

MCDB & MIMG NEW STUDENT SESSIONS 2023

Congratulations on being accepted to one of the top research institutions in the country!

Molecular, Cell & Developmental Biology

Undergraduate Advisor: Maggie Schmall

Website: <https://www.mcdb.ucla.edu/>

Email: mschmall@lifesci.ucla.edu or undergradmcdb@lifesci.ucla.edu

Office: 126 Hershey Hall

Phone: (310) 267-5908

Microbiology, Immunology, and Molecular Genetics

Undergraduate Advisor: Tasha Taylor

Website: <https://www.mimg.ucla.edu/>

Email: undergrad@microbio.ucla.edu

Office: 1602B Molecular Sciences Building

Phone: (310) 825-8482

Always include your UID in emails to advisors.

Department Emails – Sign Up Today!

The MCDB and MIMG advisors use Google Groups to send important information to students.

You will have access to announcements regarding major and course requirements, scheduling updates, career and internship opportunities, and other items of interest.

We recommend that you use a “g.ucla.edu” or “gmail.com” account to sign up for the listserv.

To subscribe to MCDB: Send an email to MCDBIO-L+subscribe@lists.ucla.edu

To subscribe to MIMG: Send an email to MIMG+subscribe@lists.ucla.edu

You will receive an email from the group. Open the email and select “Join the Group”. You will be directed to the Google Groups website. A box will appear that says “Apply to join the MCDB or MIMG group.” Check the settings options, and hit the “Apply to join this group” button. After joining the group, you will receive an email confirmation that your request has been approved. Please note that you may receive this email several days after applying to join the group.

UCLA LIFE SCIENCES

ADVISOR CONTACT INFORMATION

Biomedical Research Minor

Undergraduate Advisor: Erika Tumanov

Website: <https://www.biomedresearchminor.ucla.edu/>

Email: bmdresminor@lifesci.ucla.edu

Office: Hershey Hall 220B

Phone: (310) 825-0237

- Biomedical Research Minor

Computational and Systems Biology

Undergraduate Advisor: Maria Sanchez

Website: <https://casb.ucla.edu/>

Email: casb@lifesci.ucla.edu

Office: 102 Hershey Hall

Phone: (310) 825-5152

- Computation and Systems Biology Major
- Mathematical Biology Minor
- Structural Biology Minor
- Systems Biology Minor

Ecology and Evolutionary Biology

Undergraduate Advisors: Jessica Angus and Wendy Ramos

Website: <https://www.eeb.ucla.edu/>

Email: Please use Message Center via MyUCLA

Office: 101 Hershey Hall

Phone: (310) 825-1680

- Biology Major
- Ecology, Behavior, and Evolution Major
- Marine Biology Major
- Conservation Biology Minor
- Evolutionary Medicine Minor

Institute of the Environment and Sustainability

Undergraduate Advisor: Royce Dieckmann

Website: <https://www.ioes.ucla.edu/>

Email: rdieckmann@ioes.ucla.edu

Office: La Kretz Hall, Suite 300

Phone: (310) 206-9193

- Environmental Systems and Society Minor

Institute for Society & Genetics

Undergraduate Advisor: Frenz Cabison

Website: <https://socgen.ucla.edu/>

Email: isgacademics@g.ucla.edu

Office: Life Science Building 3360C

- Human Biology and Society, B.A. or B.S.
- Society and Genetics Minor

Integrative Biology & Physiology

Undergraduate Advisor: Inna Gergel

Website: <https://physci.ucla.edu>

Email: gergel@physci.ucla.edu

Office: 125 Hershey Hall

Phone: (310) 825-8482

- Physiological Science Major

Microbiology, Immunology, and Molecular Genetics

Undergraduate Advisor: Tasha Taylor

Website: <https://www.mimg.ucla.edu/>

Email: undergrad@microbio.ucla.edu

Office: 1602B Molecular Sciences Building

Phone: (310) 825-8482

- MIMG Major

Molecular, Cell, and Developmental Biology

Undergraduate Advisor: Maggie Schmall

Website: <https://www.mcdb.ucla.edu/>

Email: mschmall@lifesci.ucla.edu or undergradmcdb@lifesci.ucla.edu

Office: 126 Hershey Hall

Phone: (310) 267-5908

- MCDB Major

Neuroscience

Undergraduate Advisor: Jaclyn Robbin and Aftin Whitten

Website: <https://nerosci.ucla.edu>

Email: neurosci@ucla.edu

Office: 1339 Gonda Center

Phone: (310) 206-2349

- Neuroscience Major
- Neuroscience Minor

Psychology

Undergraduate Advisor: Melina Solomon-Dorian

Website: <https://psych.ucla.edu>

Email: Please use Message Center via MyUCLA

Office: 1530 Pritzker Hall

- Psychology Major
- Psychobiology Major
- Cognitive Science Major
- Cognitive Science Minor
- Applied Developmental Psychology Minor

Science Education Minor

Website: <http://www.cateach.ucla.edu/content/science-education-minor>

Email: cateach@chem.ucla.edu

Office: Young Hall 1037 and 1039

Phone: (310) 794-2191

- Science Education Minor

Semel Institute

Website: <https://education.semel.ucla.edu/brain-behavioral-health-minor/>

Email: bbhminor@mednet.ucla.edu

- Brain and Behavioral Health Minor

Each of these majors requires all, or most of, the **Life Sciences Core Curriculum**, detailed on the next three pages.

LIFE SCIENCE CORE CURRICULUM

LIFE SCIENCES (All Courses Required)
LS 7A – Cell & Molecular Biology (5)
LS 7B – Genetics, Evolution & Ecology (5) Prerequisite: 7A
LS 7C – Physiology & Human Biology (5) Prerequisite: 7B
LS 23L – Intro to Laboratory and Scientific Methodology (3) Prerequisite: 7B

CHEMISTRY		
Life Science Series		Physical Science Series
14A(E) – General Chemistry for Life Scientists I (Enhanced) (4) Co-requisite: LS 30A or MATH 3A or 31A, or place into MATH 3A/31A by taking the Math Diagnostic Test	OR	20A(H) - Chemical Structure (4) (Honors) Prep: Min 1 yr high school (HS) chemistry, 3.5 yrs HS math, (recommended) HS physics Co-req: MATH 31A
14B(E) - General Chemistry for Life Scientists II (Enhanced) (4) Prerequisite: CHEM 14A or 20A (grade of C- or better; Co-Req: LS 30B or MATH 3B or 31B (grade of C- or better)	OR	20B(H) - Chemical Energetics and Change (Honors) (4) Prerequisites: CHEM 20A(H) and MATH 31A (grades of C- or better)
14BL - General and Organic Chemistry Lab I (3) Prereq: CHEM 14A or 20A(H) (grade C- or better) Pre- or Co-requisite: CHEM 14B	OR	20L - General Chemistry Laboratory (3) Prerequisite: CHEM 14A or 20A (grade of C- or better) Pre- or Co-requisite: CHEM 14B or 20B
14C – Structure of Organic Molecules (4) Prerequisite: CHEM 14B (grade of C- or better)	OR	30A – Organic Chemistry I: Structure & Reactivity (4) Prerequisite: CHEM 20B (grade of C- or better)
14D – Organic Reactions & Pharmaceuticals (4) Prerequisite: CHEM 14C (grade of C- or better)	OR	30AL - General Chemistry Laboratory II (4) Prerequisites: CHEM 20B(H), 20L, 30A(H) (grades of C- or better)
	OR	30B – Organic Chem II: Reactivity, Synthesis, & Spectroscopy (4) Prerequisite: CHEM 30A (grade of C- or better)

ADDITIONAL CHEMISTRY (Not Required for the Major)		
These courses are recommended for students planning to attend professional school.		
Life Science Series		Physical Science Series
14CL - General & Organic Chemistry Lab II (4) Prerequisites: CHEM 14B, 14BL or 20B, 20L (grades of C- or better) Pre- or Co-requisite: CHEM 14C	OR	30BL - Organic Chemistry Laboratory I (3) Prerequisites: CHEM 30A(H), 30AL, 30B (grades C- or better)
	OR	30C - Organic Chemistry III: Reactivity and Synthesis, and Biomolecules (4) Prerequisite: CHEM 30B (grade C- or better)

IMPORTANT NOTE: After completing Chem 20A, students can move to the 14 Series starting with 14B, or after taking Chem 20A, 20B, students can take 14BL, 14C, 14CL*, 14D or after taking 20A, 20B, 20L may take Chem 14C, 14CL, 14D. Students who transfer chemistry credit from another school for 20A, 20L can take 14B, 14C, 14CL*, 14D. Students who wish to switch from the 14 series to the 20/30 series after taking Chem 14A, 14B, and 14BL, can take Chem 30A, 30AL, 30B.

LIFE SCIENCE CORE CURRICULUM, Continued

MATHEMATICS

The Life Science Core Office manages and teaches the Life Science courses (7A/B/C, 23L), as well as Mathematics for Life Scientists, which is acceptable for professional schools.

Mathematics for Life Scientists (Recommended)
Life Science 30A – Mathematics for Life Scientists (4)
Life Science 30B - Mathematics for Life Scientists (4) Prerequisite: LS 30A
Life Science 40 – Statistics of Biological Systems (5) Prerequisite: LS 30A
OR
Stats 13 – Introduction to Statistical Methods for Life and Health Sciences (5)
Note: The math diagnostic test is NOT required to start this series.

OR

If you do not choose the LS series detailed above, you can choose from one of the math series, offered by the Math department:

Mathematics (Offered by the Math Department)		
Life Science Series		Physical Science Series
MATH 3A – Calculus for Life Science Students (4) Preparation: 3.5 years of HS math (including trigonometry) Requisite: Math Diagnostic Test Score of 48 or better or Course 1 (grade of C- or better)	OR	MATH 31A(L) – Differential & Integral Calculus (Laboratory) (4) Preparation: 3.5 years of HS math (including coordinate geometry and trigonometry) Requisite: Successful completion of Math Diagnostic Test or Course 1 (grade of C- or better)
MATH 3B – Calculus for Life Science Students (4) Prerequisite: Math 3A or 31A (grade C- or better)		MATH 31B(H) – Integration & Infinite Series (Honors) (4) Prerequisite: MATH 31A (grade of C- or better)
MATH 3C – Ordinary Differential Equations with Linear Algebra for Life Science Students (4) Prerequisite: Math 3B or 31B (grade C- or better)		MATH 32A(H) – Calculus of Several Variables (Honors) (4) Prerequisite: MATH 31A (grade of C- or better)
STATS 13: Required for MIMG majors ONLY		STATS 13: Required for MIMG majors ONLY
Note: AP Calculus may give you credit for either MATH 31A or 31A & 31B – see below.		

Course Credit for AP Calculus (math courses offered by the math department ONLY):

Score	AB Exam	BC Exam
5	Credit for MATH 31A • Enroll in Math 3B or 31B	Credit for MATH 31A, 31B • Enroll in Math 3C or 32A
4	No credit for Math 3 or 31 series	Credit for Math 31A • Enroll in Math 3B or 31B

LIFE SCIENCE CORE CURRICULUM, Continued

PHYSICS	
Life Science Series	Physical Science Series
<p>5A – Physics for Life Science Majors: Mechanics and Energy (5) Prerequisite: MATH 3A, 3B, 3C(3C may be taken concurrently) or MATH 31A, 31B, 32A or LS 30A, 30B</p>	<p>1A(H) - Physics for Scientists and Engineers: Mechanics (Honors) (5) Prerequisites: MATH 31A and 31B Pre- or Co-requisite: MATH 32A</p>
<p>5B – Physics for Life Science Majors: Thermodynamics, Fluids, Waves, Light and Optics (5) Prerequisite: PHYSICS 5A</p>	<p>1B(H) - Physics for Scientists and Engineers: Oscillations, Waves, Electric and Magnetic Fields (Honors) (5) Prerequisites: PHYSICS 1A, MATH 31B, 32A Pre- or Co-requisite: MATH 32B</p>
<p>5C – Physics for Life Science Majors: Electricity, Magnetism, and Modern Physics (5) Prerequisite: PHYSICS 5A</p>	<p>1C(H) - Physics for Scientists and Engineers: Electrodynamics, Optics, and Special Relativity (Honors) (5) Prerequisites: PHYSICS 1A, 1B, MATH 32A, 32B Pre- or Co-requisite: MATH 33A</p>
<p>Labs: Each course in the 5 series includes both lecture and laboratory.</p>	<p style="text-align: center;">OR</p> <p>Labs: 4AL - Physics Lab for Scientists and Engineers: Mechanics (2) Prerequisite: PHYSICS 1A(H) Co-Req: PHYSICS 1B(H) 4BL - Physics Lab for Scientists and Engineers: Electricity and Magnetism (2) Prerequisite: PHYSICS 1A(H), 1B(H) Co-Requisite: PHYSICS 1C</p>

Notes:

- All Life Science Core Curriculum courses, as well as the courses taken to satisfy major requirements, **MUST be taken for letter grades and passed with grades of C- or better.**
- A considerable amount of the Life Science series must be completed prior to taking any upper division MIMG or MCDB courses. There are a few exceptions, like MIMG 105, which requires PHYSICS 5B only.
- Physics may be completed in the third year.

SCHEDULING TIPS

First Quarter Recommendations: We recommend that you take no more than two science courses in your first quarter. You can take any combination of Chemistry, Math, or Life Sciences – CHEM 14A and LS 30A, or LS 7A and LS 30A. In addition, you will take one non-science class (ENG COMP 3 or a GE, for example).

If you feel unprepared for college-level chemistry, please consider...

- Taking a self-diagnostic test: <https://bruinlearn.ucla.edu/enroll/LL3PBN>. It will help you to determine if you are prepared for CHEM 14A, CHEM 14AE, or CHEM 17 – Chemical Principles.

If you feel unprepared for college-level calculus, please consider...

- Taking a diagnostic test: <https://ww3.math.ucla.edu/math-diagnostic-test/>. Or take MATH 1 – Precalculus.

The sample schedules on the next page are intended to help you plan your science classes in order to graduate within four years. That being said, they are not meant to be followed exactly. There is not a single, “right” class plan.

Biology First Path

For students generally interested in a biological sciences major, preferably with at least two AP or honors courses in math, biology or chemistry

Fall	Winter	Spring
LS 30A (or MATH 3A or MATH 31A) LS 7A Plus other courses	LS 30B (or MATH 3B or MATH 31B) LS 7B Plus other courses	STATS 13 or LS 40 LS 7C LS 23L
Fall	Winter	Spring
CHEM 14A LS 110 or upper div biology class Plus other courses	CHEM 14B CHEM 14BL Plus other courses	CHEM 14C PHYSICS 5A Plus other courses
Fall	Winter	Spring
CHEM 14D LS 107 Plus other courses	CHEM 153A PHYSICS 5B Plus other courses	PHYSICS 5C Plus other courses
Fall	Winter	Spring
Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation

Biology Exploration Path

For students considering a biological sciences major with one AP or honors course in math, biology, or science

Fall	Winter	Spring
LS 20 * Non-majors biology class Plus other courses	LS 30A (or MATH 3A or MATH 31A) LS 7A Plus other courses	LS 30B (or MATH 3B or MATH 31B) LS 7B Plus other courses
Fall	Winter	Spring
LS 7C CHEM 17 LS 23L	CHEM 14A STATS 13 or LS 40 LS 110	CHEM 14B CHEM 14BL Plus other courses
Fall	Winter	Spring
CHEM 14C LS 107 Plus other courses	CHEM 14D PHYSICS 5A Plus other courses	CHEM 153A or CHEM 14D PHYSICS 5B Plus other courses
Fall	Winter	Spring
PHYSICS 5C Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation

* LS 15, EEB 25, EEB 87, PHYSICI 7, MCDB 40, MIMG 5

Chemistry Early Path

For biological sciences majors with a strong interest in chemistry and with at least two AP classes in chemistry/math.

Fall	Winter	Spring
CHEM 14A LS 30A (or MATH 3A or MATH 31A) Plus other courses	CHEM 14B LS 30B (or MATH 3B or MATH 31B) Plus other courses	CHEM 14BL LS 7A STATS 13 or LS 40
Fall	Winter	Spring
CHEM 14C LS 7B Plus other courses	CHEM 14D LS 7C LS 23L	PHYSICS 5A CHEM 153A LS 107
Fall	Winter	Spring
PHYSICS 5B Electives and remaining requirements as needed for graduation	PHYSICS 5C Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation
Fall	Winter	Spring
Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation

Physics Early Path

For biological sciences majors with a strong interest in physics and with at least two AP classes in physics, chemistry or math.

Fall	Winter	Spring
LS 30A (or MATH 3A or MATH 31A) LS 7A Plus other courses	LS 30B (or MATH 3B or MATH 31B) LS 7B Plus other courses	CHEM 14A PHYSICS 5A (or LS 40 or STATS 13) Plus other courses
Fall	Winter	Spring
CHEM 14B LS 40 or STATS 13 (or PHYSICS 5A) Plus other courses	LS 7C LS 23L CHEM 14C	CHEM 14BL PHYSICS 5C (pre-req for Neurosci M101A)* Plus other courses
Fall	Winter	Spring
PHYSICS 5B CHEM 14CL Plus other courses	CHEM 14D Plus other courses	CHEM 153A Plus other courses
Fall	Winter	Spring
Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation	Electives and remaining requirements as needed for graduation

* Physics does not require 5B as a pre-requisite for Physics 5C

ENROLLMENT PROBLEMS YOU MAY ENCOUNTER

If you want to enroll in a class that has a requisite class that you took somewhere other than UCLA, you may be prevented from enrolling. This is because the enrollment system does not always recognize transfer coursework. Before your enrollment appointment begins, check the requisites for a course. If you are blocked from enrolling, you will need to contact the advisor of the department offering the course for help enrolling. Please note that advisors can only enroll students in courses offered by their department.

YOUR MCDB ADVISOR:

- CAN enroll any student, from any major, in an MCDB course (ex: MCDB 138)
- CANNOT enroll any student (not even an MCDB student) in a class offered by ANOTHER dept (ex: LIFE SCIENCE 107)

YOUR MIMG ADVISOR:

- CAN enroll any student, from any major, in an MIMG course (ex: MIMG 101)
- CANNOT enroll any student (not even an MIMG student) in a class offered by ANOTHER dept (ex: LIFE SCIENCE 107)

Chemistry

Website: <https://www.chemistry.ucla.edu/>

Email: ugrad@chem.ucla.edu

Life Sciences

Website: <https://www.lscore.ucla.edu/>

Email: lscore@lifesci.ucla.edu

Online Form: <https://www.lscore.ucla.edu/enrollmentrequest/>

Mathematics

Website: <https://ww3.math.ucla.edu/>

Email: ugrad@math.ucla.edu

Physics

Website: <https://www.pa.ucla.edu/index.php>

Email: mtran@physics.ucla.edu

Online Form: <https://computing.pa.ucla.edu/webform/contact-physics-astronomy-undergraduate-office>

TIPS FOR NEW STUDENTS

The Quarter System

The quarter system is very different from the semester system. It moves a lot faster and more is required of students in a relatively short period of time. Transitioning from the semester to the quarter system requires time to adjust. Don't be discouraged if you find that it takes some time to get used to the faster pace. Being organized and planning your study time helps with the adjustment.

Course Load – *How many classes should I enroll in for my first quarter?*

Not more than three. As you are just starting out at UCLA, it is a good idea to begin with a conservative schedule until you get your bearings. We recommend two classes for the major and one non-science class (ENGCOMP 3 or a GE, for example). Don't take more than two major classes in your first quarter! And do not take more than three classes in total. (But if you like, you can take three classes plus a Fiat Lux seminar or University Studies 10 or 20). Once you get a feel for the kind of course load you can handle, you can adjust your schedule accordingly for future quarters.

Prerequisites & Sequence of Courses – *Do classes have to be taken in a particular order?*

Pre-requisites, also called simply "requisites", are courses that you must take *before* taking a particular course. For example, you must take LS 7A before you can take LS 7B, so LS 7A is a *requisite* for LS 7B. It is essential that you familiarize yourself with the requisites for all courses you plan to take. Requisites are established for a reason and are strictly enforced. You must have the proper requisites completed before taking any MCDB or MIMG classes! The UCLA General Catalog and the Schedule of Classes contains course descriptions with requisites. It is your responsibility to assure that required classes are completed before trying to enroll in a particular course.

When to Seek Advice – *When should I see an advisor?*

Your best source for obtaining important (and accurate) information about degree or major requirements is from an academic advisor. It is recommended that you see your MCDB or MIMG departmental advisor to go over your Degree Audit Report at least once a year, more often if needed. Questions can also be emailed to undergradmcdb@lifesci.ucla.edu (for MCDB) or undergrad@microbio.ucla.edu (for MIMG).

College vs. Departmental Advisors – *Which advisor should I go to?*

For any questions or concerns you may have regarding the requirements pertaining to the **major**, see your departmental advisor (Tasha Taylor for MIMG; Maggie Schmall for MCDB). For any other concerns (IGETC, the American History and Institutions requirement, the English Composition requirement, GEs, etc.), please check with College Academic Counseling, an Honors advisor if you are in College Honors, or an AAP counselor if you are in the Academic Advancement Program (AAP).

Professors' Office Hours – *Why should I go to office hours?*

Attending professors' office hours is an excellent way to supplement your class notes. Not only will it serve as a useful aid in preparing for exams, but it can give you and the professor an opportunity to get to know each other on a more individual basis.

Keeping the University Updated – *Why is my current contact info important?*

It is crucial that you maintain up-to-date records with the Registrar's Office. If any of your contact information (address, phone number, email address, etc.) changes, be sure to update it via MyUCLA.

Be Your Own Person! – *Should I constantly compare myself to my classmates?*

A competitive edge can be just the thing one needs to stay on top of his or her studies and to excel academically. However, it is equally important to keep things in perspective. The only person you really need to compete with is you. Try not to compare yourself with others too much (easier said than done, we know). Oftentimes, one's perception of their own progress compared to friends, roommates, or classmates can be skewed. Try to concentrate primarily on your own goals and do what you need to do for yourself to attain those goals.

MEDICAL SCHOOL REQUIREMENT GUIDELINES

Please note that these guidelines are subject to change at any time and are based on the UCLA School of Medicine requirements. The admissions offices of your top five or ten medical schools are the best sources for updated requirements.

“Pre-Health at UCLA” is a campus-wide initiative aimed to improve the pre-health experience at UCLA by bringing together information and opportunities for pre-health students:

1. <http://prehealth.ucla.edu> – Information about pre-health services, application timelines and processes, and health professions.
2. <http://facebook.com/prehealthUCLA> (@PreHealthUCLA) – Follow for upcoming events and opportunities on and off campus.
3. Pre-Health at UCLA Newsletter – Sign up for this bi-weekly newsletter by creating a [Handshake](#) account with the UCLA Career Center and indicating “Healthcare” as one of your Industry Interests when setting up your profile.

Students planning to apply to medical school should take:

- Three quarters of **English** at the college level (AP does not apply). Two quarters should be English composition (WI & WII, or 2 WI’s) and at least one course should be a literature course.
- At least 3 quarters of **Math** at the college level (AP does not apply), including one course in statistics (lower or upper division). If an additional quarter of math is needed, any college-level course will fulfill the requirement. You do not need to take an extra calculus course.
- The Life Sciences series fulfills the requirement for one year of **Biology with Lab** at the college level (AP does not apply). This is covered by Life Sciences 7A, 7B, 7C, and 23L.
- The 14 or the 20/30 series plus CHEM 153A fulfills the **Chemistry with Lab** requirement at the college level (AP does not apply). Students who choose to take the 20/30 series should also complete CHEM 30C to finish all of the organic chemistry topics required by med schools. Some schools do not specifically require a biochemistry lab, but all of these courses are what medical schools expect to see from UCLA applicants.
- **Physics** is covered by your major.
- **Spanish** is highly recommended. (This does not need to be taken at the college level. If you take it at UCLA, you should complete it through Spanish 3). Other foreign languages will also fulfill this requirement.

Students should also be able to show a commitment to the following:

- **Community service and/or experience in a health care setting.** This is an indication of your commitment to helping others. Your community service doesn't have to be through UCLA. It can be in your home community, through a church group, etc., but your record of service should show a genuine commitment.
- **Knowledge as to how healthcare is delivered and/or financed in the United States.**
- **Research.** Some admissions committees don't consider this absolutely necessary, but most schools will expect you to have done some kind of research if you were an undergraduate at UCLA. There is no minimum number of quarters of research required. Research in the Humanities is also acceptable.

GETTING INVOLVED IN RESEARCH

Both the MIMG and MCDB majors allow students to apply up to 12 units (three quarters) of upper division independent research (MIMG 196, 199 or MCDB 196, 199A-C, 198A-C) to their major requirements.

Each department has their own rules as to how and when these research courses are completed, as well as their own list of approved faculty research mentors. **It is important that you meet with either the MIMG or MCDB Undergraduate Advisor to discuss the details.**

There is also information on each department's website:

MCDB: <https://www.mcdb.ucla.edu/undergraduate/undergraduate-research>

MIMG: <https://www.mimg.ucla.edu/path-2/>

Here are some organizations or opportunities on campus related to independent research:

Biomedical Research Minor

This minor is designed to help students to become involved in laboratory research from an early point in their college career. After initial training courses, students are placed in a laboratory in the College or Medical School for a minimum of four quarters of research. In addition to their research, students complete courses in analysis of research literature, oral presentation of research data, science policy and ethics, and history or philosophy of science. Students who complete the Biomedical Research Minor should be well trained in both the process of scientific research and the social issues facing science today. Entrance into the Minor is competitive. Students should apply no later than the first quarter of their junior year. Students from any major with a UCLA GPA of at least 3.0 are eligible to apply. Before applying to the minor, students must take one of three introductory courses: BMD RES 5HA or 10H, or Honors Collegium 70A.

The Life and Physical Sciences Undergraduate Research Center (URC)

The URC administers undergraduate research-related programs, including the Student Research Program (SRP), which enables undergraduates to begin working with faculty members on research projects. UCLA's Student Research Program is one of the largest programs of its kind in American higher education. The Undergraduate Research Center also provides workshops for students interested in participating in SRP; helps students identify faculty mentors; provides research stipends for some undergraduates; sponsors *The Undergraduate Science Journal*; and maintains an undergraduate research website at <https://sciences.ugresearch.ucla.edu/>.

Information Specific to:

**MOLECULAR,
CELL &
DEVELOPMENTAL
BIOLOGY**

MOLECULAR, CELL AND DEVELOPMENTAL BIOLOGY MAJOR 2023 – 2024

Preparation for the Major			
	Life Science Series		Physical Science Series
Chemistry	14A or 14AE, 14B or 14BE, 14BL, 14C, 14CL*, 14D	OR	20A, 20B, 20L, 30A, 30AL, 30B, 30BL*
Math	3A, 3B, 3C <u>or</u> Life Sci 30A, 30B, Stats 13 or LS40		31A, 31B, 32A
Physics	5A, 5B, 5C		1A, 1B, 1C, 4AL, 4BL
Life Science	7A (Cell & Molecular Biology), 7B (Genetics, Evolution, & Ecology), 7C (Physiology & Human Body) 23L (Intro to Lab & Scientific Method)		

IMPORTANT NOTES – Preparation for the Major

★ Chem 14CL or Chem 30BL is not required on the major, but most pre-health professional schools and possibly some graduate schools still require an organic lab class.

♦ Students must earn a grade of C- or better in each prep course, & achieve an overall GPA of 2.0 in the major prep.
♦ Students receiving grades of below C- in two prep courses, either separate courses or repetitions of the same course, are subject to dismissal from the major.

- ♦ Students who complete Chem 20A can move to the 14 series starting with 14B, or after taking 20A, 20B, students can take 14BL, 14C, 14CL*, 14D or after taking 20A, 20B, 20L may take 14C, 14CL*, 14D. Students who transfer chemistry credit from another school for 20A, 20L can take 14B, 14C, 14CL*, 14D.
- ♦ The Chemistry 14 series is unique to UCLA – there are no equivalents at other schools and must be taken in its entirety at UCLA.

UPPER DIVISION MAJOR REQUIREMENTS

Upper Division Core Requirements	
Biochemistry	Chem 153A Biochem: Intro to Structure, Enzymes & Metabolism (4 units)
Genetics	Life Science 107 Genetics (5 units) <i>(not required if you completed LS4)</i>
Cell Biology Course	MCDB 165A Biology of the Cell (5 units)
Developmental Bio Course	MCDB 138 Developmental Biology (5 units)
Molecular Biology Course	MCDB 144 Molecular Biology of Cellular Processes (5 units)

Laboratory Requirement (choose from #1 – 5)	
1.	MCDB 104AL (5 units) Research Immersion Lab in Developmental Biology
OR	
2.	MCDB 187AL (5 units) Research Immersion Lab in Genomic Biology
OR	
3.	MCDB 150AL (5 units) Research Immersion Lab in Plant-Microbe Ecology
OR	
4.	MCDB 196B * (4 units) Research Apprenticeship II (2 nd qtr.) + MCDB 180B * (2 units) Scientific Analysis & Communication II
5.	MCDB 196B, 198B/C or 199B/C ** + MCDB 145 ** (4 units)
See IMPORTANT NOTES on page to regarding MCDB 196/180 and 145 courses – Page 2	

Upper Division Elective Requirement for the Major	
20 units of Approved Upper Division Electives (see attached list of electives)	5 units must be MCDB dept. course/s (category 1), 5 units may be taken from category 1 or category 2, and 10 units can be taken from category 1, 2, or 3.

★★Please see the next page for important notes pertaining to course restrictions and what counts or does **NOT** count toward the major requirements or electives.★★

IMPORTANT NOTES PERTAINING TO MAJOR REQUIREMENTS

- Any single course can be used in only **ONE** category on the major.
 - Courses applied toward the prep and major requirements must be taken for a letter grade.
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| <ul style="list-style-type: none"> ▪ MCDB majors are required to earn a letter grade of C in each MCDB Core Course (LS107, Chem 153A, MCDB 138, 144, 165A), and achieve a minimum overall GPA of 2.0 in the major. ▪ Students receiving grades below C in two required core courses, either in separate courses or repetitions of the same course, are subject to dismissal from the major. |
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IMPORTANT NOTES regarding MCDB 196/180/145

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| * MCDB 180B is taken <u>CONCURRENTLY</u> with 196B (same for 196A and 180A). |
| ♦ 196A/180A is a pre-requisite for 196B/180B. The second quarter (196B) is applied to your laboratory requirement. 196A/180A/180B (8u) are applied toward the 20 units of elective. |
| ** MCDB 145 (offered in Spring only) Students must apply for the MCDB 145 seminar during Winter quarter. It must be taken with an MCDB upper division research course. |

- Life Science 7A, 7B, 7C, 23L, AND **LIFE SCIENCE 107** are pre-requisites for all MCDB upper division coursework except MCDB 165A (pre-reqs: 14D or 30B and 7A, 7B, 7C).
- Any upper division MCDB course will be accepted as an MCDB elective, **EXCLUDING** MCDB 100, 104AL, 138, 144, 150AL, 165A, 187AL, 187C, 187D, 190A-C, 192A, 192B, 193, 194A, and 199.
- The MCDB department does not approve Biochemistry/MCDB or MIMG/MCDB double major petitions.
- A maximum of 4 units of approved seminar course credit may be applied to the ELECTIVES requirement. (e.g., MCDB 145, 180A, 180B, 191).
- **APPLYING INDEPENDENT RESEARCH TO MCDB MAJOR REQUIREMENTS:** To enroll in MCDB 196A/B, 199A-D, or 198A-D, students **MUST** be conducting research in an MCDB approved lab. A list of approved faculty mentors is available in the MCDB undergraduate office (128 Hershey Hall), and on the MCDB Undergraduate website: <https://www.mcdb.ucla.edu/undergraduate-research/>
- **APPLYING INDEPENDENT RESEARCH TO THE LAB REQUIREMENT (196A/B, 180A/B):** Students may apply for these courses during their third or fourth year. See the MCDB website for application materials and instructions: <https://www.mcdb.ucla.edu/undergraduate/undergraduate-research/mcdb-196a-and-196b> .
- **A maximum of 12 units of research (MCDB 196A – B, MCDB 199A – C, MCDB 198A – C) may be applied to the major requirements.** Please note: MCDB 196B (4u) is applied to the upper division laboratory requirement and MCDB 196A (4u) plus MCDB 199C (4u) is applied toward the ELECTIVES requirement.
- If you complete MCDB 104AL AND 104BL, 12 units of MCDB 199A-C, or MCDB 198A-C may **ALSO** be applied to the electives. MCDB 104BL will be applied to the MCDB electives as well.
- Elective credit is granted for **either** Biostats 100A or Stats 100A, but not both.

<p>Requirements for the B.S. degree established by the College of Letters & Science are listed in the UCLA General Catalog. A total of 180 quarter units are required for the degree; <u>60 of these 180 units must be upper division (course numbers 100-199)</u>. Check your DAR to determine your allotted maximum number of quarter units. NOTE: The MCDB major UD requirements satisfy between 48 – 50 upper division units.</p>
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Upper Division Elective Requirement for the Major:

The categories below correspond to the elective categories on your Degree Audit Report.

CATEGORY 1		
FIVE UNITS OF MCD BIOLOGY UPPER DIVISION ELECTIVES		
Course #	Course Name	Units
MCDB 104BL	Advanced Research Analysis in Developmental Biology	4
MCDB M130	Fundamentals of Digital Imaging and Image Processing	5
MCDB M140	Cancer Cell Biology	5
MCDB C141	Molecular Basis of Plant Differentiation and Development	5
MCDB 145	Appreciation and Critical Review of Biomedical Research	4
MCDB 146	Metabolism & Disease	5
MCDB C150	Plant Communication	4
MCDB CM156	Human Genetics	5
MCDB 160	Principles of Light Microscopy	4
MCDB 167	Genetic Engineering: History, Science, and Applications in Medicine, Agriculture and Law	6
MCDB 168	Stem Cell Biology	5
MCDB M175A	Neuroscience: From Molecules to Mind	5
MCDB M175B	Neuroscience: From Molecules to Mind	5
MCDB M175C	Neuroscience: From Molecules to Mind	5
MCDB 180A	Scientific Analysis and Communications I (<i>formerly 188A</i>)	2
MCDB 180B	Scientific Analysis and Communications II (<i>formerly 188B</i>)	2
MCDB 191	Variable Topics in Molecular, Cell, and Developmental Biology	2
MCDB 196A	Research Apprenticeship I (1 st qtr.)	4
MCDB 198A-C	Honors Research in MCDB	4/qtr
MCDB 199A-C	Directed Research in MCDB	4/qtr
CATEGORY 2		
FIVE UNITS OF UPPER DIVISION ELECTIVES FROM MCD BIOLOGY AND ACCEPTABLE LIST OF OUTSIDE ELECTIVES		
MCD BIO Courses:		
Any additional MCDB course listed above that was NOT taken to fulfill category 1		
Course Dept. & #	Course Name	Units
Chemistry & Biochemistry		
CHEM C100	Genomics and Computational Biology	5
CHEM 153B	NOT ACCEPTED ON THE MAJOR – DO NOT TAKE THIS COURSE	
CHEM 153C	Biochemistry: Biosynthetic & Energy Metabolism & Its Regulation	4
CHEM 153L	Biochemistry Laboratory	4
CHEM C159	Mechanisms in the Regulation of Transcription	4
CHEM CM160A	Introduction to Bioinformatics	4
Computer Science/Computational and Systems Biology		
COM SCI CM124	Computational Genetics	4
COM SCI CM186	Computational Systems Biology: Modeling & Simulation of Biol. Systems	5
Continued on next page		

Ecology & Evolutionary Biology		
EE BIOL 184	Evolution, Development, and Disease	4
Microbiology, Immunology & Molecular Genetics		
MIMG 100L	Microbiology Lab for Professional Schools	3
MIMG 101	Introductory Microbiology	4
MIMG 102	Virology	4
MIMG 105	Biological Microscopy	4
MIMG 132	NOT ACCEPTED ON THE MCDB MAJOR	
MIMG 158	Microbial Genomics	4
MIMG 168	Molecular Parasitology	4
MIMG 170	Cell and Gene Therapy	4
MIMG C185A	Immunology	5
Physiological Sciences		
PHY SCI 121	Disease Mechanisms and Therapies	5
PHY SCI 125	Molecular Systems Biology	5
PHY SCI C130	Sex Differences in Physiology and Disease	4
PHY SCI 174	Cell Biophysics in Physiology and Disease	5

CATEGORY 3		
TEN UNITS OF UPPER DIVISION ELECTIVES FROM MCD BIOLOGY AND ACCEPTABLE LIST OF ADDITIONAL OUTSIDE COURSES		
CATEGORY 1 OR 2 COURSES:		
Any additional MCDB or approved outside elective course/s listed above that were NOT taken to fulfill category 1 or 2		
Course Dept. & #	Course Name	Units
Biostatistics		
BIOSTATS 100A	Intro to Biostatistics	4
Ecology & Evolutionary Biology		
EEB 110	Vertebrate Morphology	6
EEB 121	Molecular Biology and Evolution	4
EEB C146	Conservation Genetics	4
EEB 162	Plant Physiology	4
Human Genetics		
HUM GEN C144	Genomic Technology	4
PHY SCI 166	Animal Physiology	6
Statistics		
STATS 100A	Introduction to Probability Theory	4
NOTE: Elective credit is granted for <u>either</u> Biostats 100A or Stats 100A, but not both.		

Course number designations:

C = Course is offered concurrently to undergrad and graduate levels in the same class.

M = Listed through multiple departments (may have different numbers in each department).

CM = Offered concurrently to undergrad and grad, and offered through multiple departments.

SCHEDULING TIPS

- Not all electives are offered every year. Please consult the Schedule of Classes or the appropriate department.
- When making a course plan to meet your major requirements, please make sure you have planned for all prerequisites for any upper division course in which you plan to enroll. Courses, which count on the MCDB major, may have upper division prerequisites.
- Some electives are restricted to the home department's own majors during first pass. If you want to get into, for example, MIMG 185A, you will need to wait until your second pass because you are not an MIMG major.

COMPUTING SPECIALIZATION IN MCDB

Majors in Molecular, Cell and Developmental Biology may receive a specialization in computing by:

1. Satisfying all the requirements for a bachelor's degree in the major and;
2. Completing the following course requirements:

- Programs in Computing 10A, 10B, and 10C
- Programs in Computing 16 (Python)
- Stats 13 or Life Science 40 (Stats)
- One upper division course from:
 - Computer Science CM124
 - Computer Science CM186
 - Chemistry & Biochemistry C100
 - Chemistry & Biochemistry CM160A
 - MCD BIO M130
 - MCD BIO 187AL*
 - Physiological Science 125

Students may overlap the upper division course for the specialization with an elective or lab requirement for the major. *Space in 187AL is extremely limited and computing specialization students are not guaranteed a space in 187AL simply because they plan to complete the specialization.

Students must earn a letter grade of C or better in each required course for the computing specialization and a combined GPA of at least 2.0 in these courses to graduate with the specialization in computing