for S/U grading only. May be repeated. Prerequisite: For MCB and Biochemistry majors only.

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<tbody>
<tr>
<td>66224</td>
<td>Independent Study</td>
<td>INT</td>
<td>ARRANGED -</td>
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<td>Michael, M</td>
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Departmental Approval Required

**MCB 199  Undergraduate Open Seminar**  credit: 1 TO 5 hours.
Approved for letter and S/U grading. May be repeated to a maximum of 10 hours.

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Credit Hours: 1 hours
Internship
Departmental Approval Required

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<th>CRN</th>
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Credit Hours: 1 hours
Instructor Approval Required
This section is reserved for MCB Leaders. It will meet in 127 Burrill Hall. Contact Tina Knox at tmknox@illinois.edu for more information.

<table>
<thead>
<tr>
<th>CRN</th>
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<th>Time</th>
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Credit Hours: 1 hours
Departmental Approval Required
Departmental Approval Required. Merit section for MCB 150. Contact Alejandra Stenger at astenger@illinois.edu for details.

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<tr>
<th>CRN</th>
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<td>Reedy, M</td>
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Credit Hours: 1 hours
Departmental Approval Required
Departmental Approval Required. Merit section for MCB 150. Contact Alejandra Stenger at astenger@illinois.edu for details.

MCB 246  Human Anatomy & Physiology II  credit: 3 hours.
Organ system biology with an emphasis on normal human anatomy and physiology, physiological processes and associated disease processes of the following systems: digestion, cardiovascular, respiratory, renal, and reproductive. Prerequisite: MCB 244 and credit or concurrent enrollment in CHEM 101, CHEM 102, or equivalent or consent of instructor.

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<th>CRN</th>
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<th>Days</th>
<th>Location</th>
<th>Instructor</th>
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<tr>
<td>54927</td>
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<td>TR</td>
<td>AUD - Foellinger Auditorium</td>
<td>Brown, C Swigart, J Tang, V</td>
</tr>
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</table>

MCB 247  Human Anat & Physiol Lab II  credit: 2 hours.
Laboratory exploration of normal human anatomy and physiology and relevant disease processes for the following systems: digestive, cardiovascular, respiratory, renal, and reproductive. Previously dissected human cadavers are an important part of the learning experience in this course, but students will not dissect human cadavers. Neither animal dissection or animal use are elements of this course. Prerequisite: MCB 245 and credit or concurrent enrollment in CHEM 101, CHEM 102, or equivalent; or consent of instructor.

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<tr>
<td>55464</td>
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<td>A</td>
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<td>MW</td>
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<td>Swigart, J</td>
</tr>
</tbody>
</table>

This course is restricted to students in majors and programs for whom it is required. If you are not in a major or program that specifically requires this course but would like to take it, you may add your name to the online waitlist at http://go.illinois.edu/mcb247_SP19_waitlist.

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<tr>
<td>55467</td>
<td>Laboratory</td>
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<td>04:00 PM - 05:50 PM</td>
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MCB 250  **Molecular Genetics**  credit: 3 hours.
Fundamentals of molecular biology including structure of DNA, RNA and proteins, mechanisms of DNA replication, transcription and translation, gene organization, genetic variation and repair, and regulation of gene expression in Bacteria, and Eukarya. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule. Prerequisite: MCB 150, CHEM 102 and CHEM 104, or equivalents or consent of instructor.
For further information: www.life.illinois.edu/mcb/250. Students must register for one discussion and one lecture section.
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<tr>
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<td>Discussion/Recitation</td>
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<tr>
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<td>Discussion/Recitation</td>
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<tr>
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<tr>
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<tr>
<td>44348</td>
<td>Discussion/Recitation</td>
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<td>43300</td>
<td>Lecture</td>
<td>01:00 PM - 01:50 PM</td>
<td>MWF</td>
<td>112 - Gregory Hall</td>
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MCB 251  **Exp Techniqs in Molecular Biol**  credit: 2 hours.
Laboratory course emphasizing a range of molecular biology questions, and the experimental approaches and methodologies needed to answer these questions. Lectures will accompany labs to explain theoretical background and experimental rationale. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment.
differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule. Credit is not given for both MCB 251 and MCB 151. Prerequisite: Concurrent or prior enrollment in MCB 250 or consent of instructor.

For further information: www.life.illinois.edu/mcb/251.

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<tr>
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<th>Section</th>
<th>Time</th>
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<tr>
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</tbody>
</table>

Labs will begin on Monday, January 14, 2019. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment.

**MCB 252  Cells, Tissues & Development  credit: 3 hours.**

Functional organization and physiology of cells and tissues, including cellular signaling, cellular interactions, and developmental processes. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule. Prerequisite: MCB 250 or equivalent with consent of instructor.

For further information: www.life.illinois.edu/mcb/252
Lectures will begin on Monday, January 14, 2019 and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Tuesday evenings: February 12, March 5, and April 9, 2019. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment.

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<thead>
<tr>
<th>Course Code</th>
<th>Discussion/Recitation</th>
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<th>Day</th>
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<tr>
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<td></td>
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</table>

MCB 252 ADJ is an MCB Honors and James Scholars Honors section. Lectures will begin on Monday, January 14, 2019 and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Tuesday evenings: February 12, March 5, and April 9, 2019. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. If you wish to register for this section but are unable to please email Shawna Naidu at shawna@illinois.edu. Restricted to James Scholars Program students.

<table>
<thead>
<tr>
<th>Course Code</th>
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**MCB 253  Exp Technqs in Cellular Biol  credit: 2 hours.**

Laboratory course emphasizing experimental techniques in cellular biology, cellular physiology, and developmental biology. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule. Credit is not given for both MCB 253 and MCB 151. Prerequisite: Concurrent or prior enrollment in MCB 252 or consent of instructor.

For further information: [www.life.illinois.edu/mcb/253](http://www.life.illinois.edu/mcb/253)

<table>
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<tr>
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</table>
James Scholars course.
MCB 253 section G is an MCB Honors and James Scholars Honors section. Labs will begin on Monday, January 14, 2019. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. If you wish to register for this section but are unable to do so please email Shawna Naidu at shawna@illinois.edu.
Restricted to James Scholars Program students.

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<td>R</td>
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</table>
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**MCB 270  Medical Genetics**  credit: 3 hours.
Addresses key issues in medical genetics, defined as human genetics for pre-health care professionals. The course covers basic principles of medical ethics, modes of inheritance, the molecular basis of genetic disorders, treatment approaches, gene therapy and emerging technologies like whole genome sequencing. Prerequisite: MCB 252 or equivalent or consent of instructor.

<table>
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<td>63412</td>
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<td></td>
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**MCB 290  Undergraduate Research**  credit: 1 TO 5 hours.
Students assist in and/or conduct research under faculty supervision in an MCB research laboratory. The topics and nature of the work will vary but will be defined as work conducted in MCB research laboratories. For each hour of course credit in fall and spring terms, the student will be expected to complete 5 hours of work in the lab as directed. 75-80 total hours would be the expectation for 1 credit hour during 15-16 week terms. May be repeated to a maximum of 10 hours. Prerequisite: Consent of instructor.

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Instructor Approval Required
Please contact your instructor or the MCB Office in 127 Burrill Hall for the appropriate CRN. The last date to add MCB 290 is January 29, 2019. Permission may not be granted after this date.

**MCB 297  MCB Honors Discussion**  credit: 1 hours.
Honors discussion section associated with MCB 250, MCB 252, and MCB 354. Concurrent enrollment in the appropriate lecture course is required. May be repeated in separate terms to a maximum of 3 hours.

<table>
<thead>
<tr>
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<td>6 - Burrill Hall</td>
<td>Olsen, G</td>
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</table>

Instructor Approval Required
**MCB 298  MCB Honors Lab Discussion**  credit: 1 hours.
Discussion section associated with the Honors lab sections of MCB 251 and MCB 253. Concurrent enrollment in the appropriate Honors lab section is required. May be repeated in separate terms to a maximum of 2 hours.

<table>
<thead>
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<th>Instructor</th>
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<td>6 - Burrill Hall</td>
<td>Naidu, S</td>
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Instructor Approval Required

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<td>M</td>
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<td>Naidu, S</td>
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</tbody>
</table>

Instructor Approval Required

**MCB 299  MCB Merit Program Discussion**  credit: 1 hours.
Provides the extra earned credit hours for students enrolled in the Merit Program in MCB 250, MCB 252, or MCB 354. Approved for letter and S/U grading. May be repeated up to 6 hours in a semester, to a maximum of 10 total hours. Prerequisite: Consent of instructor.

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<tr>
<th>CRN</th>
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<th>Time</th>
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<tr>
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<td>50A</td>
<td>09:00 AM - 10:50 AM</td>
<td>T</td>
<td>6 - Burrill Hall</td>
<td>Kirchner, N</td>
</tr>
</tbody>
</table>

Departmental Approval Required

Departmental Approval Required. Merit section for MCB 250. Contact Alejandra Stenger at astenger@illinois.edu for details.

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<tr>
<th>CRN</th>
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<th>Time</th>
<th>Days</th>
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<td>Discussion/Recitation</td>
<td>52A</td>
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<td>T</td>
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</tr>
</tbody>
</table>

Departmental Approval Required

Departmental Approval Required. Merit section for MCB 252. Contact Alejandra Stenger at astenger@illinois.edu for details.

**MCB 300  Microbiology**  credit: 3 hours.
Emphasizes fundamental concepts of microbiology, including nutrition, physiology, genetics, molecular biology, ecology and evolution of microorganisms, and their role in nature, human health and disease. Credit is not given for both MCB 300 and MCB 100. Prerequisite: MCB 250 and credit or concurrent registration in MCB 252 or consent of instructor.

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<tr>
<td>38684</td>
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<td>A</td>
<td>10:00 AM - 10:50 AM</td>
<td>MWF</td>
<td>124 - Burrill Hall</td>
<td>Alt, R Blanke, S</td>
</tr>
</tbody>
</table>
MCB 301  **Experimental Microbiology**  credit: 3 hours.
Laboratory emphasizing the fundamentals of microbiology. Topics include growth, isolation, and identification of bacteria; restriction endonuclease analysis of DNA, genetic cloning, and gene transfer. Computer methods are used for the identification of microorganisms and for the analysis of recombinant DNA molecules. Prerequisite: MCB 250 and 251 and credit or concurrent registration in MCB 300, or consent of instructor.

Students must register for one lab-discussion and one lecture section.

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<tr>
<th>CRN</th>
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<tr>
<td>38627</td>
<td>Lecture</td>
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<td>01:00 PM - 01:50 PM</td>
<td>F</td>
<td>213 - Gregory Hall</td>
<td>Alt, R Ikeda, J</td>
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</table>

Restricted to Biochemistry or Molecular and Cellular Biology major(s). Restricted to students with Junior or Senior class standing. Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 18, 2019. Labs will meet beginning on Monday, January 14, 2019. This class will be restricted to seniors until Nov. 7 and then to juniors until Nov. 12. Restrictions will be removed on Nov. 12.

38686 Laboratory-Discussion AYA 01:00 PM - 02:50 PM MW 246 - Burrill Hall Alt, R

Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 18, 2019. Labs will meet beginning on Monday, January 14, 2019.

38687 Laboratory-Discussion AYB 03:00 PM - 04:50 PM MW 246 - Burrill Hall Alt, R

Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 18, 2019. Labs will meet beginning on Monday, January 14, 2019.

38624 Laboratory-Discussion AYC 05:00 PM - 06:50 PM MW 246 - Burrill Hall Alt, R

Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 18, 2019. Labs will meet beginning on Monday, January 14, 2019.

38625 Laboratory-Discussion AYD 10:00 AM - 11:50 AM TR 246 - Burrill Hall Alt, R

Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 18, 2019. Labs will meet beginning on Monday, January 14, 2019.

38626 Laboratory-Discussion AYE 01:00 PM - 02:50 PM TR 246 - Burrill Hall Alt, R

Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 18, 2019. Labs will meet beginning on Monday, January 14, 2019.

38685 Laboratory-Discussion AYF 03:00 PM - 04:50 PM TR 246 - Burrill Hall Alt, R

Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 18, 2019. Labs will meet beginning on Monday, January 14, 2019.

57844 Laboratory-Discussion AYG 05:00 PM - 06:50 PM TR 246 - Burrill Hall Alt, R Schaefer, Z
Students must register for both the lecture and one lab. Lecture will meet beginning on Friday, January 19, 2018. Labs will meet beginning on Wednesday, January 17, 2018.

MCB 317  Genetics and Genomics  credit: 4 hours.
Study of genetics as a discipline, genetic analysis as a tool to understand biology and the role of genome sciences in biology. Credit is not given for both MCB 317 and MCB 316. Prerequisite: MCB 250, MCB 251, MCB 252, and MCB 253; or consent of instructor.

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<td>Discussion/Recitation</td>
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<td>R</td>
<td>7 - Burrill Hall</td>
<td>Rivier, D</td>
</tr>
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</table>

MCB 320  Mechanisms of Human Disease  credit: 3 hours.
The advent of molecular biology and the Human Genome Project has dramatically increased our understanding of the mechanisms of human disease. The underlying molecular causes for many diseases have been elucidated. This course examines how abnormalities that occur at the molecular and cellular level manifest as pathologies affecting the structure and function of human tissues and organs. In addition, this course focuses on the pathophysiology of common human diseases and the environmental, genetic and epigenetic causes of specific disease types. Prerequisite: MCB 252 or consent of instructor.
MCB 354  Biochem & Phys Basis of Life  credit: 3 hours.
Introduction to biochemistry and structural biology emphasizing the physical and chemical properties of macromolecules. Credit is not given for both MCB 354 and MCB 450. Prerequisite: CHEM 232 or CHEM 236, and MCB 250 and MCB 252, or consent of instructor.
For further information: www.life.illinois.edu/mcb/354.

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<td>5 - Burrill Hall</td>
<td>Stenger, A</td>
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</tbody>
</table>

Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Tuesday evenings: February 12, March 5, and April 9, 2019.
Lectures will begin on Monday, January 14, 2019, and discussions will begin on Monday, January 14, 2019. Examinations will be held from 7:00-9:00PM on the following Tuesday evenings: February 12, March 5, and April 9, 2019.

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<tr>
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</table>

Restricted to Biochemistry or Molecular and Cellular Biology major(s). Restricted to students with Junior or Senior class standing. Lectures will begin on Wednesday, January 17, 2018, and discussions will begin on Monday, January 22, 2018. Examinations will be held from 7:00-9:00PM on the following Tuesday evenings: February 13, March 6, and April 10, 2018.

**MCB 364  Eukaryotic Cell Biology Laboratory** credit: 2 hours.

Laboratory course emphasizing biochemical, immunological and molecular biological techniques used to probe the molecules and processes of eukaryotic cells. Special emphasis will be given to the cell cycle, intracellular trafficking, and cellular differentiation. Students will also learn proper data handling and reporting techniques. Prerequisite: MCB 252 and MCB 253 or consent of instructor. Priority is given to undergraduate MCB and Biochemistry majors.

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<td>W</td>
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<td>Levesque, L</td>
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</table>

Restricted to Molecular and Cellular Biology major(s). Restricted to students with Junior or Senior class standing. Prerequisites: MCB 252 and MCB 253. This laboratory course is built upon the experimental foundation introduced in MCB 253. Biochemical, immunological and molecular biological techniques will be used to probe the molecules and processes of eukaryotic cells. Special emphasis will be given to the cell cycle, intracellular trafficking, and cellular differentiation. The course will also include proper data handling and reporting techniques. This course counts as an advanced MCB laboratory course. Consult an MCB advisor for grade replacement situations. This course will be restricted until Nov. 12, 2019.

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<tr>
<td>69265</td>
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<td>Levesque, L</td>
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</table>

Restricted to Molecular and Cellular Biology major(s). Restricted to students with Junior or Senior class standing. Prerequisites: MCB 252 and MCB 253. This laboratory course is built upon the experimental foundation introduced in MCB 253. Biochemical, immunological and molecular biological techniques will be used to probe the molecules and processes of eukaryotic cells. Special emphasis will be given to the cell cycle, intracellular trafficking, and cellular differentiation. The course will also include proper data handling and reporting techniques. This course counts as an advanced MCB laboratory course. Consult an MCB advisor for grade replacement situations. This course will be restricted until Nov. 12, 2019.

**MCB 402  Sys & Integrative Physiology** credit: 3 hours.

Examines human systems physiology. Topics to be covered include the nervous and endocrine systems, muscle physiology, cardiac physiology, respiratory physiology, blood and immune homeostasis, renal physiology, and gastrointestinal physiology and energy homeostasis. Special emphasis is on homeostatic control and integration of body systems in both health and disease. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 252 or consent of instructor.

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<td>MWF</td>
<td>140 - Burrill Hall</td>
<td>Nelson, E Tsai, N</td>
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</table>

Credit Hours: 3 hours

**MCB 408  Immunology** credit: 3 hours.
Introduction to fundamentals of immunology with emphasis on biological application; basic background for understanding immunological responses and techniques applicable to biological research. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 250, MCB 251, MCB 252, MCB 253, and MCB 354; or consent of instructor.

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<td>Stenger, A</td>
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</table>

Restricted to Biochemistry or Molecular and Cellular Biology major(s). Restricted to students with Junior or Senior class standing. To inquire about access to this course please contact Alejandra Stenger at astenger@illinois.edu.

**MCB 410  Developmental Biology, Stem Cells and Regenerative Medicine**  credit: 3 hours.
Survey of molecular and cellular mechanisms involved in development and growth of animals, as well as recent advancement in stem cell and Regenerative medicine research. Topics to be covered include fertilization and early cell lineage, body axis formation, gastrulation, neural induction and patterning, segmentation, and other aspects of pattern formation including organogenesis and limb development, as well as embryonic stem cells, induced pluripotent stem cells, adult stem cells, regeneration and regenerative medicine. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 252 or consent of instructor.

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<td>38665</td>
<td>Lecture</td>
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<td>MWF</td>
<td>166 - Bevier Hall</td>
<td>Li, X</td>
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</table>

**MCB 419  Brain, Behavior & Info Process**  credit: 3 hours.
Exploration of the neural basis of animal behavior. Emphasis on the information processing problems that animals face in complex natural environments and how nervous systems have evolved to solve these problems. Introduction to the use of computer modeling and simulation techniques for exploring principles of nervous system design and function. Current literature in computational neurobiology and neuroethology will be incorporated in readings and class discussion. Same as BIOP 419 and NEUR 419. 3 undergraduate hours. 3 graduate hours. Prerequisite: CS 101; and PHYS 102 or PHYS 212; and MCB 252; or equivalent or consent of instructor.

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<td>41123</td>
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<td>TR</td>
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<td>Nelson, M</td>
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</table>

Credit Hours: 3 hours

**MCB 421  Microbial Genetics**  credit: 3 hours.
Prokaryotic microbial genetic systems; emphasis on typical data analyses, together with the basic classes of genetic phenomena. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 or consent of instructor.

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<th>CRN</th>
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**MCB 429  Cellular Microbiology & Disease**  credit: 3 hours.
Emphasizes cell biology of infectious diseases, using cellular, molecular, and animal models. Will stress molecular cross-talk that drives host-pathogen interactions, state-of-the art approaches for investigating host and microbial cell and molecular biology, latest paradigms
in host cell biology, and, the evolutionary basis by which pathogens can manipulate host cell cytoskeleton, membranes, organelles, cell cycle, gene expression, and signaling in eukaryotic cells. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 and MCB 354 or consent of instructor.

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<td>A</td>
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<td>182 - Armory</td>
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</table>

Please note that, as of Jan. 2010, MCB 400 is no longer a prerequisite for this course.

**MCB 432  Computing in Molecular Biology  credit: 3 hours.**

Examination of computational aspects of biology with an emphasis on the relationships between biological questions and their recastings as mathematical or logical problems. Topics are drawn from biochemistry, genetics, molecular sequence analysis, and molecular structure. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 250, MCB 252, MCB 354, and calculus I (MATH 220 or MATH 221), and calculus II (MATH 231) or biostatistics (STAT 212); or consent of instructor.

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This course will be taught in the Nevada Building Computer Lab at 1203 1/2 Nevada Street.

**MCB 433  Virology & Viral Pathogenesis  credit: 3 hours.**

Same as PATH 433. See PATH 433.

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<td>49871</td>
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<td>LEC</td>
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<td>163 - Noyes Laboratory</td>
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**MCB 434  Food & Industrial Microbiology  credit: 3 hours.**

Same as FSHN 471. See FSHN 471.

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<tr>
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<td>114 - David Kinley Hall</td>
<td>Jin, Y Miller, M</td>
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**MCB 435  Evolution of Infectious Disease  credit: 3 hours.**

Understanding the evolution and ecology of the microbial world is of great importance to human health and the health of our planet. Students will explore the ecology and evolution principles that apply to viruses, microbial eukaryotes, archaea and bacteria. The primary literature on historical and emerging infectious diseases will be used to illustrate critical applications of these basic principles. Examples include applying genomics tools to understand the evolutionary basis for antibiotic resistance, the spread of emerging pathogens, and the ecology of probiotics and the human microbiome. The objective of this class is to better understand how humans shape the diversity and dynamics of the microbial world living in and around us every day. Same as IB 442. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 300 or consent of instructor.

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</table>
MCB 442  **Comparative Immunobiology**  credit: 4 hours.
Same as ANSC 450 and PATH 410. See ANSC 450.

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Course is offered every other spring (even years).

MCB 446  **Physical Biochemistry**  credit: 3 hours.
Same as CHEM 472 and BIOC 446. See BIOC 446.

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<tr>
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<th>Section</th>
<th>Time</th>
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<th>Location</th>
<th>Instructor</th>
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<td>Zhang, K</td>
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</table>

Credit Hours: 3 hours

MCB 450  **Introductory Biochemistry**  credit: 3 hours.
Chemistry and metabolism of carbohydrates, lipids, proteins, nucleic acids, vitamins, and coenzymes and their relation to the regulation and processes of organisms, cells, and subcellular components. Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment. Additional fees may apply. See Class Schedule. 3 undergraduate hours. 3 graduate hours. Credit is not given for both MCB 450 and MCB 354. Prerequisite: CHEM 232 or CHEM 236, or equivalent, or consent of instructor. Not intended for students in the MCB or biochemistry curricula.

<table>
<thead>
<tr>
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<td>112 - Gregory Hall</td>
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</tbody>
</table>

Students who enter the University Fall 2011 or later are responsible for additional course-based tuition of $300 unless they are already paying differential tuition during the term of course enrollment.

MCB 458  **Basic Human Pathology**  credit: 3 hours.
Introduction to the basic mechanisms of human disease with a focus on the building blocks of pathological processes at the sub-organismal and organismal level. Basic biological processes will be stressed including tissue adaptation, injury, inflammation, repair and neoplasia. Pathology synthesizes cellular and molecular biology, biochemistry and immunology holistically so as to understand the body's limited responses to the cornucopia of experienced physiological insults. 3 undergraduate hours. No graduate credit. Prerequisite: MCB 354 or equivalent, or consent of instructor. For MCB and Biochemistry undergraduate majors only.

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<th>Location</th>
<th>Instructor</th>
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</thead>
</table>
MCB 462  Integrative Neuroscience  credit: 3 hours.
Employs integrative, multi-level systems approaches to nervous system and behavior. Focuses on neural circuits in sensory integration, pattern generation, the integration of sensation, internal states and learning in behavioral decision, the neuronal natures of pain, sleep, and biological rhythms, neuroeconomics, new vistas in neural modeling and interfacing brain and machine. Students are presented in neuroethological contexts of evolution and the economics of behavior and physiology. Same as NEUR 462. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 252 or consent of instructor. May be taken concurrently with MCB 461.

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<tr>
<th>CRN</th>
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<td>1000 - Lincoln Hall</td>
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<td>Gillette, R</td>
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</table>

MCB 465  Human Metabolic Disease  credit: 3 hours.
Examination of the molecular and physiological basis of human metabolic disease. Disruption of metabolic and energy homeostasis plays key role leading to metabolic disorders. We will examine how lipid/glucose levels and energy balance are controlled in health and how they are abnormally regulated in disease states. In addition, we will cover current topics related to control of metabolism including aging and circadian rhythms. Methodologies leading to scientific discoveries and potential preventive and therapeutic agents will also be discussed. 3 undergraduate hours. 3 graduate hours. Prerequisite: MCB 250, MCB 252, or consent of instructor.

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<tr>
<th>CRN</th>
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<td>Kemper, K</td>
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</table>

MCB 480  Eukaryotic Cell Signaling  credit: 2 hours.
General principles of molecular signaling regulating membrane, cytoplasmic, and nuclear events in eukaryotic cells with emphasis on mammalian systems. Contemporary methods of investigation and the principles of identifying and solving problems related to signal transduction will be emphasized. 2 undergraduate hours. 2 graduate hours. Prerequisite: MCB 252 or consent of instructor.

<table>
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<tr>
<th>CRN</th>
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<th>Section</th>
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<td>01:00 PM - 02:50 PM</td>
<td>F</td>
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<td>Chen, J</td>
</tr>
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</table>

MCB 492  Senior Thesis  credit: 3 TO 5 hours.
Research conducted under the direction of a faculty member in the School of Molecular and Cellular Biology. Normally, the student enrolls in MCB 492 during the last semester on campus prior to graduation. In the semester preceding enrollment, interested students should consult with their faculty advisors concerning enrollment procedures. A minimum of 3 credit hours is required, and a thesis must be presented for credit to be received. Successful completion of MCB 492 is required in order to be eligible for graduation with distinction in MCB. 3 to 5 undergraduate hours. No graduate credit. Prerequisite: Two consecutive semesters of at least 2 credit hours of MCB 290 under the guidance of the same faculty member, or consent of instructor.
Instructor Approval Required
Enrollment in MCB 492 occurs normally in the last semester before graduation and involves continuation of the work done previously for MCB 290, but is now intended to indicate that you will be writing and submitting a senior research thesis for graduation with distinction. A minimum of 3 crerdit hours of MCB 492 is required, and a thesis must be presented for credit to be received. The prerequisite for MCB 492 is a minimum of 2 consecutive semesters of at least 2 credit hours of MCB 290 under the guidance of the same professor, or consent of the instructor. MCB majors entering UIUC prior to Fall 2004 may not be required to meet these criteria. Please contact Melissa Michael at mmichae@uiuc.edu with questions.

MCB 493  Special Topics Mol Cell Biol  credit: 0 TO 4 hours.
Discussion of current topics of interest within the broad domain of molecular and cellular biology; seminar or lecture format. Topics vary. May be repeated to a maximum of 12 hours. Prerequisite: Junior standing and consent of instructor.

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<tr>
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Credit Hours: 3 hours
Epigenetics
This course will cover the field of epigenetics that seeks to explain how long-lasting changes in cellular and organismal traits can occur through non-genetic, environmentally responsive mechanisms. The course will focus on the molecular mechanisms underlying epigenetic phenomenon but we will also cover applications to contemporary topics such as cancer, metabolism, aging, and tissue engineering. 3 undergraduate hours, 3 graduate hours. Prerequisite: Undergrads- MCB 252 or consent of instructor. One semester of biochemistry is recommended. This section of MCB 493 counts as advanced MCB course credit.

<table>
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<tr>
<th>CRN</th>
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Credit Hours: 1 hours
Archaeal Cell Biology
Meets 14-Jan-19 - 08-Mar-19.
Archaea are single celled microorganisms that share a recent common ancestor with eukaryotes. The cell biology of Archaea therefore can reveal the origins of eukaryotic features such as DNA repair, recombination, meiosis, replication, and genome stability. This course will explore the recent literature on the Archaeal cell biology with a focus on features as they relate to eukaryotic cells. This is a one credit, literature based course open to both graduate and undergraduate students interested in reading the recent primary literature. This section of MCB 493 counts as advanced MCB course credit.

<table>
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<tr>
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Credit Hours: 3 hours
Viral Pathogenesis & Evolution
Viruses are everywhere. They are intimately involved in the lives of all major life forms on earth, and impose enormous public health and economic burdens upon human society. This course will focus on the common fundamental concepts that underlie and connect the replication, pathogenesis, and evolution of diverse virus families, rather than serve as a detail-focused survey of viruses. Group discussion of primary literature will be used to illustrate experimental approaches for exploring fundamental questions in virology. Prerequisites for this section of MCB 493 are MCB 250, 252, 300 and 354. This section of MCB 493 counts as advanced MCB course credit.

MCB 529  Special Topics Cell Devel Biol  credit: 1 TO 4 hours.
Discussion of current topics of interest in higher eukaryotic cellular and molecular biology, development, neurobiology; seminar or lecture format. Topics vary. May be repeated to a maximum of 8 hours. Prerequisite: Consent of instructor.
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**MCB 530 Reproductive Physiol Seminar**  
credit: 1 hours.  
Presentation and discussion of current literature as well as graduate student and staff research proposals and findings in reproductive physiology. May be repeated to a maximum of 4 hours. Prerequisite: Consent of instructor.

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Restricted to Graduate - Urbana-Champaign.

**MCB 539 Advanced Cellular Microbiology**  
credit: 1 hours.  
Advanced primary literature-based discussion course on cellular microbiology and underlying infectious diseases. Graduate level companion course for MCB 429. Prerequisite: Concurrent or prior enrollment in MCB 429 or consent of instructor.

<table>
<thead>
<tr>
<th>CRN</th>
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<td>M</td>
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</table>

Restricted to Graduate - Urbana-Champaign.  
Supplemental course for MCB 429. This course will meet in B124 CLSL.

**MCB 543 Interdisciplinary Approaches to Neuroscience II**  
credit: 2 hours.  
Same as NEUR 543 and PSYC 543. See NEUR 543.
MCB 571  **Bioinformatics**  credit: 4 hours.
Same as ANSC 543, CHBE 571, and STAT 530. See CHBE 571.

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<tr>
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<tr>
<td>61911</td>
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<td>311 - Gregory Hall</td>
<td>Zhao, S</td>
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</table>

Restricted to Graduate - Urbana-Champaign.

For up-to-date information about statistics course registration, please see our registration update pages: go.illinois.edu/StatisticsRegistration. Introduction to statistical methods used in the analysis of genomic data. Methods are organized around data types commonly found in biological experiments, such as genotype data, gene expression levels, histone modifications, and microbiome data. Emphasis on statistical understanding. Practical implementation will be illustrated in R. Prerequisites: STAT 410, STAT 420, thorough knowledge of R.

MCB 581  **Laboratory Rotation I**  credit: 3 hours.
Laboratory research methods; familiarization of first-year graduate students with experimental methods used in molecular and cellular biology research. Required of all first-year students entering MCB. Meets first five weeks of each term. Approved for S/U grading only. Prerequisite: First-year graduate status and consent of MCB graduate programs; concurrent registration in MCB 582.

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<tr>
<th>CRN</th>
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<tbody>
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<td>10583</td>
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</table>

Instructor Approval Required
Restricted to Graduate - Urbana-Champaign.

MCB 582  **Laboratory Rotation II**  credit: 3 hours.
Laboratory research methods; familiarization of first-year graduate students with experimental methods used in molecular and cellular biology research. Required of all first-year students entering MCB. Meets second five weeks of each term. Approved for S/U grading only. Prerequisite: First-year graduate status and consent of MCB graduate programs; concurrent registration in MCB 581.

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</table>

Instructor Approval Required
Restricted to Graduate - Urbana-Champaign.

MCB 583  **Laboratory Rotation III**  credit: 3 hours.
Laboratory research methods; familiarization of first-year graduate students with experimental methods used in molecular and cellular biology research. Required of all first-year students entering MCB. Meets third five weeks of each term. Approved for S/U grading only. Prerequisite: First-year graduate status and consent of MCB graduate programs; concurrent registration in MCB 581 and MCB 582.
Instructor Approval Required
Restricted to Graduate - Urbana-Champaign.

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<th>CRN</th>
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<th>Location</th>
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<tbody>
<tr>
<td>53111</td>
<td>Discussion/Recitation</td>
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<td>05:00 PM - 06:20 PM</td>
<td>T</td>
<td>B124 - Chemical and Life Sci Lab</td>
<td>Kehl-Fie, T</td>
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Restricted to Graduate - Urbana-Champaign.