

USC
Viterbi

UNDERGRADUATE
HANDBOOK
2016-17 ACADEMIC YEAR

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The USC Viterbi School of Engineering's Undergraduate Handbook is published annually. Inquiries regarding this publication should be directed to:

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This handbook draws heavily upon other official University publications including the USC Catalogue and a variety of departmentally-distributed information pieces. Although every attempt has been made to ensure the accuracy of the information found herein, the USC Catalogue and official addenda should be considered the documents of authority for all University students. The program requirements listed in the USC Catalogue supersede any information which may be contained in this or any other publication of any school or department. The University reserves the right to change its policies, rules, regulations, requirements and course offerings at any time.

The USC Viterbi School of Engineering Undergraduate Handbook is intended to serve as a supplement, not a replacement, to the USC Catalogue. This publication is designed to synthesize all academic information pertinent to engineering undergraduates. Students entering USC Viterbi in the fall of 2016 or the spring of 2017 are bound by the requirements set forth in this booklet and the 2016-2017 University Catalogue.

Title IX

While it is often thought of as a law that gives women equal opportunities in athletics, Title IX is about so much more. Title IX also covers admissions, financial aid, housing, educational programs, campus safety (including sexual assault), and sex discrimination.

Title IX states: No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.

Undergraduate Program Accreditation

The University of Southern California is accredited by WASC, the Western Association of Schools and Colleges. The Bachelor of Science degrees in aerospace engineering, astronautical engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering and computer science, electrical engineering, environmental engineering, industrial and systems engineering, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. The Bachelor of Science degrees in computer engineering and computer science and in computer science are accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>.

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Get the most out of your college experience. *Here's how.*

Starting college is exhilarating and challenging. Don't worry! We are here to help you figure it all out. From course selection to internship opportunities and student organization membership to graduate school, we are here to help.

This handbook is a useful road map as you go through your undergraduate program. We've put a ton of good information here to steer you through your own story of success. Be sure to check this book often throughout your time at Viterbi as it is more than just a first-year guide. It is a four-year plan.

It's more than a "first-year guide."

This is a four-year plan

The beginning sections of this handbook will help you explore, connect, and succeed at the Viterbi School.

The map to the right helps you understand your 5 steps towards success after Viterbi. **Your First Days** on campus are busy - but we think you can pull off these few tasks to get started off on the right foot.

Be sure to review the ways you can get involved on campus in the **Getting Involved** section. Your future teammates are in a number of areas across campus, and we don't want you to miss an opportunity.

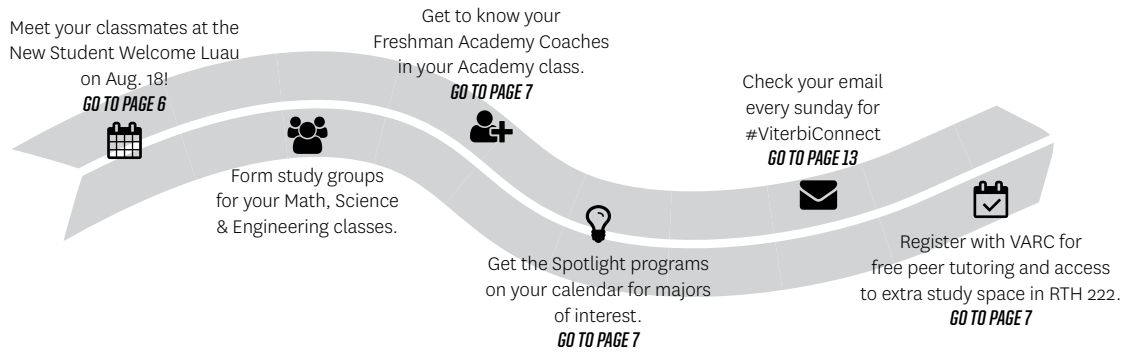
You won't want to miss the four-year plan included in the **Connecting To Your Future** section as you start thinking about your resume, internships, career choices, and life after graduation. Likewise, check out all the ways you can add to your engineering degree (aka "Engineering +") with a second major, minors, courses of interest, and study abroad programs in the **Find Your "Plus"** section.

Further into the Handbook, you'll find the focus of your program in the **Academic Advising** section. As you plan your schedule each semester, you will want to review your suggested course plan as well as prepare for your personalized advising appointment by completing your individual academic plan. If you want to add a second major or minor, we've even included a worksheet to help you begin planning with your academic advisor.

This is a lot of information. Just remember you've got time to figure it all out and between this book, your faculty, staff, and advisors, you'll get support throughout your time here.

Good luck and Fight On!

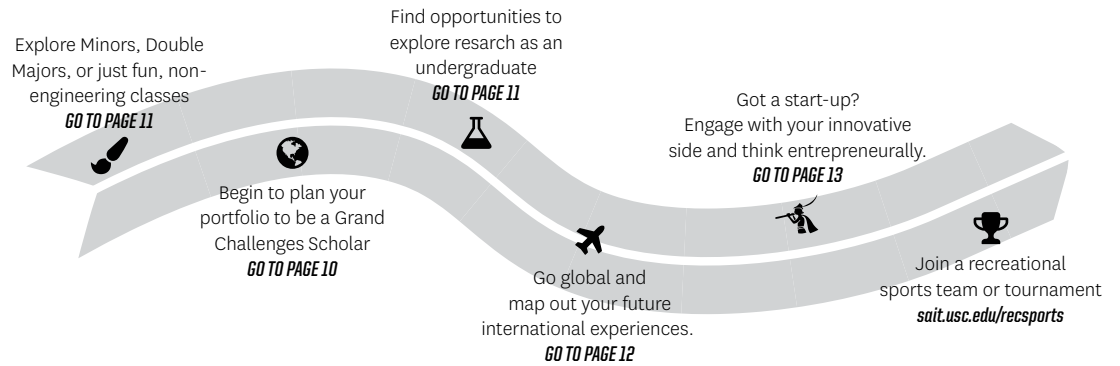
YOUR FIRST STEPS



GET INVOLVED



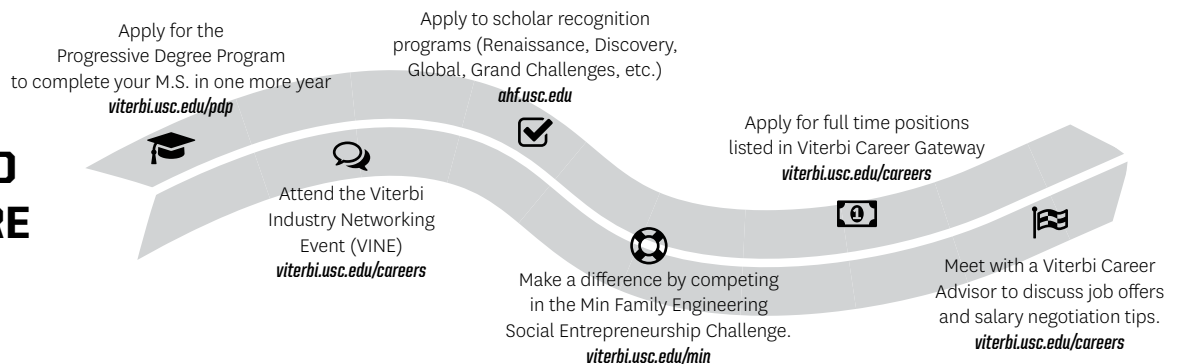
FIND YOUR "PLUS"



GAIN EXPERIENCE



CONNECT TO YOUR FUTURE





Our First Year Excellence Program is designed to support student success and to help students transition smoothly to USC and Viterbi. Through a variety of programs and services, first year students are able to engage with Viterbi faculty, students and staff, explore and further define their academic and other interests, and get connected within the USC and Viterbi communities.

ORIENTATION

The Viterbi Admission & Student Affairs Division is excited and honored to welcome you to the Viterbi School of Engineering and to the Trojan Family. We look forward to working with you during Orientation and aiding in a smooth transition to your first semester at USC. During Orientation, we highlight many of the programs and resources that you learned about during the admission process and we help you develop your first-semester schedule.

New Student Welcome

The Viterbi School of Engineering invites all new undergraduate engineering students to its annual New Student Welcome, part of the University Welcome Week activities. Join faculty, staff, and current Viterbi students as we enjoy some food and fun! You will connect with current student leaders, learn about getting involved in Viterbi student organizations, interact with faculty from each engineering department, and be in the class photo!

ADVISING & STUDENT SUPPORT

Advisors in the Viterbi School of Engineering are here to help you be successful during your time at USC. Advisors work with students to explore and define their academic and career goals and realistic ways to reach these goals. As part of the advising process, advisors help you understand engineering major options and programs, University degree requirements and policies and procedures. Advisors also assist you with scheduling and registration each term.

First Year Advisors, in the Viterbi Admission & Student Affairs Division, work with freshmen beginning at Orientation and through the end of the spring semester of freshmen year. First Year Advisors and Viterbi departmental advisors work with transfer students during Orientation as well. Transfer students work primarily with their departmental advisor after Orientation. Advising is mandatory each semester at Viterbi. Find out more about advising at Viterbi later in this handbook.

ENGINEERING COURSES

Introductory Courses

Freshmen take introductory, or survey courses, as part of their first year curriculum. These courses provide students initial exposure to their major curriculum and their first opportunity to engage with faculty and fellow students in their major.

Freshman Academy

You will take the Engineering Freshman Academy (ENGR 102) in your first semester. The Academy provides a macro-level view of the profession by addressing the ethical, societal, and political impact of engineering and its technology. The class meets once a week and is taught by a full-time engineering faculty member. The seminar is focused on building community through working on collaborative projects. Case studies, discussions, and group projects will allow you to explore how engineering intersects with other areas in society including education, the environment, new technologies, the community, and more. Each Academy section is assigned "Academy Coaches," upper division Viterbi students who serve as resources and mentors to first year students.

VITERBI ACADEMIC RESOURCE CENTER

The Viterbi Academic Resource Center (VARC) provides free peer tutoring for 50+ math, science, and engineering courses. In addition to one-on-one peer tutoring sessions, VARC offers group study sessions and Supplemental Instruction (SI) for select engineering courses.

The VARC team, along with the First Year Advisors, offers academic workshops with topics that range from time management to test-taking skills. Check viterbi.usc.edu and search "VARC" for session information.

ACADEMIC PROGRAMS

Academic Minors and Global Opportunities

Many students choose USC because of the numerous opportunities we offer, including minors and overseas studies. We host information sessions during the year to provide students the opportunity to learn about these programs directly from the minor and overseas studies advisors.

Students interested in a secondary field of study can declare a minor. Viterbi Admission & Student Affairs provides opportunities for you to learn more about minors that tend to be of interest to Viterbi undergraduates. Advisors from areas like Business, Economics, Cinema, Information Technology, Music, and Fine Arts highlight the courses students take as part of a minor and the overall benefits of minoring in their respective areas. To learn more about minors check out the **Engineering+** section of this handbook.

Along the same lines, many Viterbi students are interested in pursuing global opportunities. Two popular ways to do this are through a semester abroad program offered by the USC Overseas Studies and Viterbi Summer Overseas programs. Viterbi students are able to choose from programs in a variety of English-speaking countries. For more information about overseas opportunities, review the **Engineering +** section of this handbook.

Spotlight Programs

If you're still not sure about which field of engineering you want to pursue or you just want to learn more about the different Viterbi majors, you should attend the Viterbi Spotlight programs. Each month, Viterbi hosts a panel of alumni and industry representatives who share their experiences in industry and how they utilize their Viterbi engineering education. You also get the opportunity to practice your networking skills and mingle with the panelists.

Transfer Student Programs & Success

We know that each transfer student will likely have a unique transfer experience and, in an effort to help provide a smooth transition for you, we host programs & events designated for new transfers to help ensure that you have the best foundation for success at USC and in Viterbi. This includes helping to make sure that you get connected with Viterbi faculty, staff and other transfer students who are here to support your success.



An important part of Viterbi life is getting involved in Viterbi, USC, and the greater community. Being involved helps you forge a deeper connection with your fellow USC Trojans, and helps you develop the essential skills you need to succeed at USC. At Viterbi, we offer several opportunities to get involved.

STUDENT ORGANIZATIONS

Student organizations are a great way for you to get involved and connect with your fellow students. USC has over 850 student organizations for you to join. Student organizations hold a number of the programs and events on campus each year including concerts, lectures, special events, spirit rallies, cultural and social events, and conferences. To learn more about these student organizations, visit sait.usc.edu/stuorgs.

Within Viterbi, we have a variety of societies and organizations that appeal to the diverse interests of our student body. Honor societies such as Tau Beta Pi recognize academic excellence, creativity, and service. The student chapters of professional societies provide students in specific majors with insight into their chosen discipline. Design Teams allow you to get your hands dirty and work on projects in a team environment to get ready for competitions around the world. These design teams are an excellent way for you to take what you learn in the classroom and apply it in a fun and challenging way.

Viterbi also has service-oriented groups for students interested in using engineering skills to give back to the community. For example, the members of Engineers Without Borders have recently completed a water filtration system for two small villages in Honduras. This organization not only gives you the chance to put your engineering knowledge into practice, but it also allows you to learn about global engineering problems.

To learn more about Viterbi Student Organizations, you can visit viterbi.usc.edu/students/studentorgs.

Involvement Fairs

In addition to the New Student Welcome, there are a number of ways to learn about student organizations and start your involvement path. Each semester, the University hosts a large involvement fair in the center of campus. Join the USC Surf Club and Ballroom Dance Team on the same day!

“Get Connected!” is a student involvement fair sponsored by the Klein Institute of Undergraduate Engineering Life (KIUEL) held during the spring semester. If you were admitted in the spring semester or you just didn’t have time to get involved during the fall semester, Get Connected! provides yet another opportunity to learn about all the Viterbi student organizations in one convenient location.

#VITERBICONNECT

Once you get connected, stay connected. Your college life is busy, and there is a lot going on. We want to make sure you have all the information you need about events, student organizations, internships, research opportunities, scholarships, overseas programs and more!

Your starting point for information is the undergraduate home page, but stay up-to-date with our Facebook and Twitter pages. In addition, we send a weekly email every Sunday evening with a review of recent announcements and upcoming events that are important to the Viterbi community.

HOME: viterbi.usc.edu/undergrad

FACEBOOK: fb.com/USCViterbiUndergrad

TWITTER: [@ViterbiUG](https://twitter.com/ViterbiUG)

CENTER FOR ENGINEERING DIVERSITY (CED)

The Center for Engineering Diversity, often touted as a “home away from home” for engineering students, is dedicated to promoting scholastic, personal, and professional excellence among underrepresented students in Viterbi. CED offers its members access to a 24-hour study space and computer lab. The center is your place to connect with other students, receive mentoring from graduate students, and easily form study groups. CED also works closely with the Society of Women Engineers, the National Society of Black Engineers, the Society of Hispanic Professional Engineers, and the Queers in Science Engineering and Technology. Throughout the year, CED collaborates with the Industry Advisory Board (IAB) to sponsor professional development opportunities for engineering students.

WOMEN IN ENGINEERING (WIE)

The Women in Engineering program offers professional, academic and social opportunities for all women in Viterbi. Events such as the Alumnae/Undergraduate Networking Reception and Lunch & Learn are just a couple of the programs available for the female engineering community. In addition, there are female-oriented engineering student organizations, such as the Society of Women Engineers (SWE) and the engineering sorority, Girls in Tech, Alpha Omega Epsilon (AOE), for students to get involved and meet fellow female engineers.

KIUEL

The Klein Institute for Undergraduate Engineering Life (KIUEL) provides Viterbi undergraduates a variety of personal and professional activities to enhance experiences outside the classroom. Through its programming, KIUEL helps develop leaders who have strong communication skills, work well in teams, and know their leadership style. KIUEL also fosters a community that recognizes the importance of connecting and contributing within Viterbi and beyond. KIUEL events are designed, organized, and implemented by the KIUEL Programming Committee, a team of student leaders selected to enhance Viterbi’s community through these school-wide events.

VOLUNTEERING

Viterbi Impact Program (VIP)

The Viterbi Impact Program connects undergraduate Viterbi students with the Los Angeles community. VIP participants play an important role in bringing engineering to the community as they work as partners with local schools and organizations. VIP volunteers are undergraduate engineering students committed to a semester or more of volunteering in the community and service-learning activities as a group.

USC Volunteer Center

The USC Volunteer Center is dedicated to promoting volunteerism and service in the USC and greater Los Angeles communities. The Volunteer Center organizes numerous service projects, identifies volunteer opportunities, and houses an extensive database of over 200 non-profits and other agencies that offer volunteer opportunities. To see how you can get involved, visit sait.usc.edu/volunteer.

STEM Educational Outreach Programs

Help promote engineering in K-12 education by volunteering for Math, Engineering, Science & Achievement (MESA), Mission Science Program, or other programs. Visit viterbi.usc.edu, search “STEM Programs.”

VITERBI STUDENT ORGANIZATIONS

SPECIAL INTEREST GROUPS

- » Alpha Omega Epsilon
- » Girls in Tech
- » Illumin
- » KIUEL Programming Committee
- » National Society of Black Engineers
- » Queers in Science Engineering and Technology
- » Sigma Phi Delta
- » Society of Hispanic Professional Engineers
- » Society of Women Engineers
- » USC eSports
- » Viterbi Plus

PROFESSIONAL SOCIETIES

- » American Institute of Aeronautics and Astronautics
- » American Institute of Chemical Engineers
- » American Society of Civil Engineers
- » American Society of Mechanical Engineers
- » Associated Student of Biomedical Engineering
- » Association for the Advancement of Artificial Intelligence
- » Association of Computing Machinery
- » Association of Chinese Students in Engineering
- » Construction Management Association of America
- » Earthquake Engineering Research Institute
- » Institute of Electrical and Electronics Engineers
- » Institute of Industrial Engineers
- » Institute of Transportation Engineers
- » Korean Scientists and Engineering Association
- » National Organization for Business and Engineering
- » Sigma Eta Pi
- » Society of Automotive Engineers
- » Society of Motion Picture and Television

Engineers

- » Society of Petroleum Engineers
- » Women in Computing

PROJECT GROUPS

- » AeroDesign Team
- » Code the Change
- » Corpus Callosum
- » Design for Change
- » Engineers Without Borders
- » HackSC
- » Human Powered Vehicle Team
- » Hyperloop at USC
- » LavaLab
- » Los Angeles Technology Consulting Hub
- » Makers of Entertaining Games Association
- » Rocket Propulsion Laboratory
- » SC Racing
- » SparkSC
- » USC Aerial Robotics
- » USC Autonomous Underwater Vehicle Team
- » USC Rocket Society
- » USC Solar Car Team
- » 3D4E (3D Printing Club)
- » ASCE Concrete Canoe

HONOR SOCIETIES

- » Alpha Pi Mu
- » Chi Epsilon
- » Eta Kappa Nu
- » Omega Rho
- » Pi Tau Sigma
- » Sigma Gamma Tau
- » Tau Beta Pi
- » Upsilon Pi Epsilon
- » Omega Chi Epsilon



Dean Yortsos states, "The new canvas on which engineers now paint is one that I can characterize as Engineering + {subject}." Engineering + is exploring your interests outside of engineering so that you can think critically about today's challenges. Whether you want to pick up a second major, add a minor, study abroad, or conduct research; these are all examples of Engineering +.

GRAND CHALLENGES SCHOLARS PROGRAM

You have the unique opportunity to compete in the National Academy of Engineering (NAE) Grand Challenges Scholars Program (GCSP). Grand Challenges Scholars create their own educational experiences through discovering, exploring, and working on potential solutions to one of the NAE Grand Challenges. Each year, the top 25 students who successfully complete the GCSP components will be named National Academy of Engineering Grand Challenges Scholars, recognized both by USC at graduation and the National Academy of Engineering.

The Viterbi School encourages students to pursue their academic and co-curricular involvement keeping the Grand Challenges in mind. Students interested in being designated as Grand Challenges Scholars, must successfully demonstrate their involvement related to one of the NAE Grand Challenges across the following 5 dimensions:

Hands-on Project or Research Experience
Interdisciplinary Curriculum
Entrepreneurship
Global Dimensions
Service Learning

To find out more about the GCSP, visit viterbi.usc.edu and search "gcsp."

DOUBLE MAJORS AND MINORS

Renaissance Scholars

The Renaissance Scholars program honors students whose broad interests help them excel academically. Like Leonardo da Vinci, who was equally adept in the arts and the sciences, Renaissance Scholars are students whose majors and minors are from widely separated fields of study. For more information visit usc.edu, search "Renaissance Scholars."

Double Majors

With over 150 majors at USC, the world is your oyster. Engineering students have added a second major in everything from Dramatic Arts to East Asian Languages and Cultures. Visit usc.edu, search "catalogue" for a full listing of all the majors offered. If you find one you would like to pursue, start working with your engineering advisor to see how it may fit into your long term plan.

Minors

A minor is a great way for you to explore another area of interest and help you think about today's engineering challenges in a different ways.

NON-ENGINEERING MINORS

While there are over 150 minors university-wide, here are a few students have found interesting.

- » Astronomy
- » Applied Theatre Arts
- » Business
- » Cinematic Arts
- » Comedy
- » Digital Studies
- » Economics
- » Entrepreneurship
- » Global Health
- » Health Care Studies
- » Management Consulting
- » Music Industry
- » Music Recording
- » Music Performance
- » Organizational Leadership Management
- » Screenwriting
- » Sculpture
- » Social Entrepreneurship

Check out usc.edu/catalogue for a complete listing of possible minors.

Viterbi Minors and ITP Minors

The Viterbi School of Engineering offers a number of minor programs available to all undergraduate students at USC.

The Information Technology Program (ITP) is an academic program at the Viterbi School of Engineering whose mission is to offer courses in applied technology to all students at USC. The program offers cutting edge and hands on courses in web development, new media, 3D animation, security, programming, video game design and programming, and other innovative topics in information technology. The unit is a leading source of curriculum innovation on campus and is also a leader in integrating emerging instructional technologies in the classroom. Minors range from 16-26 required units to complete and specializations range from 6-12 units. For more information, see itp.usc.edu.

ITP Minors (16-26 units):

- » 3D Computer Graphics and Modeling
- » Applied Analytics
- » Applied Computer Security
- » Computer and Digital Forensics
- » Computer Programming
- » Enterprise Information Systems
- » Innovation: The Digital Entrepreneur
- » Mobile App Development
- » Video Game Design and Management
- » Video Game Programming
- » Web Technologies and Applications

ITP Specializations (6-12 units):

- » 3D Computer Graphics and Modeling
- » Applied Analytics
- » Computer Programming
- » Cyber Security
- » Digital Forensics
- » Enterprise Information Systems using SAP
- » Innovation: The Digital Entrepreneur
- » Mobile App Development
- » Video Game Design and Management
- » Video Game Programming
- » Web Development

OTHER ENGINEERING-RELATED MINORS

- » Astronautical Engineering
- » Computer Science
- » Construction Planning and Management
- » Engineering Management
- » Environmental Engineering
(engineering & natural sciences majors only)
- » Petroleum Engineering

Check out viterbi.usc.edu/undergrad/advisement/minors for more information.

In addition to Viterbi minors, students can also minor in programs through the various academic units at USC, such as the Dornsife College of Letters, Arts and Sciences and the Marshall School of Business. With over 150 minors available at USC, the possibilities are nearly endless! For a full list of minors available check out usc.edu, search "catalogue."

UNDERGRADUATE RESEARCH

Discovery Scholars

The Discovery Scholars Program honors students who excel in the classroom while demonstrating the ability to create exceptional new scholarship or artistic works. Like sailors on an unexplored sea, Discovery Scholars blaze new paths, rather than simply following the course charted by others. For more information, visit usc.edu and search "Discovery Scholars."

Provost and Rose Hills Research Fellowships

The Office of the Provost provides fellowships for undergraduate research each academic year in the fall and spring semesters. For more information, visit usc.edu and search "Provost Undergrad Fellows." The Rose Hills Foundation, which supports non-profit organizations that serve the citizens of Southern California, has generously provided funding for students who would like to obtain Science and Engineering Fellowships during the summer. For more information, visit usc.edu and search "Rose Hills Fellowship."

University Programs

USC has a variety of programs supporting undergraduate research efforts. From the Summer Undergraduate Research Funds (SURF) to the Student Opportunities for Academic Research (SOAR), students have many opportunities to receive funding to work in faculty laboratories both on and off campus. For a full list of University programs go to usc.edu and search for "undergraduate research."

RESEARCH AT VITERBI

With over \$185 million conducted in sponsored research each year, the Viterbi School offers a variety of ways for you to get involved in research as undergraduate.

In addition to the formal and selective programs, the majority of Viterbi undergraduates get involved in research through participating in competition and design teams, volunteering in faculty labs, and taking Directed Research (490), as well as through research-oriented and project-based capstone courses.

Undergraduate Research Matching Tool

The Undergraduate Research Matching Tool assists faculty with identifying potential candidates for their labs and helps you find research projects of interest. To use this tool, go to viterbi.usc.edu and search "research matching."

Merit Research Program

Each year, a select group of entering freshmen are invited to work with faculty on current research projects. The Merit Research Award is a renewable award provided you make satisfactory academic progress toward your engineering degree, maintain a B average overall, and complete a short renewal form each spring.

A limited number of Merit Research Awards are available to continuing students. Students who want to be considered for these awards must complete a scholarship application by March 1st of each year in order to be considered. Get more information at viterbi.usc.edu, search "merit research."

WiSE Research Grants

Undergraduate women in the Viterbi School are eligible to apply for a grant from the Women in Science and Engineering (WiSE) Program. This program gives female undergraduates an opportunity to receive funds to support their research activities in the laboratory with our faculty. Awards are provided for fall, spring, and summer terms. For further information on application information and deadlines, visit usc.edu and search "WiSE."

Undergraduate Fabrication Laboratory

You can take your research to a whole new level at Viterbi's Fabrication Laboratory. The Fabrication Laboratory, aka Fab Lab, is intended to provide you with the resources you need to make almost any design project a reality. The Fab Lab allows students to take a more hands-on approach to learning and research, giving them the opportunity to design projects ranging in scope from experimental wingtips to scale models. Visit viterbi.usc.edu and search "fab lab" for more info.

GLOBAL OPPORTUNITIES

Engineering is a global profession and studying abroad allows you to learn more about other cultures as well as gain perspective on technology issues in other countries. Today, many companies are international in scope or collaborate with partners overseas. The chance to study, work, or research abroad provides you with the opportunity to gain meaningful international exposure prior to entering the workforce. Work with your academic advisor to get started on any of the programs listed on the next page.

Global Scholars

The Global Scholars program recognizes undergraduates who have excelled in their studies both at home and abroad, including spending at least ten weeks outside the U.S. as part of their undergraduate experience. Up to ten of these students will also be selected to receive a \$10,000 prize to be applied toward graduate study. For more information, [USC search "USC Global Scholars."](#)

Viterbi Summer Overseas Program

Viterbi Summer Overseas program is a six to seven week program offered each summer in cities throughout Europe. By participating in this program you can make progress towards your engineering degree by taking up to two major-related courses while also exploring those cities.

Currently, a program runs each summer rotating through cities such as:

- » Florence, Italy
- » London, United Kingdom
- » Madrid, Spain
- » Paris, France
- » Rome, Italy
- » Istanbul, Turkey

To learn more, go to viterbi.usc.edu/overseas.

Tsinghua Summer Research Program

This six to seven week program provides an opportunity for an exchange of undergraduate students between the Viterbi School of Engineering and Tsinghua University in Beijing, China to participate in research with faculty at each institution. For more information go to viterbi.usc.edu/overseas.

International Exchange Programs

These semester-long exchange programs give Viterbi students the opportunity to study at one of our international partner schools, while students from our partner schools study at USC. These programs are one-to-one exchanges. Check out viterbi.usc.edu/overseas for more information.

Viterbi iPodia Program

iPodia is a new pedagogy which promotes peer-to-peer interactions among participating learners across disciplinary, institutional, physical and cultural boundaries. The "i" in iPodia stands for "inverted", "interactive", "international", and any combinations of the above. For more information, visit ipodia.usc.org.

Engineers Without Borders

Engineers Without Borders USA builds a better world through engineering projects that empower communities to meet their basic human needs and equip leaders to solve the world's most pressing challenges. The USC chapter's most recent project was designing and implementing a sustainable system for providing clean water to a community in Honduras. To learn more visit ewb-usc.org.

ENTREPRENEURSHIP & INNOVATION

Problems Without Passports

Problems Without Passports provides you with the opportunity for coursework that combines problem-based or inquiry learning research exercises with study in a foreign country. Courses change yearly, but recent topics have included HIST 499, The Silk Road Today: Focus on Kazakhstan; LING-499, Atayal Language and Culture in Taiwan; and IR-404, International Relations Policy Task Force: Rethinking U.S.-Cuban Relations. Check out www.usc.edu, search **"Problems Without Passports"** for more information.

Semester Overseas Programs

You can also participate in a number of university programs and receive credit towards your major requirements (subject to approval). Below are some examples. For more information check out www.usc.edu/overseas and speak with your advisor.

AFRICA / MIDDLE EAST

- » Cape Town, South Africa - University of Cape Town

AUSTRALIA / NEW ZEALAND

- » Brisbane, Australia - University of Queensland
- » Canberra, Australia - Australian National University
- » Dunedin, New Zealand - University of Otago

EUROPE

- » Galway, Ireland - National University of Ireland
- » Brighton, United Kingdom - University of Sussex
- » Edinburgh, United Kingdom - University of Edinburgh
- » London, United Kingdom - Queen Mary
- » Istanbul, Turkey - Bogazici University

The Viterbi School of Engineering promotes, encourages, and nurtures entrepreneurship and innovation of both its students and faculty. Here are some ways you can get involved.

Viterbi Student Institute for Innovation (VSI²)

VSI² serves as a crucible for innovation for Viterbi students, who will learn how to turn their ideas or research into successful business ventures. VSI² offers educational programs, new venture creation support and networking opportunities to help cultivate the next gen engineering entrepreneur. Educational programs include VSI² Speaker Series, Startup Workshops, Courses, Minor in Digital Entrepreneurship. To learn more visit: vsi2.usc.edu.

Viterbi Startup Garage

Viterbi Startup Garage is a 12-week technology accelerator program that includes \$50k in funding, space, strategic and financial resources and access to world-class mentors, and hands-on product, marketing, legal and fundraising support. For more information visit: vsi2.usc.edu/startupgarage.

Maseeh Entrepreneurship Prize Competition (MEPC)

Today's world is faced with many challenges in a wide-ranging set of domains ranging from energy, health, safety, education, and our environment. Fortunately, there is no doubt that many of these challenges will be addressed and overcome by inspired engineering innovators that turn seedling ideas and research into real products, companies, and solutions. Through a generous gift from Fariborz Maseeh, the Viterbi School of Engineering has established the MEPC, a yearly business plan competition to help inspire VSoE innovators to be at the forefront of these solutions. The MEPC's goal is to make engineering innovators more business-savvy and to empower them with refined business plans that define an effective go-to-market strategy for their ideas and inventions. See maseeh.usc.edu for contest details.

The Min Family Engineering Social Entrepreneurship Challenge

This competition provides USC students an opportunity to develop innovations in engineering and technology toward sustainable and effective solutions for global problems and to affect the greater global society positively. See viterbi.usc.edu/min for more information.

"CLASS IS ONLY A PART OF MY EDUCATION"

VSI² has taught me that class is only a part of my education. In addition to our in-class education, I've had the chance to cultivate personal ideas, explore networking events to meet industry professionals, and find a network of fellow entrepreneurs.

-Derek Peters, Mechanical Engineering



Viterbi Student Engagement & Career Connections (SECC) offers future-focused support to prepare you for internships, co-ops and full-time employment or graduate school. We host a variety of technical companies throughout the year with job openings to fill. Starting in your first year, you can take advantage of extensive services specifically designed for engineering students and your futures.

SECC and employers present workshops on career-related topics throughout the fall and spring semesters. Resume writing, obtaining internships/co-ops, how to navigate the Career Fair, and networking are just a few of the topics covered.

SECC advisors are available for draft resume reviews several times during the week. Please see viterbi.usc.edu/careers for the schedule of walk-in hours. Career advisement is also available by appointment for additional career planning and job search-related topics. To schedule your appointment just stop by the SECC office in RTH 218, call 213-740-9677 or email viterbi.careers@usc.edu.

PREPARING FOR GRADUATE SCHOOL

While it may seem early, we want to make sure you are thinking about all of your possible opportunities in the future. Be on the lookout for special workshops designed to help you prepare for your application to Masters and Ph.D. programs, applying for fellowships, mentoring relationships with faculty, and more.

Progressive Degree Program (B.S. + M.S.)

You can receive both your B.S. and M.S. in reduced time through the Progressive Degree Program (PDP). PDP allows you to start graduate-level coursework while finishing your undergraduate degree and can reduce the units required for your master's degree. Typically, students complete both their B.S. and M.S. in five years. In addition, both degrees do not need to be from the same discipline. You are eligible to apply for PDP once you have completed 64 units of study (typically your junior year) and before you complete 96 units. A 3.2 GPA is required for consideration. Get more information and details regarding the program and the application at viterbi.usc.edu/pdp.

INTERNSHIPS/COOPERATIVE EDUCATION

One of the best ways to increase your chances of landing your dream job upon graduation is to have some related work experience gained through an internship or co-op. These opportunities allow you to evaluate potential careers and to apply knowledge and skills obtained in the classroom in a “real world” setting. Internships and co-ops help your resume stand out, allow you to make valuable connections with employers and learn more about companies.

How to Obtain an Internship or Co-Op

- » Schedule an appointment with a SECC Advisor to better understand your resources and how to use them to identify opportunities and the skills required
- » Attend SECC events
- » Network with faculty, family, friends, employers
- » Participate in student organizations, class projects, volunteer work, etc. to build the skills employers seek when hiring students for these opportunities
- » Read #ViterbiConnect on a weekly basis to learn about upcoming networking and career-related events

VITERBI STUDENT-ALUMNI MENTOR PROGRAM

The Viterbi Student-Alumni Mentoring Program (VSAMP) offers Viterbi undergraduate students the opportunity to develop a mentoring relationship with an alumnus who shares his/her educational and professional experience to help students achieve greater success in their academic and career pursuits. Visit viterbi.usc.edu, search "VSAMP."

SECC EVENTS

On-Campus Interviews

To participate in on-campus interviews, students use ConnectSC and Viterbi Career Gateway for resume submission to the companies interviewing on campus; and if selected, to sign up for interviews. For details on how you can connect to Viterbi Career Gateway, please visit viterbi.usc.edu/careers.

Information Sessions

Information Sessions are presentations given by company recruiters. These presentations give you more in-depth information about companies and opportunities offered. They also allow you to build relationships with employers and be considered for interviews.

Workshops

Workshops provided through SECC staff and employers give comprehensive information about career-related topics and help prepare you to be more successful in your interactions with recruiters.

Viterbi Career Fairs

We host Viterbi Career Fairs every semester—for all USC engineering students. In this job fair environment, you can have brief conversations with recruiters about employment opportunities.

Career Conference

The Viterbi Career Conference, designed specifically for Viterbi undergraduates, takes place each fall. The conference provides an invaluable opportunity for you to develop job search skills and to connect with company representatives and alumni.

Viterbi Industry Networking Event (VINE)

VINE allows Viterbi juniors and seniors to meet employers the evening before the Career Fair and provides students the chance to practice their networking skills by engaging with top engineering companies in a professional networking environment.

Students who are most successful in their job search work with SECC advisors and use the guidelines in the Four-Year Plan below to keep them on track throughout their academic career:

FIRST YEAR: ASSESS	SECOND YEAR: EXPLORE	THIRD YEAR: DEVELOP	FOURTH YEAR: IMPLEMENT
<ul style="list-style-type: none"> <input type="checkbox"/> Register with Viterbi Gateway <input type="checkbox"/> Attend Viterbi Career Gateway Workshop <input type="checkbox"/> Attend a Resume Writing Workshop <input type="checkbox"/> Draft your resume and have SECC review <input type="checkbox"/> Join a student organization at Viterbi or USC <input type="checkbox"/> Get to know your faculty - attend office hours <input type="checkbox"/> Attend Viterbi & USC Career Fairs <input type="checkbox"/> Attend the USC Career Fest event <input type="checkbox"/> Attend the Viterbi Career Conference <input type="checkbox"/> Read #ViterbiConnect <input type="checkbox"/> Join the Viterbi Student Engagement & Career Connections LinkedIn Page <input type="checkbox"/> Talk with your academic advisor about your post-graduate interests <input type="checkbox"/> Attend VASAD Open House to get connected with resources 	<ul style="list-style-type: none"> <input type="checkbox"/> Take an active role within a student organization <input type="checkbox"/> Connect with alumni through USC Career Network <input type="checkbox"/> Join Viterbi Student Alumni Mentor Program <input type="checkbox"/> Attend an Interviewing Workshop or participate in a mock interview event <input type="checkbox"/> Go to Company Information Sessions <input type="checkbox"/> Attend the USC Internship Week events <input type="checkbox"/> Update & have a Viterbi Career Advisor review your resume <input type="checkbox"/> Attend the Viterbi Spotlight Series <input type="checkbox"/> In the Fall, look for a summer internship <input type="checkbox"/> Explore on campus research opportunities <input type="checkbox"/> Attend Go Global and research study abroad opportunities <input type="checkbox"/> Participate in a service opportunity <input type="checkbox"/> Research national fellowships and Grand Challenges Scholar requirements 	<ul style="list-style-type: none"> <input type="checkbox"/> Become an officer in a student organization <input type="checkbox"/> Attend Viterbi Industry Networking Event (VINE) <input type="checkbox"/> Attend Student Innovation Institute Speaker Series (VSi2) <input type="checkbox"/> Apply to the Progressive Degree Program <input type="checkbox"/> Research Graduate School opportunities & requirements <input type="checkbox"/> Conduct an informational interview with someone in your industry of interest <input type="checkbox"/> Attend a technical interview workshop <input type="checkbox"/> In the Fall, look for a summer internship <input type="checkbox"/> Apply for post-graduate fellowship opportunities <input type="checkbox"/> Create a team to compete in the Min Family Engineering Social Entrepreneurship Challenge 	<ul style="list-style-type: none"> <input type="checkbox"/> Apply for jobs through Viterbi Gateway and company websites in Fall <input type="checkbox"/> Apply for graduate schools <input type="checkbox"/> Apply for post-graduate fellowships <input type="checkbox"/> Attend the Viterbi Career Fair for full-time opportunities <input type="checkbox"/> Meet with a Viterbi Career Advisor to discuss offers and tips for salary negotiation <input type="checkbox"/> Attend Company Information Sessions <input type="checkbox"/> Apply for Grand Challenges Scholar recognition <input type="checkbox"/> Apply for Renaissance, Global, and Discovery Scholar recognition

Contact SECC for help with your Career Plan: vcareers@usc.edu | viterbi.usc.edu/careers



Working with your academic advisor is an important part of your academic success at Viterbi. The role of your academic advisor is to assist and guide you throughout your time at Viterbi and to help you stay on the right track to achieve your academic goals. Your academic advisor helps you with registering for the right courses and also works with you to discover your academic passions. This section of the handbook provides many of the tools you will use during your academic advisement appointments.

ACADEMIC POLICIES

The Viterbi School of Engineering considers student success one of its highest priorities, however you are ultimately responsible for your own academic experience. You are expected to become familiar with University policies and, with the help of faculty and academic advisors, monitor your own academic progress.

University policies can be found in this handbook and in other university publications such as the USC Catalogue (www.usc.edu/catalogue). You can monitor your degree progress by using your STARS report through OASIS on my.usc.edu.

GENERAL EDUCATION

USC General Education or "GE" for short, prepares students to be informed citizens of the 21st century. In GE courses, you will learn to think critically about the texts you read and the analysis you encounter, evaluate competing ideas and consider what is being assumed and what alternatives might exist.

As the world becomes interconnected, there is an increased need for critical thought, self-reflection, moral discernment, appreciation of diversity, aesthetic sensibility, civility, reconciliation and empathy across all spheres of life. The USC General Education program has been designed to provide you with the skills and knowledge necessary to meet the challenges of a globalized world and live a satisfying personal life.

Core Literacies

There are eight courses required across six Core Literacies. Some of these can be waived with AP credit (see p. 17).

- » **GE A:** The Arts (1 Course)
- » **GE B:** Humanistic Inquiry (2 courses)
- » **GE C:** Social Analysis (2 Courses)
- » **GE D:** Life Sciences (1 Course)
- » **GE E:** Physical Sciences (1 Course)
- » **GE F:** Quantitative Reasoning (1 Course)

Global Perspectives

There are two courses required. Engineering students are encouraged to satisfy GE G and H with a course that also satisfies a Core Literacy.

- » **GE G:** Citizenship in a Global Era (1 Course)
- » **GE H:** Traditions and Historical Foundations (1 Course)

Freshmen General Education Seminar (GESM)

All freshmen must take one of the core literacy courses in the GE seminar format. These specially designated seminars take place in a small classroom setting limited to 19 seats. Consult your advisor for help identifying these seminars and to determine which semester you should satisfy this requirement.

Writing Requirement

All majors have a two course writing requirement. The first course, WRIT 150: Writing and Critical Reasoning, is usually taken the first year of college. The second writing course, usually taken in the junior or senior year, is WRIT 340: Advanced Writing. WRIT 150 and 340 must be taken for a letter-grade and may not be taken on a pass/no pass basis.

Important Notes

You may take one GE Core Literacy course on a pass/no pass basis. After a student enrolls at USC, whether as a first-year or transfer student, the student cannot fulfill any additional GE categories or the writing requirement elsewhere. See your advisor for details.

AP, IB, AND A-LEVEL CREDIT

Your hard work in high school definitely pays off. AP, IB & A-Level credit will increase your flexibility at USC to take courses that are of interest to you. The partial list below should answer most of your questions. Please see the USC Office of Articulation website for a complete understanding of how your advanced work in high school can help with USC degree requirements: usc.edu/articulation

Pre-Med students should be aware that many medical schools do not accept AP, IB, or A-Level credit in lieu of college-level course credit to fulfill medical school pre-requisites.

AP Exams

Any AP exam with a score of 4 or 5 will get you 4 units of credit at USC. In addition to unit credits, some AP scores can help you complete degree requirements. Most commonly for engineering students, the following exams can satisfy or waive the following classes:

- » Calculus AB → **MATH 125 + GE-F**
- » Calculus BC (score of 4) → **MATH 125 + GE-F**
- » Calculus BC (score of 5) → **MATH 126 + GE-F**
- » Chemistry → **CHEM 105AL + GE-E**
- » Biology → **BISC 120L OR 220L + GE-D**
- » Physics (1, 2, B, or C) → **GE-E**
- » Art History → **GE-A**
- » European History → **GE-H**
- » U.S. History → **GE-H**
- » World History → **GE-H**
- » Statistics → **GE-F**
- » Macroeconomics → **GE-F**
- » Microeconomics → **GE-F**

VITERBI HONOR CODE

Engineering enables and empowers our ambitions and is integral to our identities. In the Viterbi community, accountability is reflected in all our endeavors.

Engineering+ Integrity.
Engineering+ Responsibility.
Engineering+ Community.

Think good. Do better. Be great.

These are the pillars we stand upon as we address the challenges of society and enrich lives.

IB Exams

IB credit can be granted either from the International Baccalaureate Diploma, or individual Higher Level Exams. You can receive either 20 units of credit from the IB Diploma with a score of 30 or higher, or 6 semester units of credit for each score of 5, 6, or 7 on Higher Level exams, up to a maximum of four exams, whichever is higher.

- » Mathematics (6 or 7) → **MATH 125 + GE-F**
- » Chemistry (6 or 7) → **CHEM 105A + GE-E**
- » Biology (6 or 7) → **BISC 120L OR 220L + GE-D**
- » Physics → **GE-E**
- » Economics → **GE-F**
- » History (Route 1) → **GE-H**
- » History (Route 2, 20th Century World History: Europe and the Middle East) → **GE-H**
- » History (Route 2, 20th Century World History: Asia and Oceania or History of Africa or History of the Americas) → **GE-G**
- » Dance, Film, Music, Theatre, or Visual Arts → **GE-A**
- » Global Politics → **GE-G**

A-Level Exams

USC awards 8 semester units of elective credit for A-level exams, along with H2 exams in Singapore, with a score of B or better. Students may not receive credit for both an AP exam (or IB or other international exam) and a college course taken before high school graduation covering the same subject matter, nor for an AP and IB exam covering the same subject matter.

- » Art & Design, Music → **GE-A**
- » Biology & Marine Science → **GE-D**
- » Chemistry → **CHEM 105A + GE-E**
- » Physics → **GE-E**
- » Economics → **GE-F**
- » Mathematics → **MATH 125 + GE-F**
- » Classical Studies, Divinity and Islamic Studies → **GE-H**
- » History → **GE-G**

MANDATORY ACADEMIC ADVISEMENT

All Viterbi students are required to meet with their academic advisor at least once each semester for mandatory academic advisement. During your mandatory advisement appointment, you and your advisor will discuss your current semester's progress and plan your courses for the following semester. The mandatory advisement appointment should take place before your registration appointment. You will not be able to register for the next semester until you have had your mandatory advisement appointment.

The purpose of academic advisement is not just to help you select the courses you take each semester. Your academic advisor's role is to also assist with planning your academic and career goals and help you achieve them. This can include anything from discussing potential minors, your academic progress, exploring other majors, and connecting you with career services and faculty.

Freshmen are assigned an advisor who primarily focuses on first-year students. Transfer students begin working with their specific department advisor according to major. Starting sophomore year, entering freshmen will meet with their specific department advisor who will remain their advisor until graduation (provided that you don't change majors).

First-Year Advisors

Starting at orientation, the first-year advisors work with you to ensure a smooth transition into USC and Viterbi. You are required to meet with your first-year advisor at least once each semester during your first year to discuss your transition, academic progress, career interests and registration for the next semester. You are more than welcome to meet with your advisor beyond the mandatory advisement session through additional appointments or during walk-in advising hours. The first-year advisors also hold programs throughout the year that cover various topics such as planning for a minor and studying abroad.

Department Advisors

As a transfer or sophomore student, you will begin working with your department advisor that is specific to your major. Department advisors build on the progress you made with your first-year advisor and help to you are reach your academic and career goals. They help select the appropriate courses and plan accordingly if you wish to do a minor, double major, or study abroad.

Walk-In Advisement

The First-Year Advisors have walk-in advising hours throughout the week in RTH 110. During walk-ins, students can see an advisor for quick advisement questions. No appointment is needed for walk-in advisement. You can check the Viterbi website for their hours during a particular semester. The First-Year Advisor walk-in hours are available to all students, not just freshmen. The purpose of walk-in advisement is for answering any quick questions you may have. For issues that might require a longer discussion, you should make an appointment.

TOOLS FOR ADVISEMENT AND REGISTRATION

During your advisement session, you will be utilizing various tools that will help you with the advisement process. First and foremost is this book. This handbook is your primary resource when it comes to class scheduling, learning about how to get involved, exploring different minors, and discovering other opportunities you can take advantage of to supplement your engineering activities.

Advisement Form

The advisement form in this handbook should be filled out to the best of your ability prior to your mandatory advisement appointment. If you plan on pursuing a minor, a double major, or studying abroad, you need to plan ahead. Your advisor will review the form with you during your appointment and make suggestions and changes as necessary.

An electronic version of this form is also available at viterbi.usc.edu/undergrad.

USC Catalogue

The USC Catalogue (usc.edu/catalogue) serves as your resource for academic policies, curriculum requirements for majors and minors, and course descriptions for all classes at USC. Although this handbook tells you all the required courses for Viterbi majors, you should use the Catalogue if you want to read the course descriptions about any of your classes. The Catalogue is also useful when planning for a double major or minor.

Schedule of Classes

The Schedule of Classes (usc.edu/soc) tells you which courses are offered each semester, as well as the time, location, and who's teaching the course. You might be wondering why you would need the Schedule of Classes when all this information is on the Web Registration system. The Schedule of Classes also provides information that Web Registration does not. For example, in the Schedule of Classes, you can also find out who to contact to get D-Clearance for a class, the final exams schedule, and course syllabi (if the professor has uploaded it).

General Education Course Guide

The GE Course Guide (dornsife.usc.edu/2015ge) provides more information about the GE courses offered for a specific semester. You can view the course descriptions, day and time the class is offered, and the professor teaching the course.

OASIS

The On-line Academic Student Information System (OASIS) provides several key pieces of information that you will need during advisement process. On OASIS, you are able to view your Permit to Register, see if you have any restrictions on your account, find your book list, and see which courses you are registered for. OASIS is also where you will be able to access your STARS report. You can access OASIS through my.usc.edu.

STARS Report

The Student Academic Record System (STARS report), available on OASIS, is where you can track your degree progress. This report lets you know, based on your major, which requirements you have completed, are still outstanding, and are currently in progress. You should check your STARS report every semester for accuracy and that you are on track to graduate on time. OASIS also has a STARS Interactive Audit Report which you can use to see which of the courses would still count if you were to change your major or add a minor.

Suggested Course Plans

In the following pages you will find Suggested Course Plans for each Viterbi major and a copy of the Advisement Form. You will be utilizing these throughout the advisement process. The Suggested Course Plans provide a general layout of how your next four years could possibly look depending on your major. However, keep in mind that these are indeed suggested course plans. You will be using the Suggested Course Plan as a guide to create your own course plan that is tailored to your individual needs and interests. Your individual course plan may vary due to other factors (i.e. AP and transfer credit, minors, overseas studies, etc.).

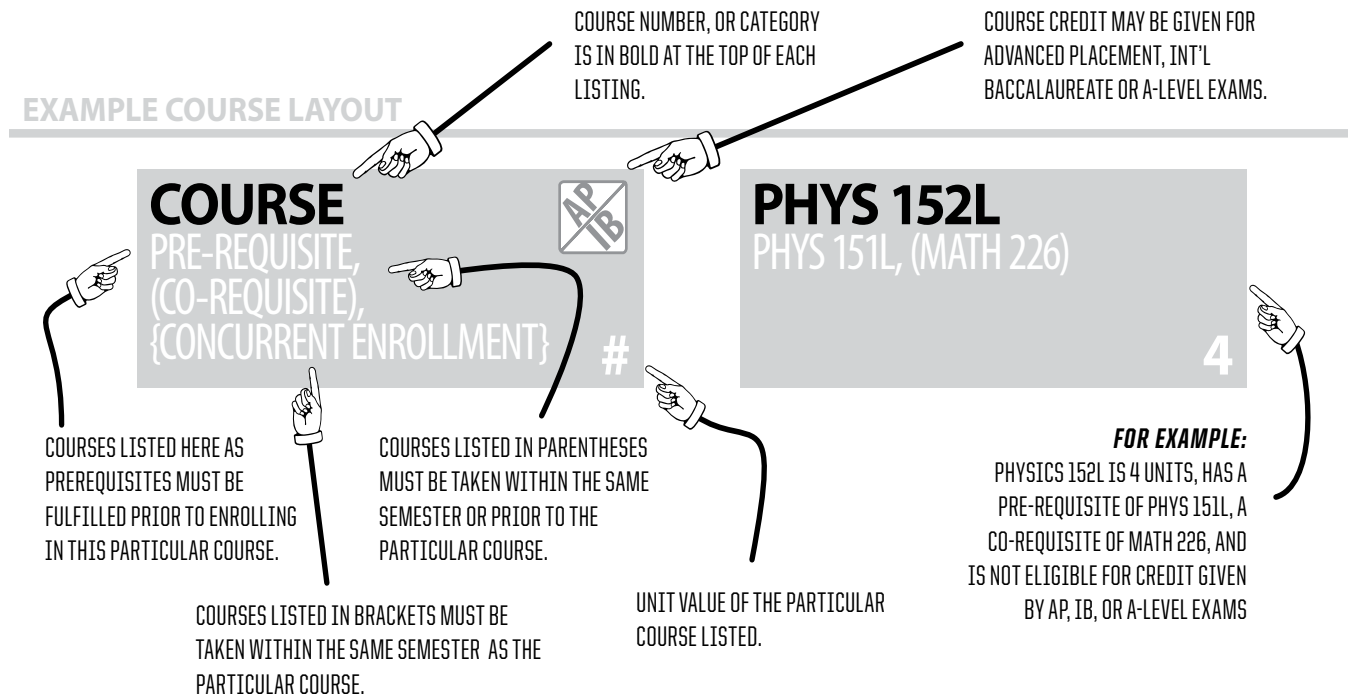
The Suggested Course Plans only reflect the required courses for each major. You are required to complete a minimum of 128 units or more depending on your major. You will work with your academic advisor to determine which semesters are appropriate for you to take elective courses to ensure that you have enough units.

Many of the math, science and engineering courses have one or more pre-requisites or co-requisites to ensure adequate preparation for courses in a sequence. Please refer to the diagram below to learn how to read the course requirements on your Suggested Course Plan.

Each Suggested Course Plan includes terms that you should be familiar with

- » **OPTIONAL ELECTIVE:** Although they don't satisfy major requirements, you can enroll in optional electives. Optional electives count towards your total USC units.
- » **REQUIRED ELECTIVE:** Some majors require you to take elective courses in order to make up the 128 units needed to complete your degree. These required electives can also be satisfied with AP/IB and transfer credit.
- » **TECHNICAL ELECTIVE:** Some majors require elective courses that are more technical. Academic Departments have lists of approved courses that satisfy the technical elective requirement.

Always consult with your Academic Advisor if you have any questions about the Suggested Course Plans.



NAME:

USCID:

MOBILE PHONE:

MAJOR:

FIRST YEAR

FALL

TOTAL UNITS:

SPRING

TOTAL UNITS:

SUMMER PLANS:

CHECKLIST

- Get to know your Academy Coaches & Professors.
- Register with the Viterbi Academic Resource Center (VARC) for free tutoring and study space in RTH 222.
- Join a student organization at Viterbi or USC and/or a project group such as Rocket Lab or USC Competition Robotics.
- Attend Get Connected! and Go Global.
- Visit the Viterbi Student Engagement & Career Connections (SECC) office in RTH 218 and register with Viterbi Career Gateway.
- Draft your resume and have SECC review.
- Read the weekly email #ViterbiConnect.
- Attend the Viterbi Spotlight Series.
- Explore the Center for Engineering Diversity in RTH 210.
- Consider a minor, speak with your advisor.

GOALS:

CO-CURRICULAR/CAREER INTERESTS:

QUESTIONS FOR YOUR ADVISOR:

SECOND YEAR

FALL

TOTAL UNITS:

SPRING

TOTAL UNITS:

SUMMER PLANS:

CHECKLIST

- Talk to your professors about research opportunities.
- Start your Grand Challenges Scholars Portfolio.
- Attend the Undergraduate Research Symposium.
- Consider going global: viterbi.usc.edu/overseas.
- Take an active role in a student organization and/or apply to be an Academy Coach, Resident Advisor, Orientation Advisor, Viterbi Student Ambassador, etc.
- Volunteer! Check out Joint Educational Project, USC Volunteer Center, MESA, etc.
- Join the Viterbi Alumni Mentor Program.
- Go to Company Information Sessions.
- Attend the Viterbi Career Conference and other SECC Workshops.
- Read #ViterbiConnect.
- Attend the Viterbi Spotlight Series.
- Update & have SECC review your resume.
- In the fall, look for a summer internship and study abroad programs.
- Get involved with Design Teams.

GOALS:

CO-CURRICULAR/CAREER INTERESTS:

QUESTIONS FOR YOUR ADVISOR:

NAME:

USCID:

MOBILE PHONE:

MAJOR:

THIRD YEAR

FALL

TOTAL UNITS:

SPRING

TOTAL UNITS:

SUMMER PLANS:

CHECKLIST

- Become an officer in a student organization.
- Participate in SECC workshops.
- Attend the Viterbi Career Conference, VINE and Career Fair.
- Attend Student Innovation Institute Speaker Series (VSi2).
- Attend a professional conference with your student organization.
- Continue to build your network of faculty and staff.
- Participate in the USC Research Symposium.
- Apply to the Progressive Degree Program.
- Read #ViterbiConnect.
- Explore potential Graduate School opportunities.
- Engage in entrepreneurial activities.

CAREER DEVELOPMENT GOALS/PLANNING:

QUESTIONS FOR YOUR ADVISOR:

FOURTH YEAR

FALL

TOTAL UNITS:

SPRING

TOTAL UNITS:

SUMMER PLANS:

CHECKLIST

- Apply for jobs through connectSC and company websites in the fall.
- Apply for graduate schools and fellowships in the Fall.
- Attend the Viterbi Career Conference, VINE and Career Fair.
- Attend Company Information Sessions.
- Attend USC Career Center workshops, career panels, Career Fair.
- Read #ViterbiConnect.
- Submit application for Discovery, Global or Grand Challenges Scholar recognition.
- Plan for Commencement!
- Join the Alumni Association.

POST GRADUATION GOALS/PLANNING:

QUESTIONS FOR YOUR ADVISOR:

MAJORS & AREAS OF EMPHASIS

- » Aerospace Engineering (Tracks: Aeronautics, Structures, Controls, Thermal Systems, Design)
- » Mechanical Engineering (Tracks: Computational, Design, Dynamics/Control, Thermo/Fluids)
- » Mechanical (Petroleum) Engineering

LEARN MORE: viterbi.usc.edu/ame

Aerospace and Mechanical Engineers design complex mechanical, thermal, fluidic, acoustical, optical, and electronic systems, with characteristic sizes ranging from microns to tens of kilometers. Such systems are used everywhere, from the depths of the ocean and far underground, to near-Earth, planetary, interplanetary and galactic space.

Aerospace and Mechanical Engineering (AME) students conduct basic and applied research within and across the usual disciplinary boundaries. AME students develop core and valuable problem-solving skills in the areas of mechanics, thermodynamics, fluid mechanics, heat transfer, materials and design. Our graduates are frequently at the leading edge of industry, tackling innovative, significant and exciting challenges.

AME students have the opportunity to work with the world-renowned faculty on research projects including turbulence control, emerging fuel cell technologies, computational fluid mechanics, combustion, heat transfer, automatic control systems, biomechanics, robotics, and nonlinear dynamics. Recent undergraduate research and student projects include the design of fixed and flapping wing systems for small unmanned aircrafts, the search for low drag solutions for the global cargo shipping industry, sports injury and helmet design for shock reduction, and optimal control of wheelchairs for humans and hovering flight for animals.

AME RESEARCH

We advance and define research frontiers that shape the future of our life in the air, on the ground, and in space. We push forward the understanding of environments both natural (oceans, atmosphere) and engineered (internal combustion, pulsed ignition). Other efforts advance our understanding of control and dynamics of autonomous systems and robotics, advance manufacturing technology, aircraft design and flight mechanics of very small and very fast flying machines, and biodynamical systems in medical devices, natural propulsion, and evolutionary system dynamics.

We have a balance of programs - theoretical, computational, and experimental - which exemplify the Viterbi School's approach to intensive and collaborative research.

RESEARCH HIGHLIGHTS

- » Aero/Fluid Dynamics
- » Aerospace Controls
- » Design & Structures
- » Novel Combustion/Engine Technology
- » Autonomous Systems
- » Bi-Inspired Systems and Design
- » High Performance Computation
- » Nonlinear Dynamic Systems

COMPANIES THAT HIRE AME STUDENTS

Aerospace Corporation, Aerovironment, Aerotek, Boeing, Honeywell, Jet Propulsion Laboratory, Lockheed Martin, NASA Facilities, Scaled Composites, SpaceX, US National Labs (Livermore, Sandia), Northrop Grumman, U.S. government agencies, Virgin Galactic ...

And many more!

CAREER OPTIONS

- » Imagine/design piloted or autonomous crafts for land, air, sea, and space
- » Develop entirely new devices including satellites, robots, micro-scale measurement and monitoring platforms
- » Develop control and planning systems for robots, automated machinery and fleets of service
- » Join the exciting world of modern engineering where the power of smart technology is harnessed and focused to improve the human condition

FIRST YEAR

FALL SEMESTER

GEB 4	AME 105 4	MATH 125 (GE F) 4	CHEM 105aL or MASC 110L 4	ENGR 102 2
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SPRING SEMESTER

WRIT 150 4	GE A 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	ITP 168 2
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SECOND YEAR

FALL SEMESTER

GEC 4	AME 201 MATH 125 3	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

AME 261 4	AME 204 AME 201 or CE 205 3	MATH 245 MATH 226 or MATH 229 4	AME 231L (AME 204) 3	ASTE 280 MATH 226, PHYS 152 3	OPTIONAL ELECTIVE 1
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THIRD YEAR

FALL SEMESTER

GE D 4	AME 301 AME 201 or CE 205 3	AME 310 MATH 226 3	AME 308 AME 204 (AME 301) 3	AME 341aL PHYS 152L, MATH 126 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GEC 4	AME 302 MATH 245 3	AME 309 (MATH 245) 4	PHYS 153L PHYS 152 4	AME 341bL AME 341aL 3
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FOURTH YEAR

FALL SEMESTER

GEB 4	AME 404 3	TECHNICAL ELECTIVE 3	TECHNICAL ELECTIVE 3	AME 441aL AME 341bL 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

WRIT 340 WRIT 150 3	AME 436 AME 310 (AME 309 or CE 309) 3	AME 451 AME 302, MATH 245 3	AME 481 4	OPTIONAL ELECTIVE 3	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (12 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism
- PHYS 153L:** Optics and Modern Physics

CHEMISTRY / MATERIALS SCIENCE (4 UNITS)

- CHEM 105AL:** General Chemistry
- or **MASC 110L:** Materials Science

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (68 UNITS)

- AME 105:** Intro. to Aerospace Engineering
 - AME 201:** Statics
 - AME 204:** Strength of Materials
 - AME 231L:** Mechanical Behavior of Materials
 - AME 261:** Basic Flight Mechanics
 - AME 301:** Dynamics
 - AME 302:** Dynamic Systems
 - AME 308:** Comp.-Aided Analysis for Design
 - AME 309:** Dynamics of Fluids
 - AME 310:** Engineering Thermodynamics I
 - AME 341AL:** Mechoptronics Laboratory I
 - AME 341BL:** Mechoptronics Laboratory II
 - AME 404:** Comp. Solutions to Engr. Problems
 - AME 436:** Energy and Propulsion
 - AME 441AL:** Senior Projects Laboratory
 - AME 451:** Linear Control Systems I
 - AME 481:** Aircraft Design
 - ASTE 280:** Astronautics & Space Environment I
 - ENGR 102:** Engineering Freshman Academy
 - ITP 168:** Introduction to MATLAB
- TECHNICAL ELECTIVES**

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVES: Any upper-division course in engineering, Chemistry, Physics, Mathematics, or Math 225 except CE 404, 412, and ISE 440. No more than 3 units of 490 course work can be used for Technical Electives. See major advisor for exceptions/substitutions.

Optional Course Tracks for the Aerospace Engineering Degree:

The Aerospace Engineering curriculum covers foundational concepts in a number of areas, ranging from dynamics and aerodynamics to computer aided analysis for design to computational solutions to engineering problems. Through your first five to six semesters, students will gain exposure to foundational concepts in Aerospace and Mechanical Engineering.

Your final two to three semesters in the program, you may continue and graduate with the Aerospace Engineering Standard Track listed to the left or choose to specialize.

As you will notice in the curriculum, students following the standard program will have the opportunity to take more technical and AME Core electives, while students following a specialized track will take specific courses.

Aerospace Engineering offers the following tracks:
Aeronautics, Structures, Controls, Thermal Systems and Design.

AERONAUTICS

Fourth Year: FALL SEMESTER

GEB 4	AME 459 3	AME 451 AME 302, MATH 245 3	AME 457 or AME 443 AME 310, (AME 309 or CE 309) or AME 420 or 451 3	AME 441a AME 341bL 3	OPTIONAL ELECTIVE 2
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Fourth Year: SPRING SEMESTER

WRIT 340 WRIT 150 3	AME 436 AME 310, (AME 309 or CE 309) 4	AME 481 4	AME 460 AME 309 3	OPTIONAL ELECTIVE 4
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STRUCTURES

Fourth Year: FALL SEMESTER

GEB 4	AME 451 AME 302, MATH 245 3	AME 353 or CE 358 CE 225 3	AME 441a AME 341bL 4	OPTIONAL ELECTIVE 4
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Fourth Year: SPRING SEMESTER

WRIT 340 WRIT 150 3	AME 436 AME 310, (AME 309 or CE 309) 3	AME 481 4	AME 403 or AME 420 AME 204 or MATH 245 3	AME 408 or CE 458 AME 204 or CE 225 (CE 108, CE 338) or (IIP 108, AME 353) 3
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CONTROLS

Fourth Year: FALL SEMESTER

GEB 4	AME 451 AME 302, MATH 245 3	AME 459 or ASTE 480 3	AME 441a AME 341bL 3	OPTIONAL ELECTIVE 5
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Fourth Year: SPRING SEMESTER

WRIT 340 WRIT 150 3	AME 436 AME 310, (AME 309 or CE 309) 3	AME 481 4	AME 443 AME 420 or AME 451 or EE 482 3	AME 453 or AME 420 MATH 245 or MATH 245 3	OPTIONAL ELECTIVE 3
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THERMAL SYSTEMS

Third Year: SPRING SEMESTER

GEC 4	AME 302 MATH 245 3	AME 309 (MATH 245) 3	AME 331 AME 310, (AME 309 or CE 309) 3	AME 341b AME 341aL 3	OPTIONAL ELECTIVE 2
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Fourth Year: FALL SEMESTER

WRIT 340 WRIT 150 3	AME 451 AME 302, MATH 245 4	AME 430 AME 331 3	AME 441a AME 341bL 3	OPTIONAL ELECTIVE 4
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Fourth Year: SPRING SEMESTER

GEB 4	AME 436 AME 310, (AME 309 or CE 309) 3	AME 481 3	PHYS 153 PHYS 152 4	AME 312 or PHYS 316 AME 310 or (PHYS 151, MATH 226) 4
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DESIGN

Fourth Year: FALL SEMESTER

GEB 4	AME 451 AME 302, MATH 245 3	AME 459 or ASTE 480 3	AME 441a AME 341bL 3	AME 430 AME 331 3
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Fourth Year: SPRING SEMESTER

WRIT 340 WRIT 150 3	AME 436 AME 310, (AME 309 or CE 309) 3	AME 481 3	AME 408 AME 204 or CE 225 3	OPTIONAL ELECTIVE 3
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FIRST YEAR

FALL SEMESTER

GE B 4	AME 101 3	MATH 125 (GE F) 4	CHEM 105aL or MASC 110L 4	ENGR 102 2
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SPRING SEMESTER

WRIT 150 4	GE A 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	ITP 168 2
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SECOND YEAR

FALL SEMESTER

GEC 4	AME 201 MATH 125 3	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GED 4	AME 204 AME 201 or CE 205 3	MATH 245 MATH 226 or MATH 229 4	PHYS 153L PHYS 152L 4	WRIT 340 WRIT 150 3
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THIRD YEAR

FALL SEMESTER

AME 310 MATH 226 3	AME 301 AME 201 or CE 205 3	AME 308 AME 204, (AME 301) 3	MASC 310 3	AME 341aL PHYS 152L, MATH 126 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	AME 302 MATH 245 3	AME 309 (MATH 245) 4	AME 331 AME 310, (AME 309 or CE 209) 3	AME 341bL AME 341aL 3	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

AME CORE 3	AME CORE 3	AME DESIGN ELECTIVE 3	TECHNICAL ELECTIVE 3	AME 441aL AME 341bL 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GEC 4	AME CORE 3	AME CAPSTONE ELECTIVE 3	AME CORE 3	TECHNICAL ELECTIVE 2	OPTIONAL ELECTIVE 3
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (12 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism
- PHYS 153L:** Optics and Modern Physics

CHEMISTRY / MATERIALS SCIENCE (4 UNITS)

- CHEM 105AL:** General Chemistry
- or **MASC 110L:** Materials Science

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (67 UNITS)

- AME 101L:** Intro. to Mech. Engr. & Graphics
- AME 201:** Statics
- AME 204:** Strength of Materials
- AME 301:** Dynamics
- AME 302:** Dynamic Systems
- AME 308:** Comp.-Aided Analysis for Design
- AME 309:** Fluid Dynamics
- AME 310:** Engineering Thermodynamics I
- AME 331:** Heat Transfer
- AME 341AL:** Mechoptronics Laboratory I
- AME 341BL:** Mechoptronics Laboratory II
- AME 441AL:** Senior Projects Laboratory
- AME CORE**
- AME DESIGN ELECTIVE**
- AME CAPSTONE ELECTIVE**
- ENGR 102:** Engineering Freshman Academy
- ITP 168:** Introduction to MATLAB
- MASC 310:** Mechanical Behavior of Materials
- TECHNICAL ELECTIVES**

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

AME CORE: Any upper-division AME course not already required.

AME CAPSTONE ELECTIVE: AME 409, 415, 423, 430, and 443

AME DESIGN ELECTIVE: AME 305, 408, 410, 415, 430 or any special topic design course.

TECHNICAL ELECTIVES: Any upper-division course in engineering, Chemistry, Physics, and Mathematics. See major advisor for exceptions/substitutions.

Optional Course Tracks for the Mechanical Engineering Degree:

The Mechanical Engineering curriculum covers foundational concepts in a number of areas, ranging from dynamics and aerodynamics to computer aided analysis for design to computational solutions to engineering problems. Through your first five to six semesters, students will gain exposure to foundational concepts in Aerospace and Mechanical Engineering.

As you will notice in the curriculum, students following the standard program will have the opportunity to take more technical and AME Core electives, while students following a specialized track will take specific courses relative to the specialization.

Your final two to three semesters in the program, you may continue and graduate with the Mechanical Engineering Standard Track listed to the left or choose to specialize.

Mechanical Engineering offers the following tracks: Thermo/Fluids, Dynamics/Controls, Design, and Computational.

COMPUTATIONAL

Fourth Year: FALL SEMESTER

ITP 165 2	AME 404 3	AME 415 3	EE 241 MATH 126 3	AME 441a AME341b 3	OPTIONAL ELECTIVE 4
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Fourth Year: SPRING SEMESTER

GE D 4	MATH 445 MATH 245 or 225 4	CSCI 455 4	AME 408 AME204 4	OPTIONAL ELECTIVE 2
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DESIGN

Fourth Year: FALL SEMESTER

AME 305 AME 204 or CE 225 3	TECH ELECTIVE 4	AME 410 3	AME 441a AME341bL 4	OPTIONAL ELECTIVE 4
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Fourth Year: SPRING SEMESTER

GE D 4	AME 403 AME 204 3	AME 409 4	AME 408 AME204 or CE225 3	AME 420 MATH 245 3
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DYNAMICS & CONTROLS

Fourth Year: FALL SEMESTER

GE D 4	AME 451 AME 302, MATH 245 3	TECH ELECTIVE 2	AME 303 AME 301, CE 235 3	AME 441a AME 341bL 3	OPTIONAL ELECTIVE 3
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Fourth Year: SPRING SEMESTER

AME 423 (EE 301 or AME 302) and PHYS 152 3	AME 420 MATH 245 3	AME 443 AME 420 or AME 451 or EE 482 3	AME 453 MATH 245 3	TECH ELECTIVE 3	OPTIONAL ELECTIVE 3
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THERMO & FLUIDS

Fourth Year: FALL SEMESTER

TECH ELECTIVE 3	AME 415 3	AME 430 AME 331 3	AME 457 AME 310 and (AME 309 or CE 309) 3	AME 441aL AME 341bL 3	OPTIONAL ELECTIVE 3
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Fourth Year: SPRING SEMESTER

GE D 4	AME 312 AME 310 3	AME 436 AME 310 and (AME 309 or CE 309) 3	TECH ELECTIVE 3	TECH ELECTIVE 2	OPTIONAL ELECTIVE 3
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FIRST YEAR

FALL SEMESTER

GE B 4	AME 101 3	MATH 125 (GE F) 4	CHEM 105aL or MASC 110L 4	ENGR 102 2
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SPRING SEMESTER

WRIT 150 4	GE A 4	MATH 126 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	ITP 168 2
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SECOND YEAR

FALL SEMESTER

GEC 4	AME 201 MATH 125 3	MATH 226 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	AME 204 AME 201 or CE 205 3	MATH 245 MATH 226 or MATH 229 4	PHYS 153L PHYS 152L 4	WRIT 340 WRIT 150 3
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THIRD YEAR

FALL SEMESTER

AME 310 MATH 226 3	AME 301 AME 201 or CE 205 3	PTE 463 CHEM 105aL, MATH 245, PHYS 151L 3	MASC 310 3	AME 341aL PHYS 152L, MATH 126 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

AME 302 MATH 245 3	AME 308 AME 204, (AME 301) 3	AME 309 (MATH 245) 4	PTE 464 PTE 463 3	AME 341bL AME 341aL 3	OPTIONAL ELECTIVE 2
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FOURTH YEAR

FALL SEMESTER

GEC 4	PTE 461 PTE 464 3	PTE 465 PTE 464 3	AME 408 AME 204 or CE 225 3	AME 441aL AME 341bL 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE D 4	AME 331 AME 310, (AME 309 or CE 309) 3	AME 409 4	TECHNICAL ELECTIVE 4	OPTIONAL ELECTIVE 3	
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MATHEMATICS (16 UNITS)

MATH 125: Calculus I
MATH 126 or **129:** Calculus II
MATH 226 or **229:** Calculus III
MATH 245: Mathematics of Phys. and Engr.

PHYSICS (12 UNITS)

PHYS 151L: Mechanics and Thermodynamics
PHYS 152L: Electricity and Magnetism
PHYS 153L: Optics and Modern Physics

CHEMISTRY / MATERIALS SCIENCE (4 UNITS)

CHEM 105AL: General Chemistry
or **MASC 110L:** Materials Science

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantitative Reasoning (1 Course)
GE G,H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*

WRITING (7 UNITS)

WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ENGINEERING (66 UNITS)

AME 101L: Intro. to Mech. Engr. & Graphics
AME 201: Statics
AME 204: Strength of Materials
AME 301: Dynamics
AME 302: Dynamic Systems
AME 308: Comp.-Aided Analysis for Design
AME 309: Fluid Dynamics
AME 310: Engineering Thermodynamics I
AME 331: Heat Transfer
AME 341AL: Mechoptronics Laboratory I
AME 341BL: Mechoptronics Laboratory II
AME 408: Comp.-Aided Design of Mech Systems
AME 409: Senior Design Project
AME 441AL: Senior Projects Laboratory
ENGR 102: Engineering Freshman Academy
ITP 168: Introduction to MATLAB
PTE 461: Formation Evaluation
PTE 463L: Intro. to Transport Processing in Porous Media
PTE 464L: Petroleum Reservoir Engineering
PTE 465L: Drilling Technology
MASC 310: Mechanical Behavior of Materials
TECHNICAL ELECTIVE

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVES: Any upper-division course in engineering, Chemistry, Physics, and Mathematics. See major advisor for exceptions/substitutions.



MAJORS & AREAS OF EMPHASIS

» Astronautical Engineering

LEARN MORE: viterbi.usc.edu/aste



Astronautical engineers design, build, and operate space vehicles for exploration and applications beyond the Earth’s atmosphere. This program prepares students for engineering careers in the space sector of the aerospace industry, space research, development, and operations in industry and government centers and laboratories, as well as for graduate study.

The Astronautical Engineering (ASTE) program provides the fundamentals of science and engineering, specialized courses in astronautical engineering, and technical electives to broaden as well as deepen the coursework. ASTE students learn spacecraft and launch vehicle design and operations, propulsion, orbital mechanics, spacecraft dynamics and control, navigation, instrumentation and sensors, and much more.

ASTE RESEARCH

The Department of Astronautical Engineering (ASTE) is at the center of exciting and innovative research in spacecraft and space exploration, from basic science to new ways of designing and integrating spacecraft. ASTE operates world-class research facilities such as the Collaborative High Altitude Flow Facility (CHAFF) space simulation chamber, a six-meter cryogenically cooled chamber capable of testing propulsion systems in high vacuum.

Astronautical engineering students can engage in research under faculty guidance as early as the freshman year. In addition, ASTE has several ongoing hands-on student projects. The Microsatellite Project designs and builds CubeSats, small spacecraft approximately the size of a loaf of bread. Its second spacecraft, which has the first dish antenna ever used on a cubesat, has been successfully operating for more than an year. The Rocket Propulsion Laboratory designs and builds solid-fueled rockets. Its goal is to be the first student group ever to send a rocket to 100 km altitude (see photo at left). The Lunar Lander group builds subscale models of landing craft. These use jet engines for primary thrust and auxiliary thrusters for attitude and sideways motion. The goal is to demonstrate fully autonomous liftoff, travel and landing.

RESEARCH HIGHLIGHTS

- » Spacecraft architecture and design
- » Space science, space instrumentation and sensors
- » Advanced spacecraft propulsion
- » Processes in the heliosphere and planetary magnetospheres
- » Atomic and molecular interactions
- » Plasma interactions in spacecraft environment
- » Multi-spacecraft formation flying
- » Self-diagnosing and self-repairing spacecraft

COMPANIES THAT HIRE ASTE STUDENTS

Aerospace Corporation, The Boeing Company, Defense Advanced Research Projects Agency (DARPA), Lockheed Martin, Northrop Grumman, various government agencies, Jet Propulsion Laboratory (JPL), NASA Research Centers (Glenn, Marshall, Johnson), Raytheon, SpaceX, Virgin Galactic...

And many more!

CAREER OPTIONS

- » Design rocket vehicles
- » Design, build, and test satellites
- » Operate unmanned spacecrafts and probes
- » Build space instrumentation and sensors
- » Conduct government research
- » Lead space operations
- » Become a researcher at a university or government research center

FIRST YEAR

FALL SEMESTER

WRIT 150 4	ASTE 101L 4	MATH 125 (GE F) 4	CHEM 105aL or MASC 110L 4	ENGR 102 2
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SPRING SEMESTER

GE B 4	GE A 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	ITP 168 2
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SECOND YEAR

FALL SEMESTER

GE C 4	AME 201 MATH 125 3	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE D 4	AME 204 AME 201 or CE 205 3	MATH 245 MATH 226 or MATH 229 4	PHYS 153L PHYS 152L 4	ASTE 280 MATH 226, PHYS 152L 3
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THIRD YEAR

FALL SEMESTER

GE C 4	AME 301 AME 201 or CE 205 3	ASTE 301a MATH 245, PHYS 153L 3	ASTE 330 PHYS 153L, ASTE 280 3	AME 341aL PHYS 152L, MATH 126 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

AME 302 MATH 245 3	WRIT 340 WRIT 150 3	ASTE 301b ASTE 301a 3	AME 308 AME 204, (AME 301) 3	AME 341bL AME 341aL 3	OPTIONAL ELECTIVE 3
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FOURTH YEAR

FALL SEMESTER

AME 441a 3	AME 451 AME 302, MATH 245 3	ASTE 470 3	AME 404 3	TECHNICAL ELECTIVE 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	ASTE 421 ASTE 330 3	ASTE 480 3	TECHNICAL ELECTIVE 3	TECHNICAL ELECTIVE 3	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

MATH 125: Calculus I
MATH 126 or MATH 129: Calculus II
MATH 226 or MATH 229: Calculus III
MATH 245: Mathematics of Phys. and Engr.

PHYSICS (12 UNITS)

PHYS 151L: Mechanics and Thermodynamics
PHYS 152L: Electricity and Magnetism
PHYS 153L: Optics and Modern Physics

CHEMISTRY / MATERIALS SCIENCE (4 UNITS)

CHEM 105AL: General Chemistry
or **MASC 110L:** Materials Science

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantitative Reasoning (1 Course)
GE G,H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*

WRITING (7 UNITS)

WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ENGINEERING (68 UNITS)

AME 201: Statics
AME 204: Strength of Materials
AME 301: Dynamics
AME 302: Dynamic Systems
AME 308: Comp.-Aided Analysis for Design
AME 341AL: Mechoptronics Laboratory I
AME 341BL: Mechoptronics Laboratory II
AME 404: Comp. Solutions to Engr. Problems
AME 441AL: Senior Projects Laboratory
AME 451: Linear Control Systems I
ASTE 101L: Intro. to Astronautics
ASTE 280: Astronautics & Space Environment I
ASTE 301A: Thermal and Statistical Systems I
ASTE 301B: Thermal and Statistical Systems II
ASTE 330: Astronautics & Space Environment II
ASTE 421: Space Mission Design
ASTE 470: Spacecraft Propulsion
ASTE 480: Spacecraft Dynamics
ENGR 102: Engineering Freshman Academy
ITP 168: Introduction to MATLAB
TECHNICAL ELECTIVES

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVES: Any upper-division course in engineering, Chemistry, Physics, Mathematics, or Math 225 except CE 404, 412, and ISE 440. No more than 3 units of ASTE 490 or ASTE 491 course work can be used for Technical Electives.



ROCKET ROAD



MAJORS & AREAS OF EMPHASIS

- » Biomedical Engineering
- » Biomedical (Biochemical) Engineering
- » Biomedical (Electrical) Engineering
- » Biomedical (Mechanical) Engineering

LEARN MORE: bme.usc.edu

The interdisciplinary field of Biomedical Engineering (BME) combines elements of engineering (electronics, systems analysis, mechanics) with the life sciences (biology, physiology, biochemistry) to define and solve problems in biology and medicine.

Students choose this branch of engineering for the excitement of working with people and living systems, and for the opportunity to apply advanced technology to the complex problems of medical care.

Students can participate in a variety of directed study courses or classroom projects at facilities such as the County-USC Medical Center, House Ear Institute, the Biomedical Simulations Resource Center, the Medical Ultrasonic Transducer Resource Center, Rancho Los Amigos National Rehabilitation Center and Children's Hospital-Los Angeles (CHLA).

EMPHASES & OPTIONS

While many students choose a primary degree in Biomedical Engineering with no added specialization, we do offer the opportunity to deepen your education in three separate programs: Biochemical (BMEC), Electrical (BMEN), and Mechanical (BMEL).

Biomedical (Biochemical) Engineering (BMEC) combines biomedical engineering with chemistry. As a BMEC student, you will take additional coursework in areas like Separation Processes (design, operation and optimization for processes like distillation and absorption), Chemical Engineering Thermodynamics and Biomaterials.

Biomedical (Electrical) Engineering (BMEN) is for students interested in the building of electronic biomedical devices and the effects of electrical stimulation. As a BMEN student, you'll take additional coursework in areas like Linear Circuits, Digital Logic, Electromagnetics and Digital Electronic Circuit Design.

Biomedical (Mechanical) Engineering (BMEL) is for students interested in the mechanics and dynamics of medical devices and biological systems. As a BMEL student, you will take additional coursework in areas like Mechanics, Thermodynamics, Biomechanics, Materials Behavior and Processing, and Fluid Mechanics.

The BME programs are easily adapted to include the prerequisites for most medical schools, while also providing applied technical training beyond the basic life sciences. USC Pre-Med students are supported throughout the medical school application process by the Pre-Health Advisement office. Graduates go on to attend top medical, dental and pharmacy schools around the country, including the USC Keck School of Medicine.

RESEARCH HIGHLIGHTS

- » Retinal prostheses
- » Medical imaging
- » Neural prostheses
- » Biomedical photonics
- » Cortical prostheses
- » Sensory neurophysiology
- » Sensorimotor control
- » Cardio-respiratory control and dynamics
- » Ultrasonic imaging
- » Computational neurobiology
- » Mechanisms of memory and learning
- » System modeling and simulation

COMPANIES THAT HIRE BME STUDENTS

Abbott Laboratories, Advanced Bionics, Alfred E. Mann Institute, Amgen, Edwards Lifesciences, House Ear Institute, Lifescan, Medtronic, Neutrogena, Nike ...

And many more!

CAREER OPTIONS

- » Become physicians or pharmacists
- » Build advanced therapeutic & surgical devices
- » Create safe implantable artificial materials
- » Conduct biomedical research
- » Develop artificial organs
- » Design natural prosthetics
- » Improve medical imaging devices

FIRST YEAR

FALL SEMESTER

BME 101 or GE B 3-4	WRIT 150 4	MATH 125 (GE F) 4	CHEM 105aL (GE E) 4	ENGR 102 2
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SPRING SEMESTER

BME 101 or GE B 3-4	GE A 4	MATH 126 or MATH 129 MATH 125 4	CHEM 105bL CHEM 105aL 4	OPTIONAL ELECTIVE 2-3
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SECOND YEAR

FALL SEMESTER

GE B 4	GE C 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

BISC 220L (GED) 4	BME 210 EE 150L, (MATH 245) 4	MATH 245 MATH 226 or MATH 229 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

WRIT 340 WRIT 150 3	EE 202L PHYS 152L, (MATH 245) 4	BME 423 BME 210 3	CHEM 322aL CHEM 105bL 4	BME ANCHOR COURSE 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

TECHNICAL ELECTIVE 3	BME 302L EE 202L 4	GE C 4	CHEM 322bL CHEM 322aL 4	OPTIONAL ELECTIVE 3
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FOURTH YEAR

FALL SEMESTER

TECHNICAL ELECTIVE 4	BISC 320L CHEM 105bL 4	BME 403 BISC 220L, MATH 245, (EE 202L) 3	BME 425 PHYS 152L 3	EE 301L EE 202L 4
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SPRING SEMESTER

TECHNICAL ELECTIVE 3	BME 402 BISC 220L, BME 210, MATH 245 4	BME 405L BME 210, EE 202L 4	BME 410 CHEM 322aL 3	OPTIONAL ELECTIVE 4
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

CHEMISTRY (16 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- CHEM 322AL:** Organic Chemistry
- CHEM 322BL:** Organic Chemistry

BIOLOGY (8 UNITS)

- BISC 220L:** Cell Biology & Physiology
- BISC 320L:** Molecular Biology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (55 UNITS)

- BME 101:** Intro. to Biomedical Engineering
- BME 210:** Biomed. Comp. Simulation Methods
- BME 302L:** Medical Electronics
- BME 402:** Control & Comm. in Nerv. System
- BME 403:** Physiological Systems
- BME 405L:** Senior Projects: Meas. and Inst.
- BME 410:** Intro. to Biomaterials & Tissue Engr.
- BME 423:** Statistical Methods in BME
- BME 425:** Intro. to Biomedical Imaging
- EE 202L:** Linear Circuits
- EE 301L:** Linear Systems
- ENGR 102:** Engineering Freshman Academy
- BME ANCHOR COURSE:** BME 404 or BME 430 or BME 451 or BME 452
- TECHNICAL ELECTIVES**

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVES: All 10 units should be taken from ONE of the following four areas of specialization: Bioelectronics/Computers : (BME 201, BME 416, BME 430, BME 451, BME 452, BME 453, CSCI 445, EE 109L, EE 209, EE 338, EE 348L, EE 352L, EE 354L, EE 454L, EE 483, ENGR 345 or ITP 308) or Biomechanics: (AME 201, AME 204, AME 301, AME 302, AME 308 or ITP 308, AME 309, BME 201, BME 404, BME 412, BME 414, BME 416, BME 453 or MASC 310) Biochemical Engineering: (BME 201, BME 412, BME 414, BME 430, BME 453, CHE 330, CHE 350, CHE 460L, CHE 489, ENGR 305, ITP 308, or MASC 310)

FIRST YEAR

FALL SEMESTER

BME 101 or GE B 3-4	WRIT 150 4	MATH 125 (GE F) 4	CHEM 105aL (GE E) 4	ENGR 102 2
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SPRING SEMESTER

BME 101 or GE B 3-4	GE A 4	MATH 126 or MATH 129 MATH 125 4	CHEM 105bL CHEM 105aL 4	OPTIONAL ELECTIVE 2-3
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SECOND YEAR

FALL SEMESTER

GEC 4	GE B 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

BISC 220L (GED) 4	BME 210 EE 150L, (MATH 245) 4	MATH 245 MATH 226 or MATH 229 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

BISC 320L CHEM 105bL 4	CHEM 322aL CHEM 105bL 4	CHE 330 (MATH 226) 3	BME 423 BME 210 3	EE 202L PHYS 152L, (MATH 245) 4
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SPRING SEMESTER

GEC 4	BME 410 CHEM 322aL 3	CHEM 322bL CHEM 322aL 4	BISC 330L CHEM 322aL, BISC 320L 4	CHE 350 CHEM 105bL 3
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FOURTH YEAR

FALL SEMESTER

BME 430 MATH 245, BME 210 or CHE 205 3	MASC 310 3	BME 403 BISC 220L, MATH 245, (EE 202L) 3	BME 405L BME 210, EE 202L 4	WRIT 340 WRIT 150 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

TECHNICAL ELECTIVE 3	CHE 460L (MATH 245) 3	CHE 489 CHE 330, BISC 320L 3	BME 402 BISC 220L, BME 210, MATH 245 4	BME 416 3	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

CHEMISTRY (16 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- CHEM 322AL:** Organic Chemistry
- CHEM 322BL:** Organic Chemistry

BIOLOGY (12 UNITS)

- BISC 220L:** Cell Biology & Physiology
- BISC 320L:** Molecular Biology
- BISC 330L:** Biochemistry

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)

- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*


WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (52 UNITS)

- BME 101:** Intro. to Biomedical Engineering
- BME 210:** Biomed. Comp. Simulation Meth.
- BME 402:** Control & Comm. in Nervous Sys.
- BME 403:** Physiological Systems
- BME 405L:** Senior Projects Measurements & Instrumentation
- BME 410:** Intro. to Biomaterials & Tissue Engr.
- BME 416:** Dev. & Reg. of Medical Products
- BME 423:** Statistical Methods in BME
- BME 430:** Principles & Applications of Systems Biology
- CHE 330:** Chemical Engr. Thermodynamics
- CHE 350:** Intro. to Separation Processes
- CHE 460L:** Chemical Process Dynamics & Control
- CHE 489:** Biochemical Engineering
- EE 202L:** Linear Circuits
- ENGR 102:** Engineering Freshman Academy
- MASC 310L:** Materials Behavior & Processing
- TECHNICAL ELECTIVE**

*SPECIAL NOTES

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVE: Any 3 units of upper division engineering coursework.

FIRST YEAR

FALL SEMESTER

BME 101 or GE B 3-4	WRIT 150 4	MATH 125 (GE F) 4	CHEM 105aL (GE E) 4	ENGR 102 2
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SPRING SEMESTER

BME 101 or GE B 3-4	GE A 4	MATH 126 or MATH 129 MATH 125 4	CHEM 105bL CHEM 105aL 4	OPTIONAL ELECTIVE 2-3
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SECOND YEAR

FALL SEMESTER

EE 109L 3	GE C 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

EE 209 EE 109L 4	BME 210 EE 150L, (MATH 245) 4	MATH 245 MATH 226 or MATH 229 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

EE 202L PHYS 152L, (MATH 245) 4	MATH 445 (MATH 245) 4	BME 423 BME 210 3	PHYS 153L PHYS 152 4	BME 425 PHYS 152L 3
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SPRING SEMESTER

FIRST TRACK COURSE: EE 338 OR 354L 3-4	BISC 220L (GE D) 4	BME 416 3	EE 301 EE 202 4	WRIT 340 WRIT 150 3
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FOURTH YEAR

FALL SEMESTER

BISC 320L CHEM 105bL 4	TECHNICAL ELECTIVE 3	CHEM 322aL CHEM 105bL 4	GE C 4	BME 403 BISC 220L, BME 210, MATH 245 3
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SPRING SEMESTER

GE B 4	SECOND TRACK COURSE: EE 348L OR EE 454L 4	BME 405L BME 210, EE 202L 4	BME 402 BISC 220L, BME 410, MATH 245 4	TECHNICAL ELECTIVE (IF ANALOG) 1	OPTIONAL ELECTIVE 1-2
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MATHEMATICS (20 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **129:** Calculus II
- MATH 226** or **229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr. I
- MATH 245:** Mathematics of Phys. and Engr. II

PHYSICS (12 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism
- PHYS 153L:** Optics and Modern Physics

CHEMISTRY (12 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- CHEM 322AL:** Organic Chemistry

BIOLOGY (8 UNITS)

- BISC 220L:** Cell Biology & Physiology
- BISC 320L:** Molecular Biology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)

- GE G, H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (56 UNITS)

- BME 101:** Intro. to Biomedical Engineering
- BME 210:** Biomed. Comp. Simulation Methods
- BME 402:** Control & Comm. in Nerv. System
- BME 403:** Physiological Systems
- BME 405L:** Senior Projects Measurements & Instrumentation
- BME 416:** Development and Regulation of Medical Products
- BME 423:** Statistical Methods in BME
- BME 425:** Basics of Biomedical Imaging
- EE 109L:** Introduction to Embedded Systems
- EE 209:** Foundations of Digital System Design
- EE 202L:** Linear Circuits
- EE 301L:** Linear Systems
- DIGITAL TRACK: EE 354L:** Introduction to Digital Circuits
& **EE 454:** Introductions to System on Chip
- ANALOG TRACK: EE 338L:** Physical Electronics
& **EE 348:** Electronic Circuits
- ENGR 102:** Engineering Freshman Academy
- TECHNICAL ELECTIVE**

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVES: 4 units of engineering course work with department approval. At least 3 units must be upper-division.

FIRST YEAR

FALL SEMESTER

BME 101 or GE B 3-4	WRIT 150 4	MATH 125 (GE F) 4	CHEM 105aL (GE E) 4	ENGR 102 2
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SPRING SEMESTER

BME 101 or GE B 3-4	GE A 4	MATH 126 or MATH 129 MATH 125 4	CHEM 105bL CHEM 105aL 4	OPTIONAL ELECTIVE 2-3
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SECOND YEAR

FALL SEMESTER

GE C 4	AME 201 MATH 125 3	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

BISC 220L (GED) 4	BME 210 EE 150L, (MATH 245) 4	MATH 245 MATH 226 or MATH 229 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

EE 202L PHYS 152L, (MATH 245) 4	MASC 310 3	BME 423 BME 210 3	AME 301 AME 201 or CE 205 3	AME 204 AME 201 or CE 205 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE B 4	CHEM 322aL CHEM 105bL 4	AME 309 (MATH 245) 4	AME 308 or ITP 308 AME 204, (AME 301) 3	TECHNICAL ELECTIVE 3
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FOURTH YEAR

FALL SEMESTER

BISC 320L CHEM 105bL 4	AME 302 MATH 245 3	BME 403 BISC 220L, MATH 245, (EE 202L) 3	BME 404 PHYS 151L, MATH 245, AME 201 3	BME 405L BME 210, EE 202L 4	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

WRIT 340 WRIT 150 3	GE C 4	BME 402 BISC 220L, BME 210, MATH 245 4	BME 416 3	TECHNICAL ELECTIVE 4
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr. I

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

CHEMISTRY (12 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- CHEM 322AL:** Organic Chemistry

BIOLOGY (8 UNITS)

- BISC 220L:** Cell Biology & Physiology
- BISC 320L:** Molecular Biology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*


WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (60 UNITS)

- AME 201:** Statics
- AME 204:** Strength of Materials
- AME 301:** Dynamics
- AME 302:** Dynamic Systems
- AME 308:** Comp.-Aid. Analysis for Design or **ITP 308:** Comp.-Aid. Design for Bio-Mechanical Systems
- AME 309:** Dynamics of Fluids
- BME 101:** Intro. to Biomedical Engineering
- BME 210:** Biomed. Comp. Simulation Methods
- BME 402:** Control & Comm. in Nerv. System
- BME 403:** Physiological Systems
- BME 404:** Biomechanics
- BME 405L:** Senior Projects: Meas. and Instrument
- BME 416:** Development and Regulation of Medical Products
- BME 423:** Statistical Methods in BME
- EE 202L:** Linear Circuits
- ENGR 102:** Engineering Freshman Academy
- MASC 310:** Materials Behavior and Processing
- TECHNICAL ELECTIVES**

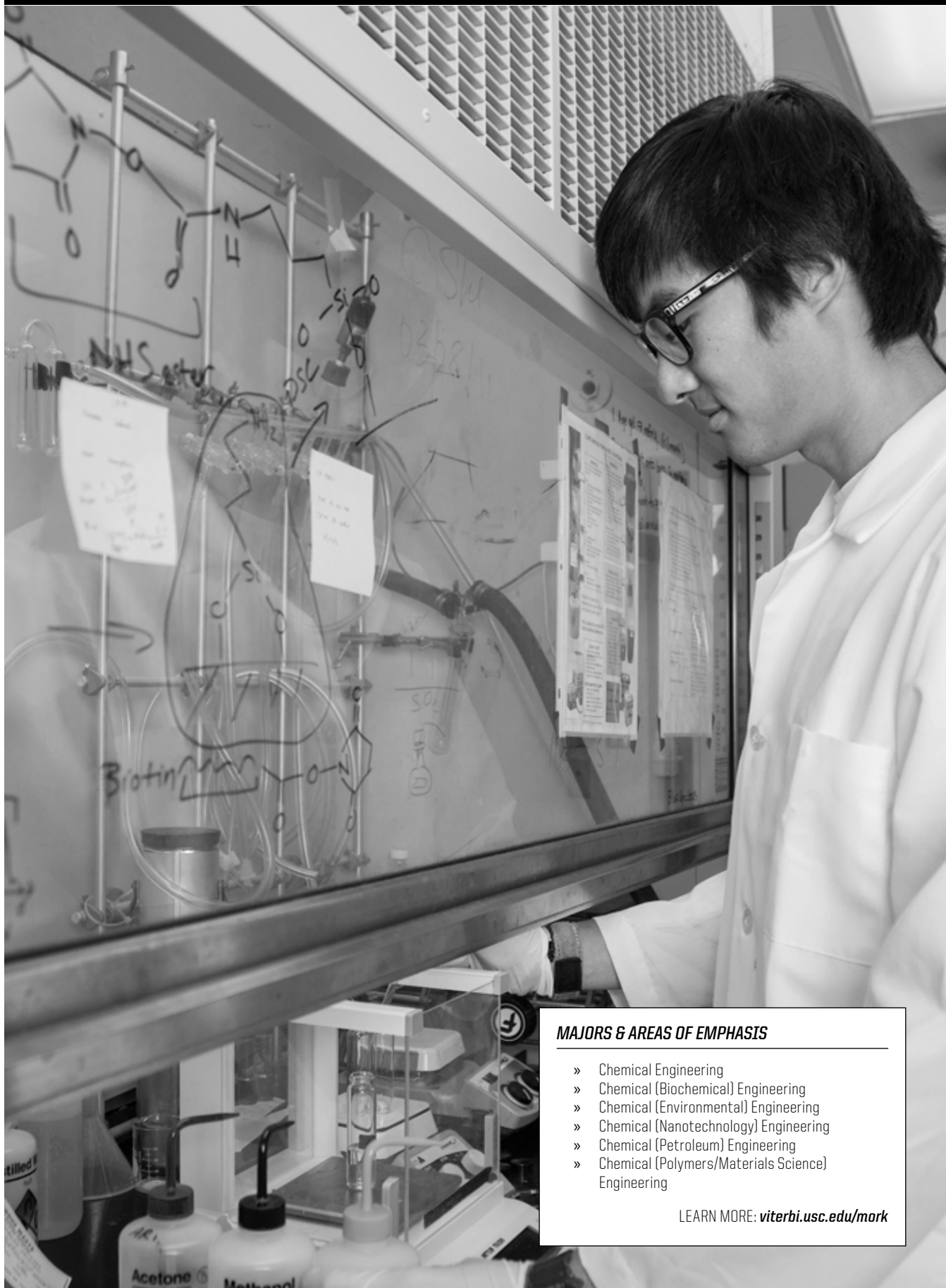
*** SPECIAL NOTES**

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVES: One course from BME 410, BME 425, BME 430, BME 451, or BME 452 and four additional units of engineering coursework, at least three of which are upper-division.



MAJORS & AREAS OF EMPHASIS

- » Chemical Engineering
- » Chemical (Biochemical) Engineering
- » Chemical (Environmental) Engineering
- » Chemical (Nanotechnology) Engineering
- » Chemical (Petroleum) Engineering
- » Chemical (Polymers/Materials Science) Engineering

LEARN MORE: viterbi.usc.edu/mork

Chemical engineers design, control and optimize large-scale chemical, physiochemical and biochemical processes. They are also involved in the development and design of new materials ranging from advanced composites used in automotive and space-related industries to materials used in the biomedical and electronics fields.

Chemical Engineers are employed in areas as diverse as the chemical, pharmaceutical, energy, material and environmental industries. Emerging fields in chemical engineering include biotechnology, the design of environmentally benign processes and the synthesis of new materials (including bio- and nanomaterials). Chemical engineers are uniquely qualified to provide solutions to many pressing problems in the areas of energy, environment and materials science.

While many students choose a primary degree in chemical engineering with no added specialization, we also offer the opportunity to deepen your education in five separate emphasis programs: Biochemical (CHEB), Petroleum (CHPE), Nanotechnology (CHEN), Polymers/Materials (CHPM), and Environmental (CHEE).

CHE RESEARCH

Researchers in the Mork Family Department of Chemical Engineering & Materials Science are at the forefront of investigations that will aid in emerging technologies. Research areas include technologies that impact oil and gas performance and maximize the world's fossil fuel supply, the latest polymers and composites, and ways to remediate contaminated soils. In addition, researchers are creating new technologies for a more efficient, environmentally sensitive future.

The Mork Family Department is well-equipped for experimental research with modern instrumentation located in core laboratories across campus, including NMR spectrometers, electron microscopes, surface analysis instrumentation, and nanofabrication tools located in clean room space.

Undergraduate students undertake senior design projects in plant design and also have many opportunities to work in the laboratories of our faculty in the areas of Chemical Engineering, Materials Science, and Petroleum Engineering. Our students also attend national conferences (e.g. AIChE, MRS, and SPE), participate in summer internships, and compete in national and international design projects such as the World Solar Challenge.

RESEARCH HIGHLIGHTS

- » Nanobioparticle engineering
- » Membrane separation, membrane reactors
- » Material characterization, corrosion
- » Polymers, ceramics and composites
- » Statistical mechanics, molecular modeling and simulation
- » Synthetic and systems biology
- » Advanced computing and simulations
- » Nano-, bio- and photonic materials
- » Peptide and protein engineering
- » Immunoengineering for cancer therapy
- » Modeling of oil and gas reservoir performance
- » Fluid flow through porous media
- » Studies of fluid, foam, and polymer flow
- » Enhanced oil recovery
- » Subsurface imaging
- » Microfluidics for nanomaterial synthesis and bioanalysis

COMPANIES THAT HIRE CHE STUDENTS

Amgen, Baxter, CH2MHill, Chevron, ConocoPhillips, Dow Chemical, DuPont, Environ, ExxonMobil, Halliburton, Hewlett-Packard, Intel, Proctor & Gamble...

And many more!

CAREER OPTIONS

- » Design and optimize cost-effective ways to produce energy, drugs, plastics and chemicals
- » Develop new biological and therapeutic agents
- » Establish new methods for chemical processing
- » Find solutions for environmental problems
- » Streamline petroleum exploration and refining
- » Create new consumer products and manufacturing systems
- » Regulate environmental health and safety standards
- » Production, design, development and research in all fields that involve chemical changes

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 (MATH 125) 3	MATH 126 or MATH 129 (MATH 125)  4	CHEM 105bL (CHEM 105aL) 4	PHYS 151L (GE E) (MATH 125 or 126 or 226) 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L (CHEM 105bL) 4	MATH 226 or MATH 229 (MATH 126 or MATH 129) 4	PHYS 152L (PHYS 151L, (MATH 226)) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL (CHEM 105bL) 4	MATH 245 (MATH 226 or MATH 229) 4	APPROVED ELECTIVE 2-3	CHE 350 (CHEM 105bL) 3
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THIRD YEAR

FALL SEMESTER

GEC 4	TECHNICAL ELECTIVE 3	CHEM 430a (CHEM 300L or 322aL, MATH 226, PHYS 151L) 4	CHE 405 (MATH 245) 3	CHE 442 (MATH 245) 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE B 4	CHE 444aL (CHE 330, 350, 442, (443)) 3	APPROVED ELECTIVE 2-3	CHE 443 (CHE 350, MATH 245) 3	CHE 476 (CHEM 322aL) 3	OPTIONAL ELECTIVE 1-2
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL (CHE 350, CHE 443) 3	CHE 445 (CHE 443, MATH 245) 2	CHE 485 (CHE 442, 443) 3	APPROVED ELECTIVE 2-3	WRIT 340 (WRIT 150) 3
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SPRING SEMESTER

GEC 4	CHE 446 (CHE 443, 445, MATH 245) 2	CHE 460L (CHE 120, (MATH 245)) 3	CHE 480 3	CHEMISTRY ELECTIVE 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

CHEMISTRY (24 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- CHEM 300L:** Analytical Chemistry
- CHEM 322AL:** Organic Chemistry
- CHEM 430A:** Physical Chemistry I
- CHEMISTRY ELECTIVE:** CHEM 322bL or 430b

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*


WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (54-57 UNITS)

- CHE 120:** Intro. to Chemical Engineering
- CHE 205:** Numerical Methods in Chemical Engineering
- CHE 330:** Chemical Engr. Thermodynamics
- CHE 350:** Intro. to Separation Processes
- CHE 405:** Probability and Statistics for CHE
- CHE 442:** Chemical Reactor Analysis
- CHE 443:** Viscous Flow
- CHE 444AL:** Chemical Engineering Lab
- CHE 444BL:** Chemical Engineering Lab
- CHE 445:** Heat Transfer in ChE Processes
- CHE 446:** Mass Transfer in ChE Processes
- CHE 460L:** Chem. Proc. Dynamics & Control
- CHE 476:** Chemical Engineering Materials
- CHE 480:** Chem. Process and Plant Design
- CHE 485:** Computer Aided Process Design
- ENGR 102:** Engineering Freshman Academy
- TECHNICAL ELECTIVE**
- APPROVED ELECTIVES**

* SPECIAL NOTES

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

TECHNICAL ELECTIVE: Any upper-division CHE course that is not already required.

APPROVED ELECTIVES: 8-9 units of approved electives including CE 205 (2), EE 438L (3), and ISE 460 (3) or BUAD 301 (3) or other courses with department approval.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	WRIT 340 WRIT 150 3	MATH 245 MATH 226 or MATH 229 4	CHEM 322aL CHEM 105bL 4	CHE 350 CHEM 105bL 3
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THIRD YEAR

FALL SEMESTER

GE C 4	BISC 320L (GE D) CHEM 105bL 4	CHEM 430a CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 442 MATH 245 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	BISC 330L BISC 320L, CHEM 322aL 4	BISC 300L BISC 320L, CHEM 322aL 4	CHE 443 (CHE 350, MATH 245) 3	CHE 444aL (CHE 350, 330, 442, 443) 3
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FOURTH YEAR

FALL SEMESTER

BIOELECTIVE 3-4	CHE 444bL CHE 350, CHE 443 3	CHE 405 MATH 245 or ISE 460 3	CHE 485 CHE 442, 443 3	CHE 445 CHE 443, MATH 245 2	OPTIONAL ELECTIVE 3-4
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	CHE 489 CHE 330, BISC 320L 3	BME 410 CHEM 322aL 3
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MATHEMATICS (16 UNITS)

MATH 125: Calculus I
MATH 126 or MATH 129: Calculus II
MATH 226 or MATH 229: Calculus III
MATH 245: Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

PHYS 151L: Mechanics and Thermodynamics
PHYS 152L: Electricity and Magnetism

CHEMISTRY (20 UNITS)

CHEM 105AL: General Chemistry
CHEM 105BL: General Chemistry
CHEM 300L: Analytical Chemistry
CHEM 322AL: Organic Chemistry
CHEM 430A: Physical Chemistry I

BIOLOGY (12 UNITS)

BISC 300L: Intro. to Microbiology
BISC 320L: Molecular Biology
BISC 330L: Biochemistry

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantitative Reasoning (1 Course)

GE G,H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*

WRITING (7 UNITS)

WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ENGINEERING (51-52 UNITS)

BME 410: Intro. to Biomaterials
CHE 120: Intro. to Chemical Engineering
CHE 205: Numerical Methods in Chemical Engineering
CHE 330: Chemical Engr. Thermodynamics
CHE 350: Intro. to Separation Processes
CHE 405: Applications of Probability & Statistics for Chemical Engineers
or ISE 460: Engineering Economy
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444ABL: Chem. Engineering Laboratory
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chemical Process Dynamics
CHE 480: Chem. Process and Plant Design
CHE 485: Computer-Aided Plant Design
CHE 489: Biochemical Engineering
ENGR 102: Engineering Freshman Academy
BIOELECTIVE

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

BIOELECTIVE: Approved Bioengineering course or BISC 403

BISC 403: Must have 48 engineering units in order to register for this class

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 (MATH 125) 3	MATH 126 or MATH 129 (MATH 125)  4	CHEM 105bL (CHEM 105aL) 4	PHYS 151L (GE E) (MATH 125 or 126 or 226) 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L (CHEM 105bL) 4	MATH 226 or MATH 229 (MATH 126 or MATH 129) 4	PHYS 152L (PHYS 151L, (MATH 226)) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL (CHEM 105bL) 4	MATH 245 (MATH 226 or MATH 229) 4	WRIT 340 (WRIT 150) 3	CHE 350 (CHEM 105bL) 3
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THIRD YEAR

FALL SEMESTER

GE C 4	CHEM 430a (CHEM 300L or 322aL, MATH 226, PHYS 151L) 4	CE 453 (CE 309 or ENE 410) 3	CHE 442 (MATH 245) 3	PTE 463L (MATH 245, CHEM 105aL, PHYS 151L) 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE B 4	ENE 428L or 429 3	CE 463L (CE 453, CHEM 105bL) 3	CHE 443 (CHE 350, MATH 245) 3	CHE 444aL (CHE 350, 330, 442, 443) 3	OPTIONAL ELECTIVE 2
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 405 (MATH 245) 3	CHE 444bL (CHE 350, CHE 443) 3	CHE 485 (CHE 442, 443) 3	CHE 445 (CHE 443, MATH 245) 2	ISE 460 or BUAD 301 3
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SPRING SEMESTER

GE C 4	CHE 446 (CHE 443, 445, MATH 245) 2	CHE 460L (CHE 120, (MATH 245)) 3	CHE 480 3	CHE 486 (CHE 480 or 485) 3	CHE 476 (CHEM 322aL) 3
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MATHEMATICS (16 UNITS)

MATH 125: Calculus I
MATH 126 or MATH 129: Calculus II
MATH 226 or MATH 229: Calculus III
MATH 245: Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

PHYS 151L: Mechanics and Thermodynamics
PHYS 152L: Electricity and Magnetism

CHEMISTRY (20 UNITS)

CHEM 105AL: General Chemistry
CHEM 105BL: General Chemistry
CHEM 300L: Analytical Chemistry
CHEM 322AL: Organic Chemistry
CHEM 430A: Physical Chemistry I

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantitative Reasoning (1 Course)
GE G,H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*

WRITING (7 UNITS)


WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ENGINEERING (63 UNITS)

CE 453: Water Quality Control
CE 463L: Water Chemistry and Analysis
CHE 120: Intro. to Chemical Engineering
CHE 205: Numerical Methods in Chemical Engineering
CHE 330: Chemical Engr. Thermodynamics
CHE 350: Intro. to Separation Processes
CHE 405: Prob. and Stats. for Chem. Engr.
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444AL: Chem. Engineering Laboratory
CHE 444BL: Chem. Engineering Laboratory
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chemical Process Dynamics
CHE 476: Chemical Engineering Materials
CHE 480: Chem. Process and Plant Design
CHE 485: Computer Aided Process Design
CHE 486: Design of Environ. Benign Plants
ENE 428L: Air Pollution Fundamentals
 or **ENE 429:** Air Pollution Control
ENGR 102: Engineering Freshman Academy

ISE 460: Engineering Economy
 or **BUAD 301:** Technical Entrepreneurship
PTE 463L: Trans. Processes in Porous Media

* SPECIAL NOTES

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	CHE 350 CHEM 105bL 3	WRIT 340 WRIT 150 3
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THIRD YEAR

FALL SEMESTER

GEC 4	CHEM 430a CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 442 MATH 245 3	CHE 487 CHEM 105aL or MASC 110L 3	OPTIONAL ELECTIVE 4
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SPRING SEMESTER

CHEM 453 CHEM 105bL, 322aL 4	CHE 444aL CHE 330, 350, 442, (443) 3	CHE 443 (CHE 350, MATH 245) 3	MASC 350 CHEM 105aL or MASC 110L, PHYS 152L 3	CHE 391 2	NANOTECH. ELECTIVE 3
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL CHE 350, CHE 443 3	CHE 445 CHE 443, MATH 245 2	CHE 485 CHE 442, 443 2	CHE 405 MATH 245 or ISE 460 or BUAD 301 3	CHE 491 CHE 391 2
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SPRING SEMESTER

GEC 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	GE B 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

CHEMISTRY (24 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- CHEM 300L:** Analytical Chemistry
- CHEM 322AL:** Organic Chemistry
- CHEM 430A:** Physical Chemistry I
- CHEM 453:** Advanced Inorganic Chemistry

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G, H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)


- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (54 UNITS)

- CHE 120:** Intro. to Chemical Engineering
- CHE 205:** Numerical Methods in Chemical Engineering
- CHE 330:** Chemical Engr. Thermodynamics
- CHE 350:** Intro. to Separation Processes
- CHE 391:** Intro. to Nanotechnology Research
- CHE 405:** Applications of Prob. & Stats. for ChE or **ISE 460:** Engineering Economy or **BUAD 301:** Technical Entrepreneurship
- CHE 442:** Chemical Reactor Analysis
- CHE 443:** Viscous Flows
- CHE 444ABL:** Chemical Engineering Lab
- CHE 445:** Heat Transfer in ChE Processes
- CHE 446:** Mass Transfer in ChE Processes
- CHE 460L:** Chemical Process Dynamics & Control
- CHE 480:** Chem. Process and Plant Design
- CHE 485:** Comp.-Aided Chemical Process Design
- CHE 487:** Nanotech and Nanoscale Engineering
- CHE 491:** Nanotech Research for Undergrads
- ENGR 102:** Engineering Freshman Academy

MASC 350: Design, Synthesis and Processing of Engineering Materials
NANOTECH. ELECTIVE

*** SPECIAL NOTES**

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.


OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

NANOTECH. ELECTIVE: EE/MASC 438L, CHE 489, or CHE/PTE 463L.

CHE 391, 491: Technical electives may be taken in place of these courses. Contact the department for approved courses.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 322aL CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	WRIT 340 WRIT 150 3
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SPRING SEMESTER

GE B 4	CHEM 300L CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	CHE 350 CHEM 105bL 3	CHE 476 CHEM 322aL 3
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THIRD YEAR

FALL SEMESTER

CHEM 430a CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 405 MATH 245 3	CHE 442 MATH 245 3	PTE 461 (PTE 463L) 3	PTE 463L MATH 245, CHEM 105aL, PHYS 151L 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE B 4	CHE 444aL CHE 330, 350, 442, (443) 3	PTE 464L PTE 463L 3	CHE 443 (CHE 350, MATH 245) 3	GE C 4	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL CHE 350, CHE 443 3	CHE 445 CHE 443, MATH 245 2	CHE 485 CHE 442, 443 3	PTE 465L PTE 464L 3	ISE 460 or BUAD 301 3
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	CHEMISTRY ELECTIVE 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

MATH 125: Calculus I
MATH 126 or **MATH 129:** Calculus II
MATH 226 or **MATH 229:** Calculus III
MATH 245: Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

PHYS 151L: Mechanics and Thermodynamics
PHYS 152L: Electricity and Magnetism

CHEMISTRY (24 UNITS)

CHEM 105AL: General Chemistry
CHEM 105BL: General Chemistry
CHEM 300L: Analytical Chemistry
CHEM 322AL: Organic Chemistry
CHEM 430A: Physical Chemistry I
CHEMISTRY ELECTIVE: CHEM 322bL or 430b

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantitative Reasoning (1 Course)
GE G,H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*

WRITING (7 UNITS)

WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ENGINEERING (60 UNITS)

CHE 120: Intro. to Chemical Engineering
CHE 205: Numerical Methods in Chemical Engineering
CHE 330: Chemical Engr. Thermodynamics
CHE 350: Intro. to Separation Processes
CHE 405: Probability and Statistics for CHE
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444AL: Chemical Engineering Lab
CHE 444BL: Chemical Engineering Lab
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chemical Process Dynamics
CHE 476: Chemical Engineering Materials
CHE 480: Chem. Process and Plant Design
CHE 485: Computer Aided Process Design
ENGR 102: Engineering Freshman Academy
ISE 460: Engineering Economy
 or **BUAD 301:** Technical Entrepreneurship
PTE 461: Formation Evaluation
PTE 463L: Trans. Processes in Porous Media
PTE 464L: Petroleum Reservoir Engineering
PTE 465L: Drill. Tech. & Subsurface Meth.

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 (MATH 125) 3	MATH 126 or MATH 129 (MATH 125)  4	CHEM 105bL (CHEM 105aL) 4	PHYS 151L (GE E) (MATH 125 or 126 or 226) 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L (CHEM 105bL) 4	MATH 226 or MATH 229 (MATH 126 or MATH 129) 4	PHYS 152L (PHYS 151L, MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL (CHEM 105bL) 4	MATH 245 (MATH 226 or MATH 229) 4	WRIT 340 (WRIT 150) 3	CHE 350 (CHEM 105bL) 3
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THIRD YEAR

FALL SEMESTER

POLYMER/MATERIALS SCI. ELECTIVE 3	CHEM 430a (CHEM 300L or 322aL, MATH 226, PHYS 151L) 4	CHE 442 (MATH 245) 3	CHE 472 3	GE C 4	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE B 4	CHEMISTRY ELECTIVE 4	CHE 444aL (CHE 350, 350, 442, 443) 3	CHE 443 (CHE 350, MATH 245) 3	CHE 476 (CHEM 322aL or MASC 310) 3	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL (CHE 350, CHE 443) 3	CHE 445 (CHE 443, MATH 245) 2	CHE 485 (CHE 442, 443) 3	POLYMER/MATERIALS SCI. ELECTIVE 3	CHE 405 (MATH 245 or ISE 460 or BUAD 301) 3
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SPRING SEMESTER

GE C 4	CHE 446 (CHE 443, 445, MATH 245) 2	CHE 460L (CHE 120, MATH 245) 3	CHE 480 3	POLYMER/MATERIALS SCI. ELECTIVE 3	MASC 350 (CHEM 105a or CHEM 115a or MASC 110L and PHYS 152) 3
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MATHEMATICS (16 UNITS)

MATH 125: Calculus I
MATH 126 or MATH 129: Calculus II
MATH 226 or MATH 229: Calculus III
MATH 245: Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

PHYS 151L: Mechanics and Thermodynamics
PHYS 152L: Electricity and Magnetism

CHEMISTRY (24 UNITS)

CHEM 105AL: General Chemistry
CHEM 105BL: General Chemistry
CHEM 300L: Analytical Chemistry
CHEM 322AL: Organic Chemistry
CHEM 430A: Physical Chemistry I
CHEMISTRY ELECTIVE: (CHEM 322bL or 430b)

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantitative Reasoning (1 Course)
GE G,H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*


WRITING (7 UNITS)

WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ENGINEERING (57 UNITS)

CHE 120: Intro. to Chemical Engineering
CHE 205: Numerical Methods in Chemical Engineering
CHE 330: Chemical Engr. Thermodynamics
CHE 350: Intro. to Separation Processes
CHE 405: Probability and Statistics for CHE or **ISE 460:** Engineering Economy or **BUAD 301:** Technical Entrepreneurship
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flow
CHE 444ABL: Chemical Engineering Lab
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 460L: Chemical Process Dynamics
CHE 472: Polymer Science & Engineering
CHE 476: Chemical Engineering Materials or **MASC 310:** Materials Behavior and Processing
CHE 480: Chem. Process and Plant Design
CHE 485: Computer Aided Process Design
ENGR 102: Engineering Freshman Academy
MASC 350L: Nanostructured Materials: Design, Synthesis, and Processing
POLYMER / MATERIALS ELECTIVES

* SPECIAL NOTES

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

POLYMER/MAT ELECTIVES: Select 9 units from BME 410, CHE 474L, 475, 477, 487, EE 438L, or MASC 440.

CHEMICAL (SUSTAINABLE ENERGY)

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CHEM 105aL (GE E)  4	ENGR 102 2
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SPRING SEMESTER

CHE 120 (MATH 125, CHEM 105aL) 3	CHE 205 MATH 125 3	MATH 126 or MATH 129 MATH 125  4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4
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SECOND YEAR

FALL SEMESTER

CHE 330 (MATH 226) 3	CHEM 300L CHEM 105bL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CHEM 322aL CHEM 105bL 4	MATH 245 MATH 226 or MATH 229 4	CHE 350 CHEM 105bL 3	WRIT 340 WRIT 150 3
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THIRD YEAR

FALL SEMESTER

GE C 4	CHEM 430a CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 442 MATH 245 3	CHE 450 3	OPTIONAL ELECTIVE 4
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SPRING SEMESTER

CHEM TECH. ELECTIVE 4	CHE 444aL (CHE 330, 350, 442, (443)) 3	CHE 443 (CHE 350, MATH 245) 3	CHE 476 CHEM 322a or MASC 350 CHEM 105aL or MASC 110L, PHYS 152L 3	SUSTAINABLE ENERGY ELECTIVE 3
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FOURTH YEAR

FALL SEMESTER

GE D  4	CHE 444bL CHE 350, CHE 443 3	CHE 445 CHE 443, MATH 245 2	CHE 485 CHE 442, 443 2	CHE 405 MATH 245 or ISE 460 or *BUAD 301 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE C 4	CHE 446 CHE 443, 445, MATH 245 2	CHE 460L CHE 120, (MATH 245) 3	CHE 480 3	GE B 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

MATH 125: Calculus I
MATH 126 or **MATH 129:** Calculus II
MATH 226 or **MATH 229:** Calculus III
MATH 245: Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

PHYS 151L: Mechanics and Thermodynamics
PHYS 152L: Electricity and Magnetism

CHEMISTRY (24 UNITS)

CHEM 105AL: General Chemistry
CHEM 105BL: General Chemistry
CHEM 300L: Analytical Chemistry
CHEM 322AL: Organic Chemistry
CHEM 430A: Physical Chemistry I
CHEM 453: Advanced Inorganic Chemistry
Chemistry Technical Electives:
CHEM 322B: Organic Chemistry
 or **CHEM 430B:** Physical Chemistry
 or **CHEM 453:** Advance Inorganic Chemistry

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantitative Reasoning (1 Course)

GE G, H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*

WRITING (7 UNITS)


WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ENGINEERING (54 UNITS)

CHE 120: Intro. to Chemical Engineering
CHE 205: Numerical Methods in Chemical Engineering
CHE 330: Chemical Engr. Thermodynamics
CHE 350: Intro. to Separation Processes
CHE 405: Applications of Prob. & Stats. for ChE
 or **ISE 460:** Engineering Economy
 or **BUAD 301:** Technical Entrepreneurship
CHE 442: Chemical Reactor Analysis
CHE 443: Viscous Flows
CHE 444ABL: Chemical Engineering Lab
CHE 445: Heat Transfer in ChE Processes
CHE 446: Mass Transfer in ChE Processes
CHE 450: Sustainable Energy
CHE 460L: Chemical Process Dynamics & Control
CHE 476: Chem. Engineering Materials
 or **MASC 350:** Nanostructured Materials: Design, Synthesis and Processing
CHE 480: Chem. Process and Plant Design

CHE 485: Comp.-Aided Chemical Process Design
ENGR 102: Engineering Freshman Academy

* SPECIAL NOTES

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

SUSTAINABLE ENERGY ELECTIVE (3):
 Biofuel (CHE 301 or CHEM 488 or CHE 489);
 Solar (CHE 487 or EE 513);
 Geothermal (PTE 463L)

*Must have 49 engineering units to be able to take BUAD 301.



MAJORS & AREAS OF EMPHASIS

- » Civil Engineering
 - Optional Track:* Construction
 - Optional Track:* Water Resources
- » Civil Engineering (Building Science)
- » Civil Engineering (Structural Engr.)
- » Environmental Engineering

LEARN MORE: viterbi.usc.edu/cee



Civil and Environmental Engineers address many of the vital needs of our modern society. They improve quality of life, promote economic growth, and protect people from hazards of natural and human origins.

Civil and Environmental Engineers create, construct, and manage the infrastructure systems we use in our everyday lives: transportation, water, power distribution, waste disposal, environment, and residential, industrial & commercial structures.

Civil and Environmental engineers support the global economy, secure the health and security of diverse communities, and enhance environmental quality worldwide. They design, build and operate our nation's infrastructure – highways, bridges, wharf and harbor structures, industrial facilities – and address the challenges of ground water and air pollution as well as industrial and hazardous waste management. They monitor the quality of the air, water and land, and enhance the protection of our environment.

EMPHASES & OPTIONS

The Bachelor's degree in Civil Engineering provides a broad base of core Civil Engineering courses and prepares students for both engineering practice and graduate studies. Students explore structural engineering, geotechnical engineering, construction, transportation, environmental engineering, and water resources. The Structural Engineering emphasis focuses on the design of safe and efficient structural systems. Students will be prepared to design structures such as bridges, buildings, and offshore structures that can resist a variety of forces such as earthquakes and wind loadings. Building Science is a joint architecture/engineering program. Students will learn all aspects of building technology from site selection to building construction, in addition to gaining a holistic perspective of building design from architectural design to structural design, and from the artistic to the functional. The Bachelor's degree in Environmental Engineering program covers engineering approaches required to provide safe drinking water, maintain air quality, and protect the environment.

RESEARCH HIGHLIGHTS

- » Sustainable Development: Long-term viability of natural resources and engineered civil systems.
- » Water Quality, Access, and Distribution: Providing an adequate supply of potable water, considering population growth and climate variability.
- » Disasters and Extreme Events: Both natural (e.g. earthquakes, tsunamis, floods, climate change) and man-made (e.g. terrorist attacks, engineering failures, industrial accidents) disasters. Research and education in this area includes all aspects of an event, from a fundamental understanding of the physical processes controlling its evolution to the resulting environmental and social reaction.
- » Coupling of Complex Systems: Most natural and engineered systems are known to be complex, defined as systems characterized by their display of patterns of structure or behavior at one level of system organization that are diagnostic of interactions among parts of the system at other levels.

COMPANIES THAT HIRE CEE STUDENTS

Campbell Concrete, CH2M Hill, Chevron, City/County of Los Angeles, Kiewit Pacific Company, Leighton Group, PPG Industries, Rudolph & Sletten, The Reynolds Group...

And many more!

CAREER OPTIONS

- » Become a structural engineer and build sustainable buildings
- » Develop land and mitigate risks of natural and manmade disasters
- » Manage civil infrastructure
- » Design and build roads, bridges, dams, tunnels and airports
- » Develop environmental public policy
- » Create waste removal systems and treatment processes
- » Design transportation systems

FIRST YEAR

FALL SEMESTER

GE A 4	WRIT 150 4	MATH 125 (GE F) 4	CE 106L 3	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL (GE E) 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 108 2
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SECOND YEAR

FALL SEMESTER

GEC 4	GED 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 205 PHYS 151L 2
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SPRING SEMESTER

GEOL 305L 4	CE 207L CE 205, (CE 106L, 225) 2	MATH 245 MATH 226 or MATH 229 4	CE 225 CE 205 3	CE 235 CE 205 3	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

CE 309 MATH 226, (CE 235) 3	CE 334L CE 225 or AME 204, CHEM 105aL, PHYS 152L 3	CE 358 CE 225 3	CE 456 CE 207L, 225, (CE 358) 3	CE 473 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	DESIGN KERNEL 3	EE 202L or EE 326Lx PHYS 152L 4	CE 451 CE 309 or ENE 410 3	CE 467L CE 225 4
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FOURTH YEAR

FALL SEMESTER

CE ELECTIVE 3	DESIGN KERNEL 3	CE 408 CE 225, MATH 226 3	CE 453 CHEM 105aL, (CE 309 or ENE 410) 3	CE 471 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

WRIT 340 WRIT 150 3	GEC 4	CE 402 CE 108, MATH 245 3	CE ELECTIVE 3	CE 465 CE 453 or CE 480 CE 456 or 457 or 478; CE 358, 467, 473 and 482 3	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

OTHER SCIENCE (8 UNITS)

- CHEM 105AL:** General Chemistry
- GEOL 305L:** Intro. to Engineering Geology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (70 UNITS)

- CE 106L:** Design & Planning of CE Systems
- CE 108:** Intro. to CE Computer Methods
- CE 205:** Statics
- CE 207L:** Intro. to Design of Structural Systems
- CE 225:** Mechanics of Deformable Bodies
- CE 235:** Dynamics
- CE 309:** Fluid Mechanics
- CE 334L:** Mechanical Behavior of Materials
- CE 358:** Theory of Structures I
- CE 402:** Computer Methods in Civil Engr.
- CE 408:** Risk Analysis in Civil Engr.
- CE 451:** Water Resources Engineering
- CE 453:** Water Quality Control
- CE 456:** Design of Steel Structures
- CE 467L:** Geotechnical Engineering
- CE 471:** Principles of Transportation Engr.
- CE 473:** Engineering Law, Finance & Ethics
- CE 480:** Structural Systems Design or **CE 465:** Water Supply & Sewage System Design
- EE 202L:** Linear Circuits
- or **EE 326Lx:** Essentials of Electrical Engr
- ENGR 102:** Engineering Freshman Academy
- DESIGN KERNELS**
- CE ELECTIVES**

*** SPECIAL NOTES**



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

CE 205, 225, 309, AND 235: Minimum grade of "C" is required.

EE 326Lx: CE students are encouraged to take EE 326Lx in the spring term.

DESIGN KERNELS: Choose six units from CE 457, 465, 466, 476, 478, 482, 484, or 485. If CE 480 is chosen as senior capstone course, 1 Design Kernel course must be CE 482. If CE 465 is chosen as senior capstone course, 1 Design Kernel course must be either CE 466 or 476.

CE ELECTIVES: Choose six units of upper-division CE course that is not already required.

FIRST YEAR

FALL SEMESTER

GE A 4	WRIT 150 4	MATH 125 (GE F) 4	CE 106L 3	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL (GE E) 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 108 2
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SECOND YEAR

FALL SEMESTER

GEC 4	GED 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 205 PHYS 151L 2
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SPRING SEMESTER

GEOL 305L 4	CE 207L CE 205, (CE 106L, 225) 2	MATH 245 MATH 226 or MATH 229 4	CE 225 CE 205 3	CE 235 CE 205 3	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

CE 309 MATH 226, (CE 235) 3	CE 334L CE 225 or A/E 204, CHEM 105aL, PHYS 152L 3	CE 358 CE 225 3	CE 456 CE 207L, 225, (CE 358) 3	CE 473 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	DESIGN KERNEL 3	EE 202L or EE 326Lx PHYS 152L 4	CE 451 CE 309 or ENE 410 3	CE 467L CE 225 4
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FOURTH YEAR

FALL SEMESTER

GEC 4	CE 482 CE 467L 3	CE 408 CE 225, MATH 226 3	CE 460 3	CE 471 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

WRIT 340 WRIT 150 3	CE ELECTIVE 3	CE 402 CE 108, MATH 245 3	CE ELECTIVE 3	CE 480 CE 456 or 457 or 478; CE 358 and 467 and 473 and 482 3	OPTIONAL ELECTIVE 3
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

OTHER SCIENCE (8 UNITS)

- CHEM 105AL:** General Chemistry
- GEOL 305L:** Intro. to Engineering Geology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (70 UNITS)

- CE 106L:** Design & Planning of CE Systems
- CE 108:** Intro. to CE Computer Methods
- CE 205:** Statics
- CE 207L:** Intro. to Design of Structural Systems
- CE 225:** Mechanics of Deformable Bodies
- CE 309:** Fluid Mechanics
- CE 235:** Dynamics
- CE 334L:** Mechanical Behavior of Materials
- CE 358:** Theory of Structures I
- CE 402:** Computer Methods in Civil Engr.
- CE 408:** Risk Analysis in Civil Engr.
- CE 451:** Water Resources Engineering
- CE 456:** Design of Steel Structures
- CE 460:** Construction Engineering
- CE 467L:** Geotechnical Engineering
- CE 471:** Principles of Transportation Engr.
- CE 473:** Engineering Law, Finance & Ethics
- CE 480:** Structural Systems Design
- CE 482:** Foundation Design
- EE 202L:** Linear Circuits
- or **EE 326Lx:** Essentials of Electrical Engr.
- ENGR 102:** Engineering Freshman Academy
- DESIGN KERNEL**
- CE ELECTIVES**

*** SPECIAL NOTES**



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

CE 205, 225, 309, AND 235: Minimum grade of "C" is required.

EE 326Lx: CE students are encouraged to take EE 326Lx in the spring.

DESIGN KERNEL: Choose one from CE 457, 465, 466, 476, 478, 484, or 485.

CE ELECTIVE: One course must be CE 462, CE 469, CE 470, or ARCH 419. The other course can be any upper-division CE course that is not already required.

FIRST YEAR

FALL SEMESTER

GE A 4	WRIT 150 4	MATH 125 (GE F) 4	CE 106L 3	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL (GE E) 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 108 2
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SECOND YEAR

FALL SEMESTER

GE C 4	GED 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 205 PHYS 151L 2
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SPRING SEMESTER

GEOL 305L 4	CE 207L CE 205, (CE 106L, 225) 2	MATH 245 MATH 226 or MATH 229 4	CE 225 CE 205 3	CE 235 CE 205 3	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

CE 309 MATH 226, (CE 235) 3	CE 334L CE 225 or A/E 204, CHEM 105aL, PHYS 152L 3	CE 358 CE 225 3	CE 456 CE 207L, 225, (CE 358) 3	CE 473 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	DESIGN KERNEL 3	EE 202L or EE 326Lx PHYS 152L 4	CE 451 CE 309 or ENE 410 3	CE 467L CE 225 4
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FOURTH YEAR

FALL SEMESTER

CE ELECTIVE 3	DESIGN KERNEL 3	CE 408 CE 225, MATH 226 3	CE 453 CHEM 105aL, (CE 309 or ENE 410) 3	CE 471 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

WRIT 340 WRIT 150 3	GE C 4	CE 402 CE 108, MATH 245 3	CE ELECTIVE 3	CE 465 CE 453 3	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

OTHER SCIENCE (8 UNITS)

- CHEM 105AL:** General Chemistry
- GEOL 305L:** Intro. to Engineering Geology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*


WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (70 UNITS)

- CE 106L:** Design & Planning of CE Systems
- CE 108:** Intro. to CE Computer Methods
- CE 205:** Statics
- CE 207L:** Intro. to Design of Structural Systems
- CE 225:** Mechanics of Deformable Bodies
- CE 309:** Fluid Mechanics
- CE 235:** Dynamics
- CE 334L:** Mechanical Behavior of Materials
- CE 358:** Theory of Structures I
- CE 402:** Computer Methods in Civil Engr.
- CE 408:** Risk Analysis in Civil Engr.
- CE 451:** Water Resources Engineering
- CE 453:** Water Quality Control
- CE 456:** Design of Steel Structures
- CE 467L:** Geotechnical Engineering
- CE 471:** Principles of Transportation Engr.
- CE 473:** Engineering Law, Finance & Ethics
- CE 465:** Water Supply & Sewage System Design
- EE 202L:** Linear Circuits
- or **EE 326Lx:** Essentials of Electrical Engr.
- ENGR 102:** Engineering Freshman Academy
- DESIGN KERNELS**
- CE ELECTIVES**

*** SPECIAL NOTES**

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

CE 205, 225, 309, AND 235: Minimum grade of "C" is required.

EE 326Lx: CE students are encouraged to take EE 326Lx in the spring.

DESIGN KERNELS: One must be CE 466 or 476. The other course can be CE 457, 465, 466, 476, 478, 482, 484, or 485.

CE ELECTIVES: Take six units from CE 466, 476, 477, or 490.

FIRST YEAR

FALL SEMESTER

CE 106L 3	WRIT 150 4	MATH 125 (GE F) 4	ARCH 114 2	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL (GE E) 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 108 2
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SECOND YEAR

FALL SEMESTER

GE C 4	ARCH 205aL CE 106L 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 205 PHYS 151L 2
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SPRING SEMESTER

CE 207L CE 205, (CE 106L, 225) 2	ARCH 205bL ARCH 205aL 4	MATH 245 MATH 226 or MATH 229 4	CE 225 CE 205 3	CE 235 CE 205 3	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

CE 309 MATH 226, (CE 235) 3	ARCH 305aL ARCH 205bL 4	CE 358 CE 225 3	CE 456 CE 207L, 225, (CE 358) 3	GED 4	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GEOL 305L 4	ARCH 305bL ARCH 305aL 4	CE 457 CE 207, 225, (CE 358) 3	CE 458 CE 108, CE 358, or AME 150 and AME 353 3	CE 467L CE 225 4
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FOURTH YEAR

FALL SEMESTER

GE B 4	ARCH 405aL ARCH 305bL 4	CE 408 CE 225, MATH 226 3	CE 334L CE 225 or AME 204, CHEM 105aL, PHYS 152L 3	ARCH 214b 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

WRIT 340 WRIT 150 3	ARCH 405bL ARCH 405aL 4	GE C 4	CE ELECTIVE 3	GE A 4
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126 or MATH 129:** Calculus II
- MATH 226 or MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

SCIENCE (16 UNITS)

- CHEM 105AL:** General Chemistry
- GEOL 305L:** Intro. to Engineering Geology
- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ARCHITECTURE (29 UNITS)

- ARCH 114:** Architecture: Culture and Comm.
- ARCH 214B:** History of Architecture

- ARCH 205AL:** Building Science I
- ARCH 205BL:** Building Science I
- ARCH 305AL:** Building Science II
- ARCH 305BL:** Building Science II
- ARCH 405AL:** Building Science III
- ARCH 405BL:** Building Science III

ENGINEERING (45 UNITS)

- CE 106L:** Design & Planning of CE Systems
- CE 108:** Intro. to CE Computer Methods
- CE 205:** Statics
- CE 207L:** Intro. to Design of Structural Systems
- CE 225:** Mechanics of Deformable Bodies
- CE 309:** Fluid Mechanics
- CE 235:** Dynamics
- CE 334L:** Mechanical Behavior of Materials
- CE 358:** Theory of Structures I
- CE 408:** Risk Analysis in Civil Engr.
- CE 456:** Design of Steel Structures
- CE 457:** Reinforced Concrete Design
- CE 458:** Theory of Structures II
- CE 467L:** Geotechnical Engineering
- ENGR 102:** Engineering Freshman Academy
- CE ELECTIVE**

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

CE 205, 225, 309, AND 235: Minimum grade of "C" is required.

ARCH 205ABL, ARCH 305ABL, AND ARCH 405ABL: Minimum grade of "C" is required in order to continue in the Building Science sequence.

CE ELECTIVE: Choose one from CE 451, 453, 460, or 471.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CE 106L 3	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL (GE E)  4	MATH 126 or MATH 129 MATH 125  4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 108 2
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SECOND YEAR

FALL SEMESTER

CE 210L (CHEM 105aL) 3	CHEM 105bL CHEM 105aL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 205 PHYS 151L 2	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

AME 310 MATH 226 3	ENE 200 CHEM 105bL, PHYS 152L, MATH 226 3	MATH 245 MATH 226 or MATH 229 4	CE 225 CE 205 3	CE 235 CE 205 3	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

CE 309 MATH 226, (CE 235) 3	CE 408 CE 225, MATH 226 3	CE 358 CE 225 3	CE 453 CHEM 105aL, (CE 309 or ENE 410) 3	CE 473 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	DESIGN KERNEL 3	BISC 220L (GE D)  4	CE 451 CE 309 or ENE 410 3	CE 463L CHEM 105bL, CE 453 3	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

GE C 4	DESIGN KERNEL 3	WRIT 340 WRIT 150 3	CE 334L CE 225 or AME 204, CHEM 105aL, PHYS 152L 3	OPTIONAL ELECTIVE 5
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SPRING SEMESTER

GE C 4	CE 467L CE 225 4	CE 485 CE 451, 463L, 473 3	ENE 426 ENE 200 3	ENE 428 MATH 245, CHEM 105bL, PHYS 151L 3	OPTIONAL ELECTIVE 1
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

OTHER SCIENCE (12 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- BISC 220L:** Cell Biology and Physiology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (67 UNITS)

- AME 310:** Engineering Thermodynamics I
- CE 106L:** Design & Planning of CE Systems
- CE 108:** Intro. to CE Computer Methods
- CE 205:** Statics
- CE 210L:** Intro. to Env. Engr. Microbiology
- CE 225:** Mechanics of Deformable Bodies
- CE 309:** Fluid Mechanics
- CE 235:** Dynamics
- CE 334L:** Mechanical Behavior of Materials
- CE 358:** Theory of Structures I
- CE 408:** Risk Analysis in Civil Engr.
- CE 451:** Water Resources Engineering
- CE 453:** Water Quality Control
- CE 463L:** Water Chemistry and Analysis
- CE 467L:** Geotechnical Engineering
- CE 473:** Engineering Law, Finance & Ethics
- CE 485:** Wastewater Treatment Design
- ENE 200:** Environmental Engr. Principles
- ENE 426:** Particulate Air Pollutants: Properties/ Behavior/ Measurement
- ENE 428:** Air Pollution Fundamentals
- ENGR 102:** Engineering Freshman Academy
- DESIGN KERNEL**

*** SPECIAL NOTES**



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

CE 205, 225, 309, AND 235: Minimum grade of "C" is required.

DESIGN KERNEL: Choose two from CE 465, 466, 476, 482, 484, or ENE 486.

FIRST YEAR

FALL SEMESTER

GE A 4	WRIT 150 4	MATH 125 (GE F) 4	CE 106L 3	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL (GE E) 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 108 2
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SECOND YEAR

FALL SEMESTER

GEC 4	GED 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 205 PHYS 151L 2
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SPRING SEMESTER

GEOL 305L 4	CE 207L CE 205, (CE 106L, 225) 2	MATH 245 MATH 226 or MATH 229 4	CE 225 CE 205 3	CE 235 CE 205 3	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

CE 309 MATH 226, (CE 235) 3	CE 334L CE 225 or AME 204, CHEM 105aL, PHYS 152L 3	CE 358 CE 225 3	CE 456 CE 207L, 225, (CE 358) 3	CE 473 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE B 4	CE 457 CE 207L, 225 (CE 358) 3	EE 202L or EE 326Lx PHYS 152L 4	CE 458 CE 108 and 358 or AME 150 and AME 353 3	CE 467L CE 225 4
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FOURTH YEAR

FALL SEMESTER

CE 478 3	CE 408 CE 225, MATH 226 3	CE 459 (CE 458) 3	CE 460 3	CE 482 CE 467L 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

WRIT 340 WRIT 150 3	GEC 4	CE 402 CE 108, MATH 245 3	CE 451 CE 309 or ENE 410 3	CE 480 CE 456, or 457, or 478; CE 358 and 467 and 473 and 482 3	OPTIONAL ELECTIVE 2
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

OTHER SCIENCE (8 UNITS)

- CHEM 105AL:** General Chemistry
- GEOL 305L:** Intro. to Engineering Geology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (70 UNITS)

- CE 106L:** Design & Planning of CE Systems
- CE 108:** Intro. to CE Computer Methods
- CE 205:** Statics
- CE 207L:** Intro. to Design of Structural Systems
- CE 225:** Mechanics of Deformable Bodies
- CE 309:** Fluid Mechanics
- CE 235:** Dynamics
- CE 334L:** Mechanical Behavior of Materials
- CE 358:** Theory of Structures I
- CE 402:** Computer Methods in Civil Engr.
- CE 408:** Risk Analysis in Civil Engr.
- CE 451:** Water Resources Engineering
- CE 456:** Design of Steel Structures
- CE 457:** Reinforced Concrete Design
- CE 458:** Theory of Structures II
- CE 459:** Intro. to Structural Dynamics
- CE 460:** Construction Engineering
- CE 467L:** Geotechnical Engineering
- CE 473:** Engineering Law, Finance & Ethics
- CE 478:** Timber & Masonry Design
- CE 480:** Structural Systems Design
- CE 482:** Foundation Design
- EE 202L:** Linear Circuits
- or **EE 326Lx:** Essentials of Electrical Engr
- ENGR 102:** Engineering Freshman Academy

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

CE 205, 225, 309, AND 235: Minimum grade of "C" is required.

EE 326Lx: CE students are encouraged to take EE 326Lx in the spring.

FIRST YEAR

FALL SEMESTER

GE A  4	WRIT 150 4	MATH 125 (GE F)  4	CE 110 3	ENGR 102 2
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SPRING SEMESTER


GE B 4	CHEM 105aL (GE E)  4	MATH 126 or MATH 129 MATH 125  4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 108 2
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SECOND YEAR

FALL SEMESTER

CE 205 PHYS 151L 2	CHEM 105bL CHEM 105aL 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 210L (CHEM 105aL) 3
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SPRING SEMESTER

GE C 4	BISC 220L (GE D)  4	MATH 245 MATH 226 or MATH 229 4	ENE 200 CHEM 105bL, MATH 226, PHYS 152L 3	OPTIONAL ELECTIVE 3
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THIRD YEAR

FALL SEMESTER

CE 309 MATH 226, (CE 235) 3	CE 408 CE 225, MATH 226 3	CE 453 CHEM 105aL, (CE 309 or ENE 410) 3	WRIT 340 WRIT 150 3	CE 473 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

ENE 428 MATH 245, CHEM 105bL, PHYS 151L 3	CHEM 322aL CHEM 105bL 4	DESIGN KERNEL 3	CE 451 CE 309 or ENE 410 3	CE 463L CHEM 105bL, CE 453 3	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

GE B 4	CHE 330 (MATH 226) 3	CE 484 CE 451, 463L 3	ENE 486 ENE 400 3	PTE 463L MATH 245, CHEM 105aL, PHYS 151L 3	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE C 4	GEOL 305L 4	CE 465 CE 453 3	ENE 426 ENE 200 3	CE 485 CE 451, 463L, 473 3	OPTIONAL ELECTIVE 1
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 226** or **MATH 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr.

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

CHEMISTRY (12 UNITS)

- CHEM 105AL:** General Chemistry
- CHEM 105BL:** General Chemistry
- CHEM 322AL:** Organic Chemistry

OTHER SCIENCE (8 UNITS)

- BISC 220L:** Cell Biology and Physiology
- GEOL 305L:** Intro to Engr. Geology

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G, H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (62 UNITS)

- CE 110:** Intro. to Environmental Engr.
- CE 108:** Intro. to CE Computer Methods
- CE 205:** Statics
- CE 210L:** Intro. to Env. Engr. Microbiology
- CE 309:** Fluid Mechanics
- CE 408:** Risk Analysis in Civil Engr.
- CE 451:** Water Resources Engineering
- CE 453:** Water Quality Control
- CE 463L:** Water Chemistry and Analysis
- CE 465:** Water Supp. & Sewage Systems Des.
- CE 473:** Engineering Law, Finance & Ethics
- CE 484:** Water Treatment Design
- CE 485:** Wastewater Treatment Design
- CHE 330:** Chemical Engr. Thermodynamics
- ENE 200:** Environmental Engr. Principles
- ENE 426:** Particulate Air Pollutants: Properties/ Behavior/ Measurement
- ENE 428:** Air Pollution Fundamentals
- ENE 486:** Solid & Hazardous Waste Engr.
- ENGR 102:** Engineering Freshman Academy
- PTE 463L:** Intro. to Transport Processes
- DESIGN KERNEL**

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

ENE 200, 426, 428, 486, and CE 309: Minimum grade of "C" is required.

DESIGN KERNEL: Choose one from CE 443, 466, 476, or CHE 442.





MAJORS & AREAS OF EMPHASIS

- » Computer Science
- » Computer Science (Games)
- » Computer Science / Business Administration
- » Computer Engineering & Computer Science

LEARN MORE: viterbi.usc.edu/cs

Computer scientists and computer engineers design and implement efficient software and hardware solutions to computer-solvable problems. They are involved in the development of areas such as high-speed networks, multimedia and creative technologies, systems design, virtual reality and robotics.

The Computer Science (CSCI) program prepares students to work in the areas of software design, development, application and maintenance. It provides intensive study in algorithmic design and analysis as well as the theory of computing.

The Computer Science (Games) degree (CSGM) offers technical and creative training for the Video Game industry. The curriculum brings numerous core areas of advanced computer science - including artificial intelligence, graphic interfaces, modeling, algorithm design - together with creative and artistic training from the School of Cinematic Arts and the Roski School of Fine Arts. The combination of the creative and technical training along with industry exposure prepares students for key leadership positions in this dynamic field.

The Computer Science / Business Administration program (CSBA) is a combined degree program that allows students to study both Computer Science and Business in four years. In addition to the core computer science courses, students will take courses from the Marshall School of Business such as Organizational Behavior, Marketing Fundamentals, Business Finance, and Strategic Management.

The Computer Engineering & Computer Science program (CECS) trains students to integrate hardware and software processes to form solutions to problems arising from complex systems such as atomic reactors, guidance systems and manufacturing systems. These students graduate ready to design and build computers and computer networks.

RESEARCH HIGHLIGHTS

- » Artificial intelligence
- » Robotics
- » Mobile and cloud computing
- » Multimedia and immersive technology
- » Networks and distributed systems
- » Security, data science and analytics
- » Theoretical computer science
- » Software engineering and applications

COMPANIES THAT HIRE CSCI STUDENTS

Amazon, Apple, Blizzard, Cisco, Conexant, DIRECTV, Disney Interactive, eBay, Electronic Arts, Facebook, Garmin, Google, Heavy Iron Studios, Hewlett-Packard, IBM, Intel Corporation, Lockheed Martin, Microsoft, NASA-JPL, NBCUniversal, Raytheon, Samsung, Sony Online Entertainment, SpaceX, Square, Yahoo!, Zynga...

And many more!

CAREER OPTIONS

- » Build new computer circuits, microchips, and other electronic components
- » Conduct research on artificial intelligence capabilities
- » Create new computer and operating systems
- » Design logic devices for everyday appliances
- » Improve video game consoles and devices
- » Integrate hardware and software processes
- » Launch high tech entrepreneurial projects and ventures
- » Invent intelligent robots
- » Develop advanced data analytics

FIRST YEAR

FALL SEMESTER

WRIT 150 4	MATH 125 (GE F) 4	CSCI 103L (CSCI 109) 4	CSCI 109 2	ENGR 102 2
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SPRING SEMESTER

GE B 4	MATH 126 or MATH 129 MATH 125 4	CSCI 104 (CSCI 103L, (CSCI 170)) 4	CSCI 170 (CSCI 103L, 109) 4	OPTIONAL ELECTIVE 2
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SECOND YEAR

FALL SEMESTER

GEC 4	EE 101 3	CSCI 270 (CSCI 104L, 170) 4	CSCI 201L (CSCI 104L) 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

CSCI 310 (CSCI 201) 4	MATH 226 or MATH 229 (MATH 126 or MATH 129) 4	WRIT 340 3	EE 352L (CSCI 104L) 3	GE B 4
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THIRD YEAR

FALL SEMESTER

GE A 4	MATH 225 (MATH 126 or MATH 129) 4	CSCI 350L (CSCI 201L, EE352L) 4	CSCI 360L (CSCI 104L, CSCI 170) 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

BASIC SCIENCE (GE D or E) 4	TECH. ELECTIVE I 4	TECH. ELECTIVE II 4	EE 364 (MATH 225 or 245 or MATH 407) (MATH 226) 3 or 4	OPTIONAL ELECTIVE 2-3
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FOURTH YEAR

FALL SEMESTER

BASIC SCIENCE II 4	TECH. ELECTIVE III 3	CSCI 401 or CSCI 404 (CSCI 270, CSCI 310, CSCI 201, CSCI 270, IIP 466) 4	GE C 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE D or E 4	TECH. ELECTIVE IV 3	REQUIRED ELECTIVE 4-5	REQUIRED ELECTIVE 4-5	OPTIONAL ELECTIVE 1-3
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MATHEMATICS (19-20 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 225:** Linear Algebra & Diff. Equations
- EE 364:** Intro to Probability & Statistics or **MATH 407:** Probability Theory

SCIENCE COURSES (8 UNITS)

- BASIC SCIENCE I**
- BASIC SCIENCE II**

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (60UNITS)

- CSCI 103L:** Introduction to Programming
- CSCI 104L:** Data Structures & Object Oriented Design
- CSCI 109:** Introduction to Computing
- CSCI 170:** Discrete Methods in Comp. Science
- CSCI 201L:** Princ. of Software Development
- CSCI 270:** Intro. to Algorithms & Theory of Computing
- CSCI 310L:** Intro. to Software Engineering
- CSCI 350L:** Introduction to Operating Systems
- CSCI 360L:** Introduction to Artificial Intelligence
- CSCI 401:** Capstone: Design and Construction of Large Software Systems
- or **CSCI 404:** Capstone: Creating Your High-Tech Startup
- EE 101:** Introduction to Digital Logic
- EE 352L:** Computer Organization & Architecture
- ENGR 102:** Engineering Freshmen Academy

OTHER COURSES (8-10 UNITS)

REQUIRED ELECTIVES

* SPECIAL NOTES

Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

GRADE QUALIFIER: A grade of a C (2.0) or better is required for each of the core courses (CSCI 103, 170, 104 & 201). Courses with a grade of C- or below must be repeated; courses may only be retaken once with department approval.

BASIC SCIENCE: PHYS 151L and 152L; CHEM 105aL and CHEM 105bL; or BISC 120L and 220L

TECHNICAL ELECTIVES: See approved tech elective list on CS webpage.

FIRST YEAR

FALL SEMESTER

CSCI 109 2	CSCI 103L (CSCI 109) 4	MATH 125 (GE F) 4	CTIN 190 4	ENGR 102 2
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SPRING SEMESTER

GE B 4	CSCI 104L (CSCI 103L, CSCI 170) 4	MATH 126 or MATH 129 MATH 125 4	CSCI 170 CSCI 103L, 109 4	OPTIONAL ELECTIVE 2
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SECOND YEAR

FALL SEMESTER

CSCI 201L CSCI 104L 4	PHYS 151L (GE E) MATH 125 or 126 or 220 4	ITP 380 CSCI 104L or ITP 365 4	WRIT 150 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

EE 352L CSCI 104L 3	CSCI 270 CSCI 104L, 170 4	MATH 225 or EE 241 MATH 126 or MATH 129 3-4	CSCI 281 3	CTIN 488 4
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THIRD YEAR

FALL SEMESTER

CSCI 353 CSCI 201L 4	CSCI 420 CSCI 104, MATH 225 4	CTIN 484L CTIN 488, (CTIN 489) 2	CTIN 489 CTIN 488 2	ITP 485 ITP 380 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

CSCI 423 ITP 360 4	CSCI 350L CSCI 201L, EE 352L 4	GE C 4	WRIT 340 WRIT 150 3	OPTIONAL ELECTIVE 3
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FOURTH YEAR

FALL SEMESTER

CSCI 360 CSCI 104L, 170 4	GE A 4	GE D 4	CSCI 491aL 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE B 4	GE C 4	GAMES ELECTIVE 2-4	CSCI 491bL 2	OPTIONAL ELECTIVE 4-6
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MATHEMATICS (11-12 UNITS)

MATH 125: Calculus I
MATH 126 or 129: Calculus II
MATH 225: Linear Algebra & Diff. Equations
 or **EE 241:** Applied Linear Algebra

PHYSICS (4 UNITS)

PHYS 151L: Mechanics and Thermodynamics

GENERAL EDUCATION (32 UNITS)

GE A The Arts (1 Course)
GE B Humanistic Inquiry (2 Courses)
GE C Social Analysis (2 Courses)
GE D Life Sciences (1 Course)
GE E Physical Sciences (1 Course)
GE F Quantative Reasoning (1 Course)
GE G,H Global Perspectives (2 Courses)*
GESM General Education Seminar (1 Course)*

WRITING (7 UNITS)

WRIT 150: Writing and Critical Reasoning
WRIT 340: Advanced Writing

ANIMATION & INTERACT. MEDIA (12 UNITS)

CTIN 190: Intro to Interactive Entertainment
CTIN 488: Game Design Workshop
CTIN 484L: Intermediate Game Development
CTIN 489: Intermediate Game Design Workshop

ENGINEERING (64 UNITS)

CSCI 103L: Introduction to Programming
CSCI 104L: Data Structures & Object Oriented Design
CSCI 109: Introduction to Computing
CSCI 170: Discrete Methods in Comp. Science
CSCI 201L: Princ. of Software Development
CSCI 270: Intro. to Algorithms & Theory of Computing
CSCI 281: Pipelines for Games & Interactives
CSCI 350: Introduction to Operating Systems
CSCI 353: Introduction to Internetworking
CSCI 360: Intro. to Artificial Intelligence
CSCI 420: Computer Graphics
CSCI 423: Native Console Multiplayer Game Development
CSCI 491AL: Final Game Project
CSCI 491BL: Final Game Project
EE 352L: Computer Organization & Architecture
ENGR 102: Engineering Freshmen Academy
ITP 380: Video Game Programming
ITP 485: Programming Game Engines

GAMES ELECTIVES (2-4 UNITS)

CTAN 452: Intro to Computer Animation
 or **CSCI 424:** Game Engine Tool Development
 or **CSCI 425:** Immersive Game Design

* SPECIAL NOTES



Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

GRADE QUALIFIER: A grade of a C (2.0) or better is required for each of the core courses (CSCI 103, 170, 104 & 201). Courses with a grade of C- or below must be repeated; courses may only be retaken once with department approval.

RECOMMENDED PREP: It is recommended that students complete:

- » PHYS 151 with or before ITP 380
- » CSCI 353 before CSCI 423
- » ITP 485 before CSCI 423, 424, 425

FIRST YEAR

FALL SEMESTER

GE B 4	MATH 125 (GE F) 4	WRIT 150 4	BUAD 304 4	ENGR 102 2
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SPRING SEMESTER

CSCI 103L (CSCI 109) 4	MATH 126 or 129 MATH 125 4	ECON 351 MATH 125 or 126 or 226 4	GE C 4	CSCI 109 2
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SECOND YEAR

FALL SEMESTER

CSCI 170 CSCI 103L, 109 4	MATH 225 or EE 241 MATH 126 or MATH 129 3-4	ECON 352 (ECON 351) 4	CSCI 104L CSCI 103L, (CSCI 170) 4	OPTIONAL ELECTIVE 2-3
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SPRING SEMESTER

PHYS 151 or CHEM 105aL or BISC 120 (GE D or E) 4	CSCI 201L CSCI 104L 4	CSCI 270 CSCI 104L, 170 4	ACCT 410x 4	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

BUAD 310 or EE 364 or MATH 407 MATH 225, MATH 226 3-4	BUAD 302 4	GE A 4	BUAD 307 4	OPTIONAL ELECTIVE 2-3
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SPRING SEMESTER

CSCI ELECTIVE 4	CSCI 310L CSCI 201L 4	GE C 4	BUAD 306 ACCT 410x, ECON 351, (ECON 352, BUAD 310 or EE 364) 4	OPTIONAL ELECTIVE 2
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FOURTH YEAR

FALL SEMESTER

WRIT 340 WRIT 150 3	BUAD ELECTIVE 4	CSCI 401 or CSCI 404 CSCI 270, CSCI 310, CSCI 201, CSCI 270, IIP 466 4	BUAD 311 BUAD 310 or EE 364 or MATH 407 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE E or D 4	GE B 4	BUAD 497 ACCT 410 or BUAD 302, 304, 306, and 307, (BUAD 311) 4	CSCI/BUAD ELECTIVE 4	OPTIONAL ELECTIVE 2
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MATHEMATICS (14-16 UNITS)

- MATH 125:** Calculus I
- MATH 126** or **MATH 129:** Calculus II
- MATH 225:** Linear Algebra & Diff. Equations or **EE 241:** Applied Linear Algebra
- BUAD 310:** Applied Business Statistics or **EE 364:** Intro to Probability & Statistics or **MATH 407:** Probability Theory

SCIENCE COURSES (4 UNITS)

- PHYS 151L, CHEM 105aL OR BISC 120L**

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantative Reasoning (1 Course)
- GE G, H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

BUSINESS & ECONOMICS (36 UNITS)

- ACCT 410X:** Accounting for Non-Business Majors
- BUAD 302:** Communication Strategy in Business

- BUAD 304:** Organizational Behavior
- BUAD 306:** Business Finance
- BUAD 307:** Marketing Fundamentals
- BUAD 311:** Operations Management
- BUAD 497:** Strategic Management
- ECON 351:** Microeconomics for Business
- ECON 352:** Macroeconomics for Business

ENGINEERING (32 UNITS)

- CSCI 103L:** Introduction to Programming
- CSCI 104L:** Data Structures & Obj. Orient. Design
- CSCI 109:** Introduction to Computing
- CSCI 170:** Discrete Methods in Comp. Science
- CSCI 201L:** Princ. of Software Development
- CSCI 270:** Intro. to Algorithms & Theory of Comp.
- CSCI 310L:** Intro. to Software Engineering
- CSCI 401:** Capstone: Design & Construction of Large Software Systems
- or **404:** Capstone: Creating Your High-Tech Startup
- ENGR 102:** Engineering Freshmen Academy

CSCI/BUAD ELECTIVES (12 UNITS)

- CSCI 351:** Programming & Multimedia on the World Wide Web
- CSCI 360L:** Introduction to Artificial Intelligence
- CSCI 430:** Security Systems
- CSCI 485:** File and Database Management
- BAEP 452:** Feasibility Analysis

- BAEP 453:** Venture Management
- BUAD 301:** Technology Entrepreneurship
- DSO 431:** Managing the Digital Revolution for Your Business
- DSO 433:** Business Info. Sys. Analysis & Design
- DSO 443:** The Bus. of Interactive Digital Media
- DSO 462:** Managing Small Bus. on the Internet
- MKT 425:** Marketing on the Internet

*SPECIAL NOTES

Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

GRADE QUALIFIER: A grade of a C (2.0) or better is required for each of the core courses (CSCI 103, 170, 104 & 201). Courses with a grade of C- or below must be repeated; courses may only be retaken once with department approval.

CSCI/BUAD ELECTIVES: Students must take one course from the Computer Science selection and one from the Business selection and a third course from either one.

FIRST YEAR

FALL SEMESTER

WRIT 150 4	MATH 125 (GE F) 4	EE 109 3	CSCI 103L (CSCI 109) 4	ENGR 102 2
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SPRING SEMESTER

PHYS 151L (GE E) MATH 125 or 126 or 226 4	MATH 126 or MATH 129 MATH 125 4	CSCI 104L CSCI 103L, (CSCI 170) 4	CSCI 170 CSCI 103L, 109 4	OPTIONAL ELECTIVE 2
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SECOND YEAR

FALL SEMESTER

PHYS 152L PHYS 151L, (MATH 226) 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	CSCI 201L CSCI 104 4	EE 209 EE 109 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GE C 4	MATH 225 MATH 126 or MATH 129 4	CSCI 270 CSCI 104L, 170 4	EE 354L EE 101 or 209 4	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

GE A 4	EE 364 MATH 225 or 245 or MATH 407 MATH 226 3-4	WRIT 340 WRIT 150 4	EE 457 EE 354 4	OPTIONAL ELECTIVE 2-3
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SPRING SEMESTER

GE B 4	TECH. ELECTIVE I 4	CSCI 350 CSCI 201, EE 109 or EE 352 4	GE D 4	OPTIONAL ELECTIVE 2
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FOURTH YEAR

FALL SEMESTER

GE B 4	TECH. ELECTIVE II 4	CSCI 353 CSCI 201 4	EE 451L CSCI 201 or EE 454L EE 354 or EE 477L EE 354 3-4	OPTIONAL ELECTIVE 2-3
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SPRING SEMESTER

EE 451L CSCI 201 or EE 454L EE 354 or EE 477L EE 354 3-4	GE C 4	CSCI 401 CSCI 270, 310 or CSCI 404 CSCI 201, 270, ITP 466 or EE 459 EE 354 3-4	OPTIONAL ELECTIVE 6-8
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MATHEMATICS (19-20 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 225:** Linear Algebra & Diff. Equations
- EE 364:** Intro to Probability & Statistics or **MATH 407:** Probability Theory

PHYSICS (8 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (64-66 UNITS)

- CSCI 103L:** Introduction to Programming
 - CSCI 104L:** Data Structures & Object Oriented Design
 - CSCI 170:** Discrete Methods in Comp. Science
 - CSCI 201L:** Princ. of Software Development
 - CSCI 270:** Intro. to Algorithms & Theory of Computing
 - CSCI 350:** Introduction to Operating Systems
 - CSCI 353:** Introduction to Internetworking
 - CSCI 401:** Capstone: Design of Large Software Systems or **404:** Capstone: Creating Your High-Tech Startup or **EE 459L:** Senior Design Project
 - EE 109:** Introduction to Embedded Systems
 - EE 209:** Fundamentals of Digital Logic
 - EE 354L:** Introduction to Digital Circuits
 - EE 457:** Computer Systems Organization
 - EE 451:** Parallel and Distributed Computation or **EE 454L:** Intro. to Sys. Using Microprocessors or **EE 477L:** MOS VLSI Circuit Design
 - ENGR 102:** Engineering Freshman Academy
- TECHNICAL ELECTIVES**

* SPECIAL NOTES

Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

GRADE QUALIFIER: A grade of a C (2.0) or better is required for each of the core courses (CSCI 103, 170, 104 & 201). Courses with a grade of C- or below must be repeated; courses may only be retaken once with department approval.

SENIOR DESIGN PROJECT: CSCI 401 or EE 459L.

TECHNICAL ELECTIVES: See approved tech elective list on CS webpage.

MAJORS & AREAS OF SPECIALIZATION

- » Electrical Engineering
Specializations:
Computer Engineering
Circuits, Signals & Systems
Electrical Sciences

LEARN MORE: viterbi.usc.edu/ee

Electrical Engineering (EE) is the enabling technology driving many of today's most crucial industries and a critical field in advancing the future. It is a diverse discipline encompassing computer and information systems, digital media, telecommunications and wireless technologies, nanoelectronics, lasers, robotics, display technologies, circuit design, and more.

In particular, it is a vital part of every industry, from biomedical engineering and health applications to telecommunications, aerospace, and information technology.

The department offers an exciting, diverse curriculum that prepares students with significant breadth and depth. Core sets of classes prepare students for one of three areas of emphasis: circuit, signals and systems, computer engineering and energy and electrical sciences. As freshmen and sophomores, students are introduced to the concepts of digital and analog electronics and computer programming, as well as core courses in math and physics. Students then choose courses that pertain to their chosen area of specialization. Computer Engineering contains courses that focus on software engineering, digital hardware, embedded systems, and VLSI design. Circuits, Signals, and Systems covers areas in VLSI design, media and audio systems, wireless communications, adaptive control, and mixed-signal integrated circuits. Courses in the Electrical Sciences area cover communications hardware, integrated-circuit technology, energy sources and management, and mixed-signal integrated circuits.

Design courses permeate the class schedule allowing students to apply the knowledge they have gained as well as prepare them to address the specific needs of industry when they graduate. One EE senior design course recently challenged students to design "smart" surfing equipment. Design options included a new "sustainable surfboard," a "wireless lifejacket" and a programmable "interactive surfboard."

EE RESEARCH

Research in the Ming Hsieh department is revolutionizing information processing, telecommunications, medical diagnosis and treatment, energy and green initiatives, computer systems, and new media, among other areas. Partnerships with off-campus research institutes like the Information Sciences Institute (ISI) and the Institute for Creative Technologies (ICT) create unparalleled opportunities for students to work at the cutting-edge of technology.

RESEARCH HIGHLIGHTS

- » Nanoelectronics and nanobiology
- » Wireless communication & sensor networks
- » Biological interface circuits and devices
- » Laser interactions with materials
- » Speech and image recognition & compression
- » Computer architecture and parallel processing
- » Photonics and integrated optics
- » Plasma science and technology
- » Quantum computing and communication
- » Robust, adaptive learning control
- » Communications theory and coding

COMPANIES THAT HIRE EE STUDENTS

3Com Corporation, Accenture, Apple, BAE Systems, The Boeing Co., CapGemini, Disney, Edwards Lifesciences, Garmin, General Electric, Google, IBM, Intel Corporation, Microsoft, Northrop Grumman, Nvidia, Qualcomm, Raytheon, SpaceX, Teradata, Teradyne, Verizon...

And many more!

CAREER OPTIONS

- » Develop alternative energy and green power sources
- » Develop semiconductors and consumer electronics
- » Develop wireless communication systems
- » Design new media and imaging systems (HDTV, satellite radio, etc.)
- » Design robots and other embedded systems
- » Architect novel computer processors and networking systems
- » Build lasers used for medical, manufacturing and military purposes
- » Develop airborne and satellite electronic systems
- » Develop new biomedical imaging devices

The Electrical Engineering major provides a broad curriculum that covers topics from a variety of areas. Through the Core Curriculum taken during the first two years, students will gain exposure to broader topics and the areas of specialization. Within an area of specialization, students will choose Entry-Level Electives as well as Advanced Electives based on their interests.

The EE degree offers three areas of specialization: Computer Engineering; Circuits, Signals, and Systems; and Electrical Sciences.

Computer Engineering contains courses that focus on software engineering, digital hardware, embedded systems, and VLSI design.

Circuits, Signals, and Systems covers areas in VLSI design, media and audio systems, wireless communications, adaptive control, and mixed-signal integrated circuits.

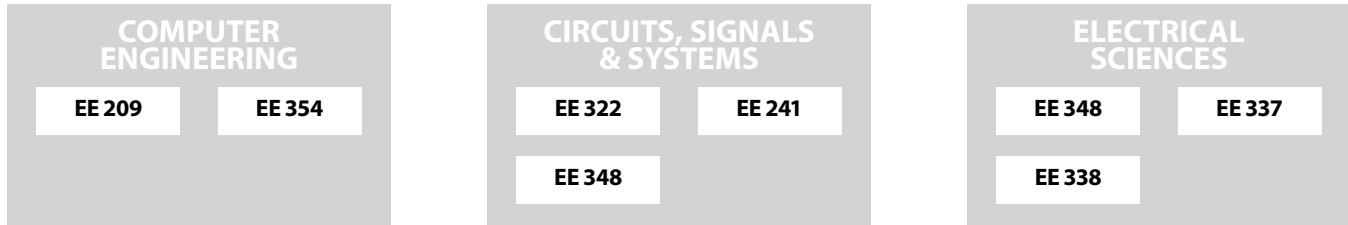
Courses in the Electrical Sciences area cover communications hardware, integrated-circuit technology, energy sources and management, and mixed-signal integrated circuits.

The diagram below shows the paths for each area of specialization. You should use the diagram and the suggested course plan on the following page to develop your individual course plan.

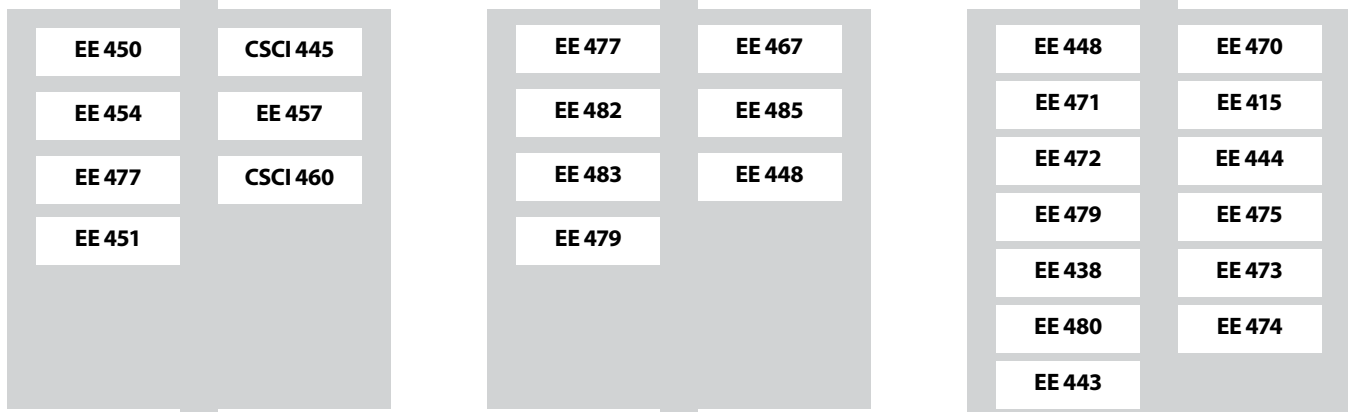
CORE CURRICULUM All courses are required for an electrical engineering degree.



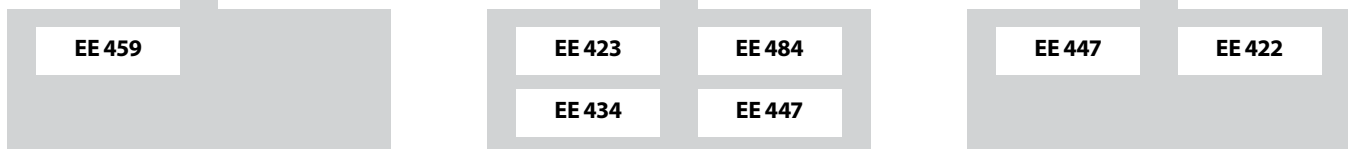
ENTRY-LEVEL ELECTIVES Take 2 courses from your chosen area of specialization and 2 additional courses from any area.



ADVANCED ELECTIVES Take 2 courses from your chosen area of specialization.



CAPSTONE Take 1 course from your chosen specialization



FIRST YEAR

FALL SEMESTER

EE 105 (MATH 125) 3	WRIT 150 4	MATH 125 (GE F) 4	EE 155 4	ENGR 102 2
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SPRING SEMESTER

EE 109 3	GE A 4	MATH 126 or MATH 129 MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	OPTIONAL ELECTIVE 3
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SECOND YEAR

FALL SEMESTER

GEC 4	CHEM 105aL or MASC 110L 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	OPTIONAL ELECTIVE 2
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SPRING SEMESTER

GED 4	EE 202L PHYS 152L, (MATH 245) 4	MATH 245 MATH 226 or MATH 229 4	PHYS 153L PHYS 152L 4	OPTIONAL ELECTIVE 2
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THIRD YEAR

FALL SEMESTER

WRIT 340 WRIT 150 3	EE 301L EE 202L 4	MATH 445 MATH 245 4	ENTRY-LEVEL ELECTIVE 3	REQUIRED ELECTIVE 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

EE 330 MATH 445, EE 202L 3	EE 364 MATH 245 3	EE 355 EE 150 3	ENTRY-LEVEL ELECTIVE 3	GE B 4	OPTIONAL ELECTIVE 2
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FOURTH YEAR

FALL SEMESTER

GE B 4	ENTRY-LEVEL ELECTIVE 3	ENTRY-LEVEL ELECTIVE 3	ISE 460 or BUAD 301 3	OPTIONAL ELECTIVE 5
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SPRING SEMESTER

GEC 4	ADVANCED ELECTIVE 3	ADVANCED ELECTIVE 3	CAPSTONE ELECTIVE 3	OPTIONAL ELECTIVE 5
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MATHEMATICS (20 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 245:** Mathematics of Phys. and Engr. I
- MATH 445:** Mathematics of Phys. and Engr. II

PHYSICS (12 UNITS)

- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism
- PHYS 153L:** Optics and Modern Physics

CHEMISTRY / MATERIALS SCIENCE (4 UNITS)

- CHEM 105AL:** General Chemistry or **MASC 110L:** Materials Science

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing


ENGINEERING (53 UNITS)

- EE 105:** Intro. to Electrical Engineering
- EE 109:** Intro. to Embedded Systems
- EE 155:** Intro. to Comp. Programming for EE
- EE 202L:** Linear Circuits
- EE 301L:** Linear Systems
- EE 330:** Electromagnetics I
- EE 355:** Software Design for Engineers
- EE 364:** Intro to Probability & Statistics
- ISE 460:** Engineering Economy or **BUAD 301:** Technical Entrepreneurship
- ENGR 102:** Engineering Freshman Academy
- ENTRY-LEVEL ELECTIVES**
- ADVANCED ELECTIVES**
- CAPSTONE ELECTIVE**

OTHER COURSES (3 UNITS)

- REQUIRED ELECTIVES**

* SPECIAL NOTES

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

REQUIRED ELECTIVE: Required electives are needed to meet minimum unit requirement and can be met with AP/IB and transfer credit.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

EE ENTRY-LEVEL, ADVANCED, AND CAPSTONE ELECTIVES: Refer to the diagram on the facing page.



MAJORS & AREAS OF EMPHASIS

- » Industrial & Systems Engineering
Track: *Information Systems*
Track: *Operations*

LEARN MORE: viterbi.usc.edu/epstein

Industrial and Systems Engineers (ISE) use engineering and business principles to formulate rigorous approaches to problem solving and the management of complex systems. They are productivity catalysts, managing innovation and the combination of physical, capital, and human resources needed to produce and deliver valuable goods and services.

Industrial and Systems engineers are consummate economic competitors who focus on developing and controlling manufacturing, production, inventory, distribution, service, and management information systems to ensure their companies' success in the global marketplace.

On the job, these engineering professionals optimize the use of scarce resources by integrating people and technology to maximize productivity, minimize cost, improve processes, and maintain high standards of quality.

The Epstein Department's Information Systems Engineering option gives extra emphasis to enterprise resource planning, software, and data mining techniques. USC's undergraduate ISE curricula prepare students for careers in a wide-range of industries, consulting, or professional engineering practice, and are also an excellent intellectual foundation for advanced degrees in fields as diverse as Engineering, Logistics, Business Administration, Finance, Medicine, Law, or Public Policy.

RESEARCH HIGHLIGHTS

- » Rapid prototyping and automated construction
- » Agile, flexible manufacturing and production systems
- » Human-computer interaction
- » Management of technology
- » Economic impacts of terrorism
- » Port operations and the supply chain
- » Green logistics and industrial ecology
- » Renewable energy systems
- » Transportation and logistics
- » Optimization and logistics
- » Collaborative engineering design
- » Rapid prototyping and automated construction
- » Health systems improvement

COMPANIES THAT HIRE ISE STUDENTS

Accenture, Aera Energy, The Aerospace Corporation, Boeing, Capgemini, Cisco Systems, Deloitte Consulting, The Disneyland Resort, Fair Isaac Corporation, GE Power Systems, Hewlett-Packard, IBM, Kaiser Permanente, KPMG, Northrop Grumman, Northwestern Mutual, Target, UPS...

And many more!

CAREER OPTIONS

- » Implement enterprise resource planning systems
- » Consult on business practices
- » Design efficient manufacturing and service systems
- » Optimize assembly and distribution systems
- » Develop ergonomically correct systems and interfaces
- » Improve hospital operations and schedules
- » Make systems safe by reducing errors and accidents
- » Manage business operations
- » Develop quality control and assurance systems

FIRST YEAR

FALL SEMESTER

GE A 4	ISE 105 2	MATH 125 (GE F) 4	WRIT 150 4	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL or MASC 110L 4	MATH 126 or MATH 129 MATH 125 4	CSCI 101 3	OPTIONAL ELECTIVE 3
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SECOND YEAR

FALL SEMESTER

ISE 220 MATH 126 3	ITP 320 4	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

ISE 225 ISE 220 3	INFO SYSTEMS COURSE 4	MATH 225 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L 4	OPTIONAL ELECTIVE 3
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THIRD YEAR

FALL SEMESTER

GE D 4	WRIT 340 WRIT 150 3	ISE 460 3	ISE 330 MATH 225 3	DSO 435 4	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE C 4	ISE 315L ISE 225 and ISE 330 3	ISE 331 ISE 220 3	ISE 470 3	INFO SYSTEMS COURSE 4	OPTIONAL ELECTIVE 1
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FOURTH YEAR

FALL SEMESTER

GE B 4	ISE 410 ISE 330 3	ISE 435 CSCI 101 and ISE 225 3	ISE 495ax ISE 225, ISE 460 and DSO 435 or ISE 382 2	INFO SYSTEMS COURSE 3	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE C 4	INFO SYSTEMS COURSE 3	ISE 440 3	ISE 495bx ISE 315, ISE 435, ISE 495a and ISE 370 or ISE 470 2	OPTIONAL ELECTIVE 6
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 225:** Linear Algebra and Diff. Equations

SCIENCE (12 UNITS)

- CHEM 105AL:** General Chemistry
- or **CHEM 115AL:** Advanced General Chemistry
- or **MASC 110L:** Materials Science
- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*

WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing


ENGINEERING (45 UNITS)

- CSCI 101L:** Fund. of Comp. Programming
- ENGR 102:** Engineering Freshman Academy
- ISE 105:** Intro. to Industrial Engineering
- ISE 220:** Probability Concepts in Engr.
- ISE 225:** Engineering Statistics I
- ISE 315L:** Engineering Project Management
- ISE 330:** Intro. to Operations Research I
- ISE 331:** Introduction to Operations Research: Stochastic Models
- ISE 410:** Prod. Planning and Scheduling
- ISE 435:** Discrete Systems Simulation
- ISE 440:** Work, Technology and Organization
- ISE 460:** Engineering Economy
- ISE 470:** Human/Computer Interface Design
- ISE 495A:** Senior Design Project
- ISE 495B:** Senior Design Project
- ITP 320:** Enterprise information Systems

OTHER COURSES (16 UNITS)

- DSO 435:** Enterprise Data Architecture
- INFO SYSTEMS COURSES:**
- DSO 431:** Foundations of Digital Business Innv.
- and **DSO 433:** Business Process Design
- or **ITP 482:** Engineering Database Applications
- and **ITP 487:** Data Warehouse and Business Intelligence
- APPROVED ENGINEERING ELECTIVES**

*** SPECIAL NOTES**

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

INFO SYSTEMS COURSES: Select at least 8 units among the following courses: DSO 431 (4), DSO 433 (4), ITP 482* (3), ITP 487* (3).

Also select at least 5 units among the following classes: AME 341a, AME 341b, CE 408, CE 460, CE 471, DSO 427, EE 326, ISE 232L, ISE 310L, ISE 327, ISE 344, ISE 426, ITP 215Lx, ITP 320x, ITP 325x, ITP 421x, ITP 422L, ITP 454x, ITP 457, ITP 466, ITP 482*, ITP 486, ITP 487*, ITP 488x, NSC 335, NSC 337

Classes noted with a * will count for Info Systems course requirement and Approved Engineering Electives.

FIRST YEAR

FALL SEMESTER

GE A 4	ISE 105 2	MATH 125 (GE F) 4	WRIT 150 4	ENGR 102 2
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SPRING SEMESTER

GE B 4	CHEM 105aL or MASC 110L 4	MATH 126 or MATH 129 MATH 125 4	CSCI 101 3	OPTIONAL ELECTIVE 3
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SECOND YEAR

FALL SEMESTER

ISE 220 MATH 126 3	OPERATIONS COURSE 3	MATH 226 or MATH 229 MATH 126 or MATH 129 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	OPERATIONS COURSE 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE C 4	ISE 225 ISE 220 3	MATH 225 MATH 126 or MATH 129 4	PHYS 152L PHYS 151L 4	OPTIONAL ELECTIVE 3
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THIRD YEAR

FALL SEMESTER

GE D 4	WRIT 340 WRIT 150 3	ISE 330 MATH 225 3	ISE 370L 4	ISE 460 3	OPTIONAL ELECTIVE 1
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SPRING SEMESTER

GE B 4	ISE 310L ISE 330, 460 4	ISE 315L ISE 225 AND ISE 330 3	ISE 331 ISE 220 3	ISE 382 4
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FOURTH YEAR

FALL SEMESTER

ISE 327 ISE 225 3	ISE 410 ISE 330 3	ISE 435 CSCI 101 and ISE 225 3	ISE 495ax ISE 225, ISE 460 and DSO 435 or ISE 382 2	OPERATIONS COURSE 4	OPTIONAL ELECTIVE 3
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SPRING SEMESTER

GE C 4	ISE 426 ISE 225 3	ISE 440 3	ISE 495bx ISE 315, ISE 435, ISE 495a and ISE 370 or ISE 470 2	REQUIRED ELECTIVE 3	OPTIONAL ELECTIVE 3
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MATHEMATICS (16 UNITS)

- MATH 125:** Calculus I
- MATH 126 or 129:** Calculus II
- MATH 226 or 229:** Calculus III
- MATH 225:** Linear Algebra and Diff. Equations

SCIENCE (12 UNITS)

- CHEM 105AL:** General Chemistry or **MASC 110L:** Materials Science
- PHYS 151L:** Mechanics and Thermodynamics
- PHYS 152L:** Electricity and Magnetism

GENERAL EDUCATION (32 UNITS)

- GE A** The Arts (1 Course)
- GE B** Humanistic Inquiry (2 Courses)
- GE C** Social Analysis (2 Courses)
- GE D** Life Sciences (1 Course)
- GE E** Physical Sciences (1 Course)
- GE F** Quantitative Reasoning (1 Course)
- GE G,H** Global Perspectives (2 Courses)*
- GESM** General Education Seminar (1 Course)*


WRITING (7 UNITS)

- WRIT 150:** Writing and Critical Reasoning
- WRIT 340:** Advanced Writing

ENGINEERING (62 UNITS)

- CSCI 101L:** Fund. of Comp. Programming
- ENGR 102:** Engineering Freshman Academy
- ISE 105:** Intro. to Industrial Engineering
- ISE 220:** Probability Concepts in Engr.
- ISE 225:** Engineering Statistics I
- ISE 310L:** Prod. I: Facilities & Logistics
- ISE 315L:** Engineering Project Management
- ISE 327:** Six Sigma and Lean Operations
- ISE 330:** Intro. to Operations Research I
- ISE 331:** Introduction to Operations Research: Stochastic Models
- ISE 370:** Human Factors in Work Design
- ISE 382:** Database Systems: Concept, Design and Implementation
- ISE 410:** Prod. Planning and Scheduling
- ISE 426:** Statistical Quality Control
- ISE 435:** Discrete Systems Simulation
- ISE 440:** Work, Technology and Organization
- ISE 460:** Engineering Economy
- ISE 495A:** Senior Design Project
- ISE 495B:** Senior Design Project

*** SPECIAL NOTES**

 Courses with this symbol may be satisfied with AP, IB or A-Level exams. See page 17 for more information.

GE: Engineering students are encouraged to satisfy GE G and GE H with a course that also satisfies a Core Literacy. GE H may be satisfied by exam. Additionally, your GESM course should be taken in categories A, B, C, or D only. See pp. 16-17 for more information and consult your advisor for detailed assistance.

OPTIONAL ELECTIVES: Consult with your academic advisor to explore optional elective courses. These courses are not required.

OPERATIONS ELECTIVES: Select at least one among ISE 232L, ITP 488x, or ACCT 410

GET THE STUDENT PERSPECTIVE:

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