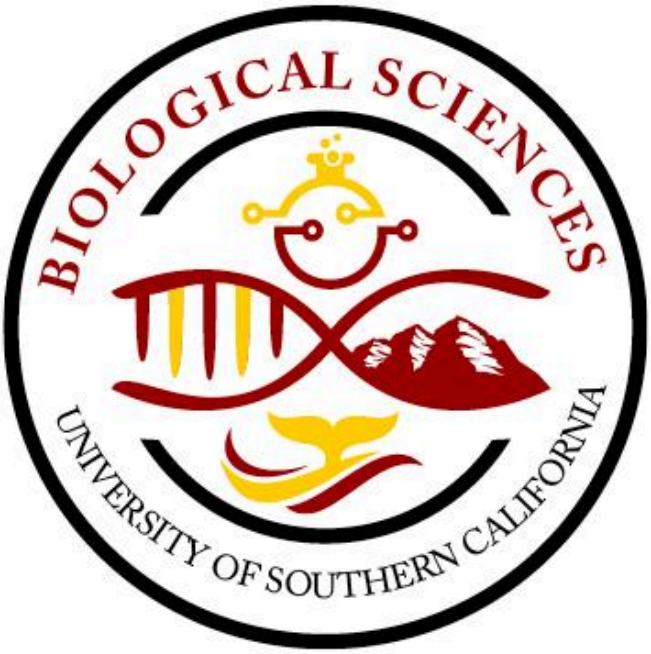
Biological Sciences Undergraduate Advisement Guide



USC Dornsife

Dana and David Dornsife
College of Letters, Arts and Sciences

Department of Biological Sciences

Welcome to the study of the broadest, most dynamic, and (we think) most exciting of the natural sciences, the study of life itself, biology. The Department of Biological Sciences invites you to join our community of scholars as we teach, learn, and explore the living world together. Our students will gain a deep appreciation of organisms, from their smallest molecular mechanisms to their largest interactions within ecosystems. We will help you refine your skills in critical thinking, communication, and collaboration, as well as understand how biology can contribute to solving society's problems. We also offer the opportunity to participate in the discovery of new knowledge, by working alongside our faculty members in their laboratories. Students who complete our degree programs will be well prepared for professional careers in the health sciences as well as for careers in research and education in the basic biological and biomedical fields, and in many other professions. We look forward to meeting you.

Lorraine Turcotte, Ph.D.
BISC Department Chair

Cameron Egan, Ph.D.
BISC Director of Undergraduate Studies

The Biological Sciences Department would like to extend their gratitude and appreciation to David Litchenstein who first conceived of and put together the BISC guide.

Learning Objectives

A. General Skills and Breadth
- Develop the ability to manage one's time, work independently, take initiative, and collaborate
- Develop the ability to think critically, analyze, synthesize, and use information to solve problems
- Acquire broad knowledge in the humanities, social sciences, mathematics, and physical sciences, and understand the relevance of these disciplines to the biological sciences
- Develop the ability to communicate scientific ideas, orally and in writing
- Develop facility in the use of computer applications and the internet

B. Scientific and Experimental Skills
- Understand and apply the scientific method, including forming hypotheses, designing experiments to test hypotheses, and collecting, analyzing, interpreting, and reporting data
- Develop the ability to use appropriate laboratory or field procedures, methods, and instrumentation for biological studies

C. Biological Skills
- Develop breath of knowledge in the biological sciences, including in the fields of biochemistry, cell biology, ecology, evolution, molecular biology and genetics, and physiology
- Acquire an appreciation for all levels of biological organization, including the molecular, cellular, organismal, and systems levels
- Understand the processes that underlie embryonic development, cellular differentiation, and reproduction

1. *Biochemistry*: Understand the structure and function of biological molecules, cellular energetics, cellular metabolism, and photosynthesis
2. *Cell Biology*: Understand the structure and function of prokaryotic and eukaryotic cells, as whole entities and in terms of their subcellular processes
3. *Ecology*: Understand the interactions between organisms and their environments, and the consequences of these interactions in natural populations, communities, and ecosystems
4. *Evolution*
    - Understand evolution as the central unifying concept in biological sciences
    - Understand natural selection, and how it contributes to the formation of species, biodiversity, and patterns of biological evolution
    - Appreciate the scope of biological diversity in terms of the evolutionary history of the major groups of organisms
5. *Molecular Biology and Genetics*
    - Understand the synthesis, structure, and function of nucleic acids and proteins in prokaryotes and eukaryotes
    - Understand the principles of inheritance from molecular mechanisms to population consequences
    - Understand the flow of genetic information in populations and the relationship between genetics and evolutionary theory

6. *Physiology*: Understand the functioning of organisms, at the molecular, cellular, organ, and organismal levels

D. Ethics/Society

- Be able to place biological knowledge into an ethical context, especially how biology can contribute to the resolution of ethical, social, and environmental issues

E. After Graduation

- Prepare students with a sufficient depth of knowledge and abilities to prepare them for entry-level employment in a wide variety of fields, or for graduate study in the health professions or other biology-related disciplines

Academic Advisement

Philosophy of Academic Advising

Academic Advising is an integral component to success in higher education by which professional advisors work collaboratively with students to help foster their intellectual and personal development toward graduation, post-graduation, and lifelong goals. The objective of academic advising is to engage students by extending learning opportunities beyond the classroom, facilitating personal reflection and empowering students with the necessary information to make informed decisions.

Learning Outcomes for Students

Personal Growth: Develop effective communication skills, achieve greater autonomy, and problem-solving skills.

- Clearly articulate short and long term goals which are congruent with your values, interests, and personality
- Describe the relationship between academic goals and your personal values and goals
- Analyze problems and embrace all challenges as an opportunity for learning and growth
- Make your own decisions after gathering all the available facts and pertinent information

Institutional Knowledge: Awareness of programs, resources, and opportunities to maximize learning

- Identify the location of major campus offices and their function within student services
- Apply for scholarships, internships, and special programs

Co-curricular Integration: Establishing link between current academic experiences to your future career and personal goals

- Describe the relationship between major(s) and minor(s) and how they can assist in achieving future goals
- Define the knowledge gained from courses and identify skills and competencies developed through participation in extracurricular activities

Mandatory Advisement Hold

Advising holds help ensure that students and advisors meet periodically, typically once each semester, to monitor progress toward graduation. Students cannot enroll in courses without first meeting with their

academic advisor. Mandatory advising sessions are limited to 30 minutes. Students can always meet with their advisor by scheduling an appointment on AdviseUSC: usc.edu/advise

Important Links

Academic Review and Retention - arr.usc.edu/registration-counseling/academic-review/ - Academic probation and disqualification
AdviseUSC - usc.edu/advise - Platform for connecting with your advisor including course plans and scheduling appointments
Catalogue - catalogue.usc.edu/ - Covers most academic policies and university programs
Grades - arr.usc.edu/faculty-staff/grades/ - Information about grading policies and procedures
OASIS - usc.edu/OASIS/ - Grades, STARS Report, Transfer Credit Report, pre-approval for transfer course work
Schedule of Classes - classes.usc.edu/ - Course offerings, important university dates, syllabi
Transfer Credit Services - arr.usc.edu/students/transfer-credit-services/ - Reviews transfer course work from outside institutions

Meeting With Your Advisor

Your academic advisor is available to discuss academic, career, and personal issues and acts as your liaison to university resources. BISC majors communicate and meet with their advisor throughout their USC career to ensure satisfactory and timely academic progress. For the best experience, you should meet consistently with your assigned advisor. You can find your assigned advisor and schedule an appointment at usc.edu/advise.

> Ashlyn Kirkpatrick (adkirkpa@usc.edu)
> Elisa Chavarría (elisacha@usc.edu)

Your advisor will assist in navigating your academic career, selecting courses, and provide guidance for the various USC policies and procedures. Advisors also possess a wealth of information about campus resources, graduate school, internships and careers, student organizations, extracurricular opportunities and so on. Advisors are generally pretty nice people who are looking out for your best interests and are available to talk about any concerns you may have. Come prepared with questions to make the most out of advisement meetings.

USC Catalogue and Degree Requirements

You must meet the degree requirements for your major outlined in the USC Catalogue. Degree requirements fall into the following categories:

> **Major** - BISC core, collateral (CHEM, MATH, PHYS), and upper division BISC electives
>
> **Minor or additional major** - All course requirements for other programs of study

General Education - Core Literacies (GE Categories A-F) and Global Perspectives (GE Categories G & H)

Skill Level - Writing (WRIT150 & WRIT340), foreign language (three semesters or equivalent)

Electives - Any course work not included in the above categories but for unit and grade credit only

Units - There are many different unit requirements and limitations (overall degree, upper-division, Dornsife College, physical education, transfer, etc.)

GPA - Grade point average requirements including: cumulative, major(s), minor(s), university honors, etc.

All of these requirements can be quite confusing. This is why you should **meet with your advisor regularly** to ensure that you are on track toward graduation.

Major Programs

Choosing a Major

The BISC programs are designed for students passionate about biology and the natural sciences. Many pre-health students choose the BISC major because most of the course requirements overlap with the pre-health curriculum. Some get "bit by the research bug" and decide to enter careers in academia or science. Rigorous training in scientific methods paired with broad liberal arts education prepares BISC majors for careers in diverse fields such as business, education, law, and technology.

If you are unsure about pursuing the BISC major and want to explore other options, you should meet with an Academic Exploration Advising team advisor. More information can be found here: https://academicprograms.usc.edu/offices-and-units/academic-exploration-advising/

Major Course Requirements

Major Requirements

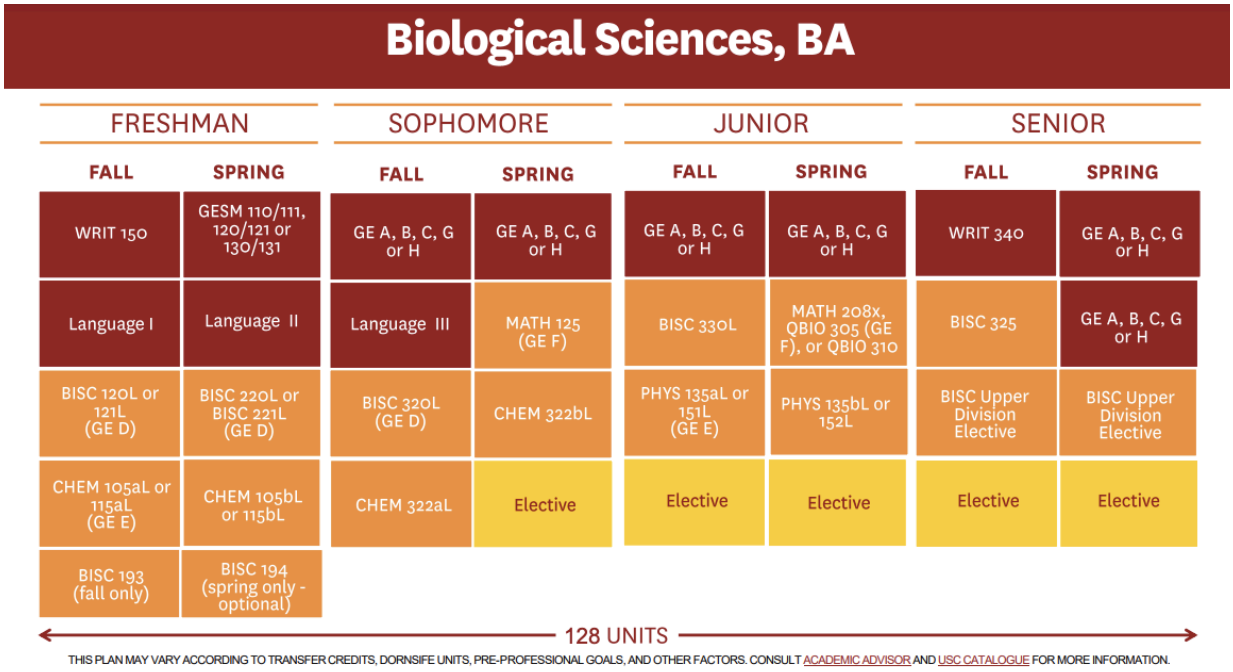
	BA (61 Units)	BS (73 Units)
BISC 120L or 121L – Organismal Biology and Evolution	X	X
BISC 220L or BISC 221L – Cell Biology and Physiology	X	X
BISC 193 or BISC 194 – Introduction to Research	X	X
BISC 320L – Molecular Biology	X	X
BISC 330L – Biochemistry	X	X
BISC 325 – Genetics	X	X
CHEM 105aL or CHEM 115aL – General Chemistry I	X	X
CHEM 105bL or CHEM 115bL – General Chemistry II	X	X
CHEM 322aL – Organic Chemistry	X	X
CHEM 322bL – Organic Chemistry II	X	X
MATH 125 – Calculus I	X	X
MATH 208x, QBIO 305, or QBIO 310 – Statistics	X	X
PHYS 135aL – Physics for Life Sciences I	X	X
PHYS 135bL – Physics for Life Sciences II	X	X
Upper –Division Electives	**8 Units**	**20 Units**

Upper-Division BISC Electives

Upper-division courses provide opportunities to explore cutting-edge, specialized topics within biology. BISC majors are required to complete upper-division BISC elective courses (8 units for BA, 20 units for BS). 300- and 400-level BISC courses meet this requirement (with the exception of the core BISC-320L, 325, 330L, and honors 493 & 494 courses). Many students opt to take BISC490 Directed Research to fulfill part of this requirement. For more information about BISC490, refer to the Research section.

Bachelor of Arts in Biological Sciences

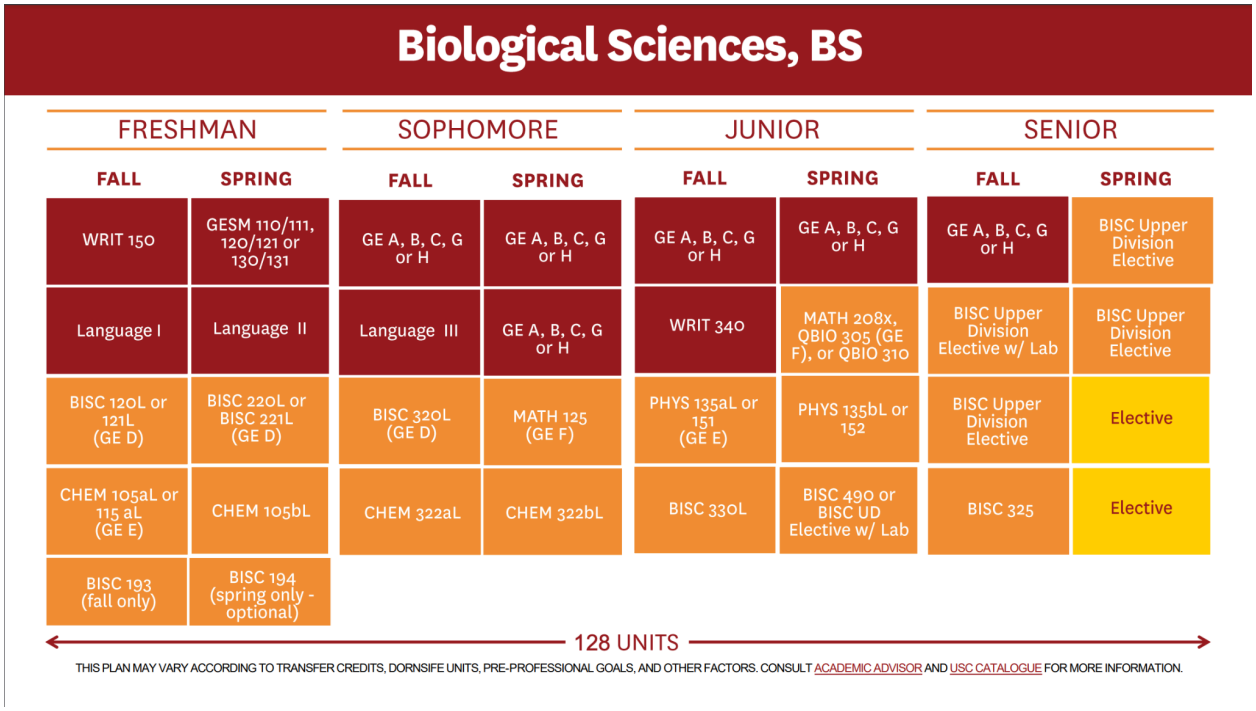
The Bachelor of Arts (BA) in BISC provides more flexibility for students to pursue additional major(s) or minor(s), study abroad, or graduate early. Students can also complete most pre-health requirements without additional science courses. A Bachelor of Arts provides less depth in biology coursework.



BISC major requirements are shown in orange.
*GESM must be taken freshman year
****TWO** GE-B courses are required
*****TWO** GE-C courses are required. Pre-med students should consider SOCI 200, SOCI 210, or SOCI 242 for the MCAT.
******GE-G and GE-H can overlap with GE-A, GE-B, or GE-C

Bachelor of Science in Biological Sciences

The Bachelor of Science (BS) in BISC is an excellent choice for students interested in research or graduate education in the natural sciences. The Bachelor of Science provides a greater depth and more opportunities to specialize but has less space for additional programs of study.



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Emphases in BISC

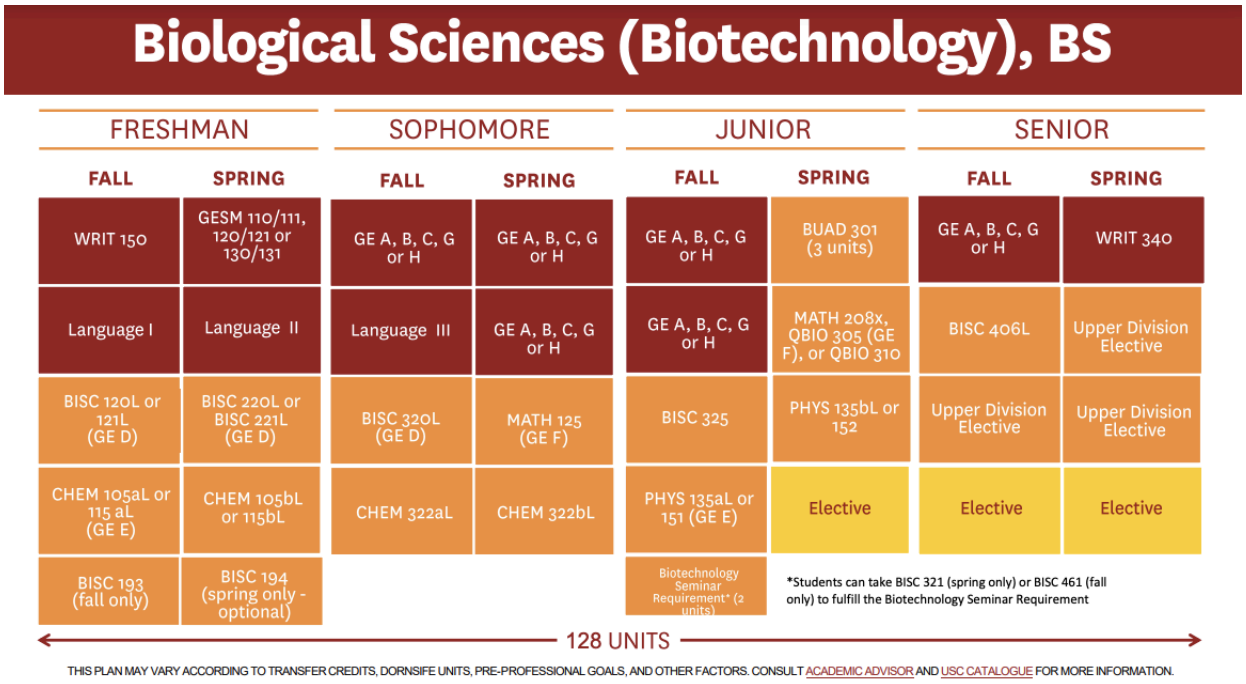
In addition to the BA in Biological Sciences and the BS in Biological Sciences, students can also select a Biological Sciences major with an emphasis. These emphases are only offered as a Bachelor of Sciences (BS). These emphases give students the opportunity to specialize in a specific area of interest within biology through relevant upper division electives, seminars, capstone courses, and/or research requirements.

Biological Sciences (Biotechnology), BS

Biotechnology involves the utilization of biological processes and living organisms for human benefit. A rapidly growing part of the U.S. and global economies, biotechnology represents one of the main career paths for life scientists who do not wish to go into academic or clinical careers. The present is a “golden

age" in the history of biotechnology due to many relatively recent transformative innovations. These technologies collectively provide a platform for using living systems to solve many of the core problems that plague society, including cancer, inherited and infectious diseases, food scarcity and environmental issues.

Students will learn skills necessary for professional jobs in the biotechnology industry. Because biotechnology is composed of a number of subsectors (e.g., synthetic biology, genome editing, clinical diagnostics, cell therapies, plant-based meats), the goal is to provide students with broad training in applied life science and business skills. Students will benefit from core courses that provide essential conceptual knowledge in both biology and business. They will then specialize through upper-division electives focused on life science applications involving biological macromolecules, cells or organisms; business skills needed in the biotechnology industry; and/or experiential learning through hands-on course work, directed research and/or internships. The highly interdisciplinary nature of this emphasis will give students a broad foundation needed to succeed in the modern biotechnology industry or to pursue graduate education.



Biotechnology emphasis major requirements are shown in orange.
*GESM must be taken freshman year
__TWO**__ GE-B courses are required
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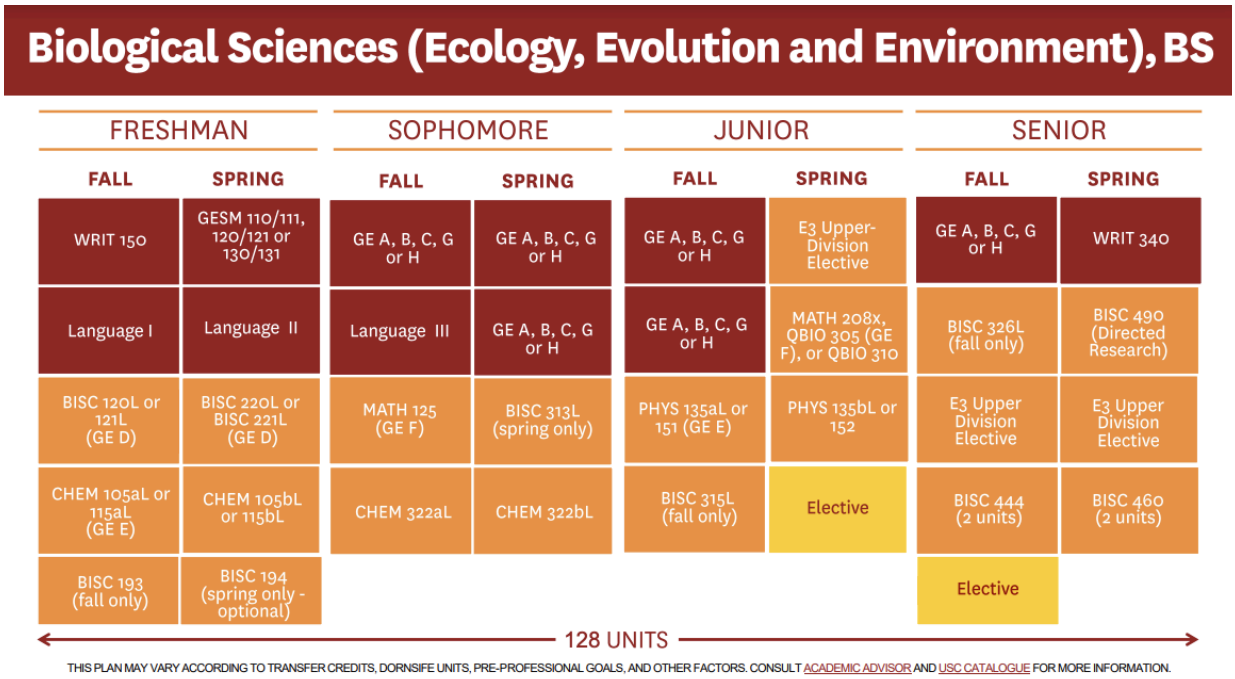
****GE-G and GE-H can overlap with GE-A, GE-B, or GE-C

Biological Sciences (Ecology, Evolution, & Environment), BS

The Ecology, Evolution and Environment emphasis empowers students with the experimental and theoretical tools required to understand the forces that drive and maintain biodiversity on the planet. This fundamental question spans many different hierarchies in biology – from genes and molecules, to organisms and populations, to species and ecosystems. How do all these interactions work, and what causes them to fail? The Ecology, Evolution and Environment curriculum was designed by active research faculty with an eye towards modern biological techniques and a strong emphasis on field biology. Ecology, Evolution and Environment students will be uniquely prepared to pursue a career in sustainability in addition to careers with a strong focus on ecology, evolution and environment in both the public and private sector.



Ecology, Evolution, & Environment emphasis major requirements are shown in orange.

*GESM must be taken freshman year

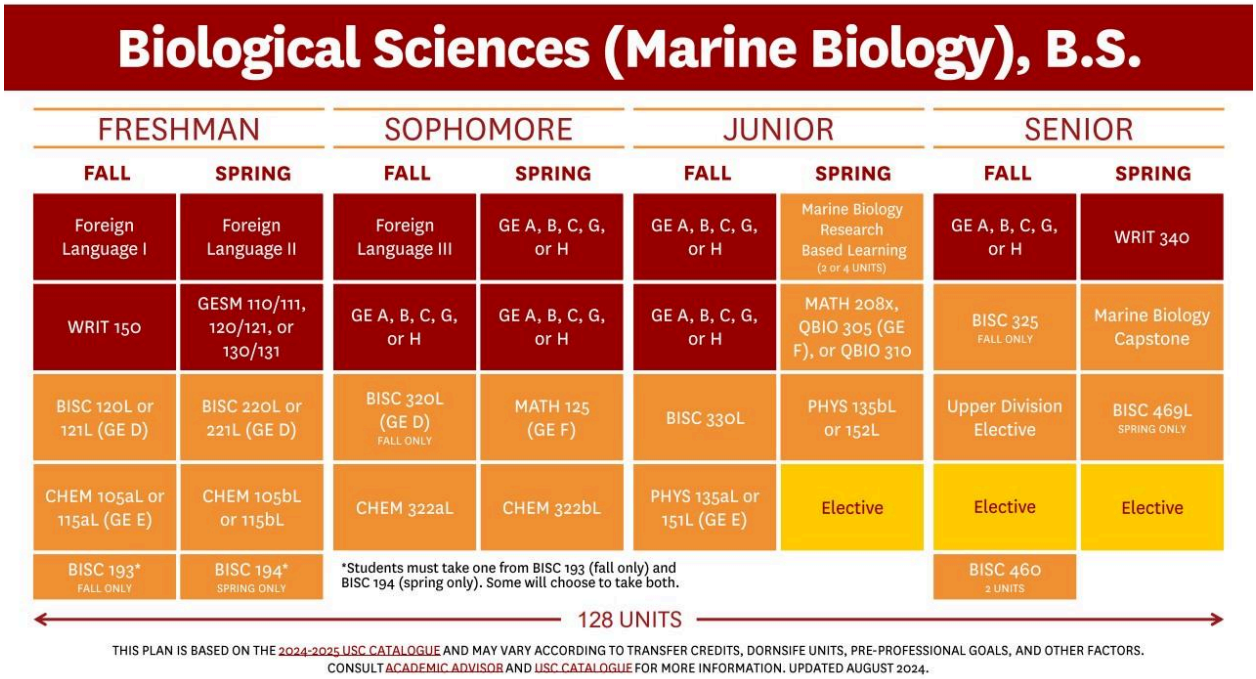
__TWO**__ GE-B courses are required

***__**TWO**__ GE-C courses are required. Pre-med students should consider SOCI 200, SOCI 210, or SOCI 242 for the MCAT.

****GE-G and GE-H can overlap with GE-A, GE-B, or GE-C

Biological Sciences (Marine Biology), BS

All students take foundational courses in biological sciences, chemistry, math, statistics and physics. Marine biology is the study of life in oceans and other saltwater environments. The marine biology emphasis focuses on the biology of marine organisms, their interactions with the environment and emergent properties of the ecosystems that arise from these interactions. The program addresses this field across multiple levels of organization, from the ecology of microbial populations and their role in the cycling of nutrients and energy in the ocean, through to the physiological and genetic mechanisms that enable marine organisms to adapt to the dynamic and often extreme environments in the ocean. The conditions in the oceans are also changing at an unprecedented rate because oceans play a critical role in climate change, absorbing much of the anthropogenic carbon dioxide and associated heat from global warming. The emphasis enables students to understand the biological effects that warming, ocean acidification and deoxygenation will have on marine biodiversity and the ecosystem services that the oceans provide the planet.



Marine Biology emphasis major requirements (for students beginning Fall 2024 or later) are shown in orange.

*GESM must be taken freshman year

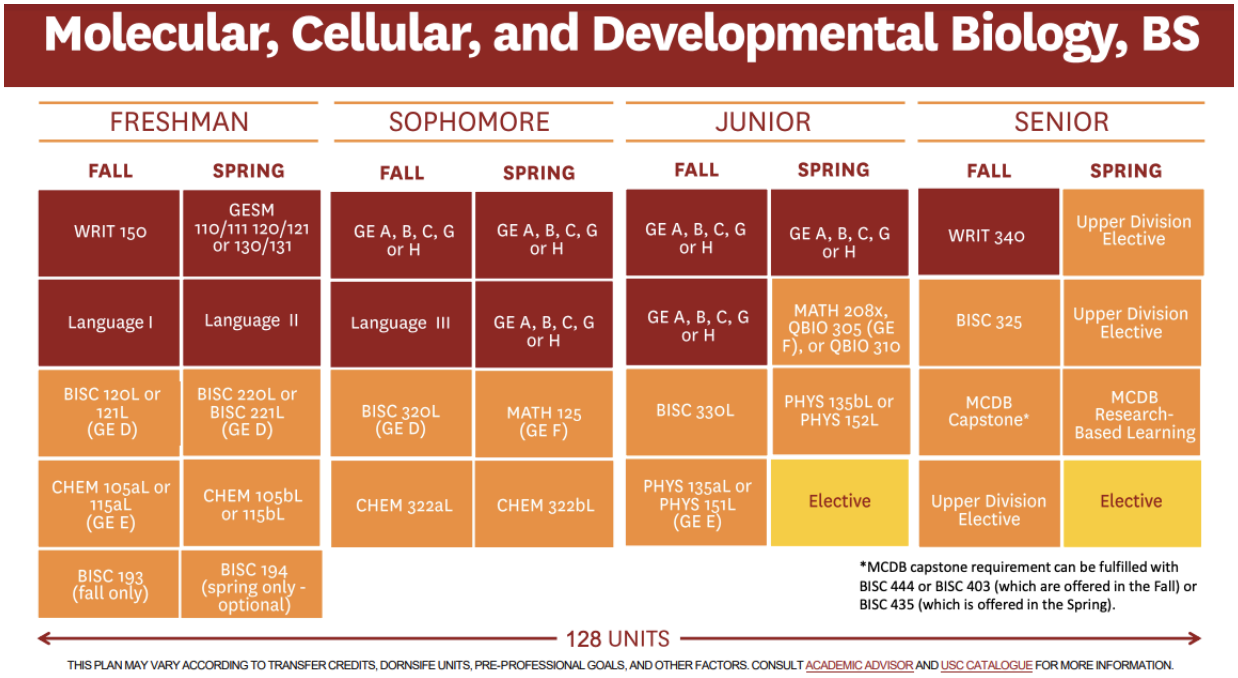
__TWO**__ GE-B courses are required

***__**TWO**__ GE-C courses are required. Pre-med students should consider SOCI 200, SOCI 210, or SOCI 242 for the MCAT.

****GE-G and GE-H can overlap with GE-A, GE-B, or GE-C

Biological Sciences (Molecular, Cellular, and Developmental Biology), BS

All students will take foundational courses in biological sciences, chemistry, math, statistics and physics. The Molecular, Cellular and Developmental Biology (MCDB) emphasis provides a focused and rigorous training in the fundamentals of biology with a concentration on how genes, proteins and pathways give rise to organisms and their phenotypes. Students will conduct hands-on laboratory research and gain experience in reading and critical evaluation of the current research literature. The MCDB emphasis provides a foundation for post-graduate study, and for careers in biomedical research and clinical practice.



Molecular, Cellular, and Developmental Biology emphasis major requirements are shown in orange.
*GESM must be taken freshman year
****TWO** GE-B courses are required
*****TWO** GE-C courses are required. Pre-med students should consider SOCI 200, SOCI 210, or SOCI 242 for the MCAT.
******GE-G and GE-H can overlap with GE-A, GE-B, or GE-C

Minors

Minor in Marine Biology

Studies of the marine environment are relevant to many contemporary environmental issues and problems central to understanding earth-system evolution, dynamics, climate and sustainability. The minor in Marine Biology combines courses related specifically to marine science from several Dornsife College departments or programs. USC's location along the Pacific Ocean and the unique facilities at the USC Wrigley Marine Science Center on Catalina Island provide superb access for students to learn outside of

traditional classroom venues. Students will learn about the biology, evolution and ecology of organisms that inhabit marine environments and the ecological and physical processes linking them. This program is an appropriate start for students who are seeking a focus in marine science or who are interested in broadening their base of knowledge about marine biology, earth sciences or environmental science.

The minor consists of 24 units of course work. At least 16 must be upper-division and unique to the minor. Courses required by the student's major or general education (GE) requirements may not be applied toward the minor. Students must average a 2.0 cumulative grade point average for all minor coursework. Prior to declaring the minor, students must have completed the requirement for BISC 120Lg or BISC 121Lg or BISC 103Lgx. Basic chemistry, such as CHEM 103Lxg or CHEM 105aLg and CHEM 105bL, is strongly recommended. Students are encouraged to enroll in at least one field-based course. Courses may be substituted with approval of the minor in Marine Biology program director.

Required Courses (8 units)
BISC-469L: Marine Biology
BISC-473L: Biological Oceanography

Field Courses and Other Electives (select 12 units)
*no more than one lower-division course may count toward the minor

Field-based Courses
BISC-431L: Aquatic Microbiology
BISC-457L: Methods in Marine Biology and Biological Oceanography
ENST-298aL: Introduction to Scientific Diving
ENST-483L: Coastal Zone Sustainability

Non-field-based Courses
BISC-140g: Our Blue Planet in a Changing Climate
BISC-313L: Evolution and Population Genetics
BISC-315L: Introduction to Ecology
BISC-419L: Microbiology for a Sustainable Future
BISC-427: The Global Environment
BISC-483: Geobiology and Astrobiology
BISC-485: Advanced Seminar in Bacterial Survival and Evolution
BISC-490x: Directed Research
ENST-310: Sustainable Fisheries Management
ENST-370: Marine and Coastal Environmental Policy
ENST-490x: Directed Research
GEOL-107Lg: Oceanography
GEOL-412: Oceans, Climate, and the Environment
GEOL-490x: Directed Research
SSCI-265Lg: The Water Planet

Minor in Natural Sciences

Designed for students pursuing majors outside of Biological Sciences, the Minor in Natural Sciences requires a broad array of course work in biology, chemistry, and physics with elective offerings in geological sciences and human biology. The minor also requires a 2-unit, Spring semester capstone course. This minor is a great option for pre-health students not majoring in the natural sciences as the minor includes many of the pre-health requirements.

Core Courses - 20 units (choose 5 of 6)
BISC-120L or 121L
BISC-220L or 221L
CHEM-105aL or 115aL
CHEM-105bL or 115bL
PHYS-135aL or 151L
PHYS-135bL or 152L

Elective Courses - 8 units
Any courses offered for major credit in the following departments: biology, chemistry, geological sciences, human biology, and physics.

Capstone Course - 2 units
BISC-321: Multidisciplinary Seminar in Science, Technology and Society

Minor in Biology and Business

This interdisciplinary minor combines courses in accounting, biology, business, and chemistry to provide the essential scientific, analytical, and corporate skills required in the rapidly growing biotechnology industry.

Well-suited for business, biology, chemistry, and engineering majors seeking careers in biomedical/biotechnical sciences or the administrative side of a biotechnology company.

Finance, Business, and Accounting Courses (16-18 units)
Accounting (choose one)
ACCT-410x: Foundations of Accounting (for Non-Business Majors)
BUAD-280 & BUAD-281: Introduction to Financial Accounting & Introduction to Managerial Accounting
BUAD-305: Abridged Core Concepts of Accounting Information

Business
BUAD-306 (Business Finance) or BUAD-308 (Advanced Business Finance)
FBE-403: Introduction to the Legal Environment of Business

Elective (choose 1)

BUAD-304: Organizational Behavior and Leadership
BUAD-307: Marketing Fundamentals

Natural Sciences Courses (28 units)
BISC-220L or 221L: Cell Biology & Physiology
BISC-320L: Molecular Biology
BISC-330L: Biochemistry
BISC-406L: Biotechnology
CHEM-105aL or 115aL: General Chemistry I
CHEM-105bL or 115bL: General Chemistry II
CHEM 322aL: Organic Chemistry I

Minor in Craniofacial and Dental Technology

The Herman Ostrow School of Dentistry, the Viterbi School of Engineering Department of Biomedical Engineering and the Dornsife College of Letters, Arts and Sciences Department of Biological Sciences jointly offer the minor in craniofacial and dental technology. This minor is designed to prepare engineering, pre-dental, pre-medical and biological sciences undergraduates to enter the dental biotechnology industry as well as to introduce them to recent innovations in craniofacial sciences and therapeutics. The coursework introduces students to concepts in dental and craniofacial sciences and technology, tissue engineering, molecular biology, genetics, biochemistry and biotechnology as well as applications to dental diagnostics, imaging and dental therapies (dental implants, restorative dentistry, salivary diagnostics).

For more information or to declare the minor, contact Viterbi Biomedical Engineering, (213) 740-7237.

Core Courses (15 units)
DENT-412: Fundamentals of Craniofacial and Dental Technology
BISC-320L: Molecular Biology
BISC-325: Genetics
BME-410: Introduction to Biomaterials and Tissue Engineering

Electives (select at least two courses)
BISC-330L: Biochemistry
BISC-403: Advanced Molecular Biology
BISC-406L: Biotechnology
BISC-410: Applications of Molecular Biology to Medicine
BISC-435: Advanced Biochemistry
BME-404: Orthopaedic Biomechanics
BME-415: Regulation of Medical Products
BME-416L: Development and Regulation of Medical Products
BME-451L: Fundamentals of Biomedical Microdevices
DENT-221: Introduction to Dentistry
ENGR-305: Engineering Biology Matters

HP-340L: Health Behavior Statistical Methods
HP-350L: Health Behavior Research Methods
MASC-310L: Materials Behavior and Processing
RXRS-416: Medical Products: From Idea to Market

Progressive Degree Programs

Progressive Masters Degrees

Earn a Bachelor's and Master's degree in as little as 5 years, with a reduction of up to one-third of the units required for the Master's degree. Apply theoretical knowledge and basic research skills acquired as an undergraduate to practical applications of the professional world. Take your education a step further and better prepare yourself for a final degree, whether a PhD or M.D. Apply to the Graduate School without an application fee, and without the need to take the Graduate Record Examination (GRE). If you have a USC GPA of a 3.0 or higher and will have 64-96 units completed in the near future, you are eligible to apply.

Master of Science in Marine and Environmental Biology

The Master of Science degree in Marine and Environmental Biology (MEB) is designed to provide admitted students with a rigorous, quantitative and focused introduction to the burgeoning fields and breadth of topics in marine environmental biology/chemistry, geobiology, oceanography, conservation biology and population dynamics (depending upon the concentration selected). MEB provides students with independent research experiences that satisfy their own specific interests. The program is intended to position and stimulate students for possible advanced study leading to a PhD in one of the areas stated above, and/or provide a unique facet to the background of a prospective medical student. The program will also provide fundamental tools and expertise for entry into a master's level position in academic, government or private sector research laboratories. It will prepare students interested in governmental and non-government (NGO) environmental regulatory science and forge career pathways into private sector positions in environmental consulting and business.

Master of Science in Molecular Genetics and Biochemistry

The Master of Science in Molecular Genetics and Biochemistry is designed to provide outstanding students in life science majors with a rigorous, quantitative experimental experience in molecular genetics, genomics, evolutionary biology, cell and molecular biology, and biochemistry (depending upon the research area selected). The program is intended to position and stimulate students for possible advanced study leading to a Ph.D. in one of the areas stated above, and/or provide an important research experience to the background of a prospective medical student. The program will also provide fundamental tools and expertise for entry into a master's level positions in academic, government, or private sector research laboratories, including biotech, pharmaceuticals, or diagnostics. This is a terminal degree.

Research

Getting Involved

https://dornsife.usc.edu/bisc/research/undergraduate-research/

Laboratory and field research can help students develop and refine their scientific inquiry and technical skills. Participation in research can be intellectually and personally illuminating and is requisite for students pursuing graduate education in the natural sciences. There are several ways to get involved: volunteering, part-time work, or for course credit (BISC-490, Directed Research).

Ambitious students often aspire to dive into research during their freshman year. However, many professors prefer students with science courses and college experience under their belt, as participation requires basic science knowledge and can be a significant time commitment.

Conduct outstanding research and become a Discovery Scholar. Learn more at https://ahf.usc.edu/commencement-honors/scholar-distinctions/discovery/

Directed Research (BISC-490)

For those interested in major credit for research participation, the BISC department offers an upper-division course, BISC-490, that can be taken for a maximum of 8 units, but only 4 of those units will count toward upper division elective requirements. Students enrolled in BISC-490 are expected to work an average of 3-4 hours per unit per week in their lab and complete a final project due at the end of the semester.

Some tips for finding a research sponsor:

- Talk to your current instructors. Initial correspondence via email is appropriate but we recommend discussing research opportunities with professors in person when possible.
- Visit the BISC website (dornsife.usc.edu/bisc) to locate faculty based on their research topics. You can peruse faculty in Marine and Environmental Biology, Molecular and Computational Biology, Human and Evolutionary Biology, and Neurobiology to find prospective sponsors that match your interests.
- Visit the Programs in Biomedical & Biological Sciences website (usc.ed/pibbs). The Faculty Research Topics link helps students locate faculty engaged in research at the University Park and Health Sciences campuses.
- If you are still having difficulty locating a faculty sponsor and would like additional tips, speak with your advisor.

Programs, Funding, and Scholarships

Student Opportunities for Academic Research (SOAR) provides funding to undergraduate students for participation in faculty-assisted research or pursuing scholarly projects of their own choosing. The

Summer Undergraduate Research Fund (SURF) provides funding for undergraduate research, on or off campus, during summer. Information and application instructions at https://dornsife.usc.edu/undergraduate-education/undergraduate-research/

Read more about USC research programs and funding for undergraduate students on the Office of Academic Programs website, https://academicprograms.usc.edu/services/undergraduate-research-and-experiential-learning/

Honors

Freshman Science Honors Program

https://dornsife.usc.edu/fsh/

Exceptionally qualified incoming freshmen may participate in the Freshman Science Honors Program (FSH), which allows students the opportunity to take enriched biology and chemistry courses in the first year sequence: BISC-121Lg and CHEM-115aLg in the first semester, and BISC-221L and CHEM 115bL in the second semester. The FSH courses tend to have smaller class sizes and offer students access to special lectures, tours, and field trips. Some students are invited prior to their acceptance of admission to the University, while others apply during Freshman Orientation. Students majoring in Biological Sciences who secure good grades in the program are typically invited to participate in the Department of Biological Sciences Honors Program.

BISC Honors Program

For outstanding students pursuing majors in Biological Sciences or Biochemistry, the Department of Biological Sciences Honors Program provided students the opportunity to enhance and deepen their involvement in the field through participation in honors seminars, undergraduate research opportunities, and faculty-advised writing of an honors thesis. In addition to major requirements, students pursuing departmental honors must take two semesters of BISC-493x Honors Seminar (1 unit per semester) and one semester of BISC-494x Honors Thesis (2 units). Honors students must also take BISC-490 Directed Research as one of the upper-division electives required for the major. In order to receive honors, students must complete their degrees with a GPA of 3.5 or higher in math and science courses being applied to the major. Successful completion of this program will earn students the transcript notation of “B.A./B.S. in Biological Sciences with Honors.”

Department Honors and Awards

These awards, determined by the faculty and lab directors, are presented each Spring at the Honors Luncheon.

Milo Don Appleman Award

Established in 1974 in memory of Milo Don Appleman, M.D., this award is given to the most outstanding graduating senior pursuing a career in the health sciences.

SCynergy Award
Established in 1998, this award is given to the most outstanding graduating senior pursuing a career in the biological sciences.

Okin Scholarship
This award, established in memory of Dr. Milton Okin, is given to the most outstanding sophomore, junior, or continuing senior in the Department of Biological Sciences.

Course Honors
Awarded to the most high achieving biology and biochemistry undergraduate students in the BISC/HBIO core courses: BISC-120L, BISC-121L, BISC-220L, BISC-221L, BISC-320L, BISC-325, BISC-330L, HBIO-301, HBIO-302, HBIO-308, HBIO-320, HBIO-401, HBIO-407, HBIO-408, and HBIO-420.

Maymester & Studying Abroad

Maymester

Learn more at *https://dornsife.usc.edu/flp/home/programs-and-resources/maymester/*
BISC 431L: Dr. John Heidelberg (jheidelb@usc.edu) and Dr. Eric Webb (eawebb@usc.edu)
BISC 457L: Dr. Karla Heidelberg (kheidelb@usc.edu) and Dr. Noelle Held (nheld@usc.edu)

Maymester courses take place immediately after spring courses but are included as part of spring tuition. They are taught intensively and immersively over a 4 week period at the Wrigley Marine Sciences Center on Catalina Island.

BISC 431L: Aquatic Microbiology
Discover how microbes affect not only your health but also the health of our planet, and how anthropogenic influences affect them in return. Aquatic microbiology brings together many different fields of science, including microbial biology, ecology, biochemistry, genomics, bioinformatics, and molecular biology. This deep-immersion course cross-trains students to work and think in many fields, and to apply their knowledge toward an understanding of natural cycles and human impacts along our coastlines. Due to WMSC's unique setting, students will spend plenty of time in the field getting up-close and personal with the microbial world.

BISC 457L: Methods in Marine Biology and Biological Oceanography
This course is designed to introduce students to the study of coastal marine environments and to guided, independent research in marine ecosystems. During the class, students will learn how to use scientific methodology to evaluate global environmental issues, including topics related to human impacts on coastal environments, watershed interactions, and ecosystem function. Students will use authentic research sampling equipment, sampling methodology, and analysis methods for sites on and around the

Wrigley Marine Science Center on Catalina Island. One of the highlights of this class will be an oceanographic training cruise where students will conduct field sampling aboard a working research vessel.

Overseas Study

https://dornsife.usc.edu/overseas-studies/

Studying abroad offers an unparalleled opportunity for personal growth through immersion in foreign culture allowing students to gain insights into themselves and others, while developing leadership and networking skills for the future. The Overseas Studies office offers students exciting and diverse opportunities to study abroad in 57 unique programs in 30 countries. The myriad of programs offered enable BISC majors to choose programs that complement their program of study. The majority of USC students who receive Fulbright fellowships have participated in study abroad programs.

Problems Without Passports

https://dornsife.usc.edu/flp/home/programs-and-resources/summer-programs/

Each summer, the Dornsife Faculty-Led Programs Office (FLP) offers students the opportunity to help solve global challenges, such as climate change or pandemics, through the Problems Without Passports program (PWP). PWP courses combine problem-based or inquiry learning research exercises with study in different locations worldwide. Examples of past PWP courses are: International Relations 374: Comparative Public Policy in France and the European Union; and Biological Sciences 428: The Biology of Health from a Global Perspective in Oxford, England. Students applying to a PWP program are eligible to apply for the Summer Undergraduate Research Fund (SURF).

Student Organizations

There are hundreds of clubs and organizations at USC. You can explore all registered student organizations (RSOs) on EngageSC at https://engage.usc.edu/club_signup.

African Americans in Health

https://linktr.ee/AAIHUSC

African Americans in Health is a campus organization centered on the goal of supporting African Americans in their pursuit of careers in the health industry. This includes the fields of medicine, dentistry, pharmacy, or public health.

Alpha Epsilon Delta

https://www.usc-aed.com/

Alpha Epsilon Delta is USC's premier pre-medical honor society. We seek to foster a sense of community by offering guidance and mentorship to students seeking acceptance to medical school.

American Red Cross at USC

https://arcusc.org/
The American Red Cross at USC is a humanitarian organization dedicated to alleviating human suffering through emergency assistance, disaster relief, and disaster preparedness education. From hosting blood drives to fundraisers to volunteering events, we focus on serving our surrounding LA community.

Blueprints for Pangea
https://www.blueprintsforpangaea.org/
Our mission is to reallocate unused medical supplies from areas of excess to areas in need. By collecting and shipping supplies abroad, we're changing the fate of these precious medical resources and lives.

Health Sciences Education Program
https://www.usc-hsep.com/
Dedicated to health education, scientific principles, and critical thinking, we partner with K-12 schools throughout the LA district giving presentations on a variety of health science related topics.

MEDLIFE at USC
https://www.medlifemovement.org/
MEDLIFE is a 501(c)(3) non-profit organization that partners with low-income communities in Latin America and Africa to improve their access to medicine, education, and community development projects. In order to achieve the ultimate goal of a world free from the constraints of poverty, we provide opportunities for students to become advocates for change by creating on-campus Chapters, volunteering in Service Learning Trips, and supporting the Moving Mountains giving program.

Pre-Pharmacy Society
https://uscprepharmacysociety.notion.site/USC-s-Pre-Pharmacy-Society-1156d100186b43eea983f9d7c5c2b2bf
The mission of the USC Pre-Pharmacy Society is to encourage student interest in a career in pharmacy and generate awareness of pharmacy-related opportunities in and out of the classroom. We are also dedicated to providing students with opportunities to contribute to the LA community via service projects and health fairs. We strive to strengthen the society of pre-pharmacy students at USC by fostering a professional and social network of students that will serve as support throughout our members' health care careers.

SCience Outreach
https://www.uscscienceoutreach.org/home
Science Outreach was created at USC to teach elementary schoolers in neighboring schools science with fun and safe experiments. Our ultimate goal strives to inspire youth to make meaningful observations, work with peers, think critically, ask questions, and have fun learning by doing
Society for the Advancement of Chicanos/Hispanics & Native Americans in Science
https://uscsacnas.weebly.com/
Our purpose is to expose more students to STEM fields and generate more diversity in said fields. SACNAS is a society of scientists dedicated to fostering the success of Chicano/Hispanic and Native American scientists – from college students to professionals, to attain advanced degrees, careers, and

positions of leadership in science. Anyone is welcome to join and our main goal is to support science amongst students and increase diversity.

Trojan Research Association
https://trojanresearch.org/
Our mission is to introduce USC students to various facets of academic research in many disciplines, offer research-related workshops, and match motivated individuals with mentors for independent research projects.

Resources and Support

Career Center

https://careers.usc.edu/ - (213) 740-9111 - STU 110
The USC Career Center provides career services to all USC students and recent graduates. Their array of programs include career counseling, workshops, company profile events, career panels, internships, job listings & searches, Trojan Network and Career Fairs.

Counseling and Mental Health Services

https://sites.usc.edu/counselingandmentalhealth/ - (213) 740-9355 - Engemann Student Health
The professional staff of the Student Counseling Services offer individual, couple and group counseling, as well as emergency services, in order to help students to successfully cope with the variety of concerns common during their college experiences. All personal information is kept confidential. The staff also provide workshops and consultation on stress management, assertiveness, communication skills, and conflict resolution techniques. Services are covered by the Student Health and Counseling Services Fee.

Dornsife Career Pathways

https://dornsife.usc.edu/careerpathways/ - (213) 740-2534 - GFS 320
Our dedicated team of career services professionals provide comprehensive career advising services, programs, and resources to support students' and alumni's career development, employment, and graduate school education.

Kortschak Center for Learning and Creativity

https://kortschakcenter.usc.edu/ - (213) 740-7884 - STU 311
Through individual academic guidance, workshops, academic support groups, and the availability of quiet study spaces, the KCLC provides support to help students make successful transitions to college.

Office of Student Accessibility Services

https://osas.usc.edu/ - (213) 740-0776 - GFS 120
OSAS provides support services necessary to enable students with disabilities to develop their maximum academic potential. OSAS services include assistance in providing tutoring in academic disciplines,

learning assistants, readers, scribes, notetakers and/or interpreters, advocacy with faculty, special accommodations for test taking, and assistive technology for students with an identified learning disorder or disability.

Pre-Health Advisement Office

https://dornsife.usc.edu/pre-health/ - (213) 740-4844 - HNB 120
The Office of Pre-Health Advisement exists to serve all students interested in pursuing careers in the health professions. Our pre-health advisors provide an array of student-centered advisement services and support tools tailored to meet the individual needs, interests, and goals of pre-health students.

Supplemental Instruction (SI)

https://dornsife.usc.edu/next-gen-science/supplemental-instruction/
The SI program targets traditionally difficult courses and provides regularly scheduled, peer-led study sessions. These sessions are available to all students enrolled in the class at no cost. Work in small, collaborative groups with your classmates; review lecture material, course reading, and homework; and go over exam strategies with SI leaders who know the courses and professors.