

USC Viterbi

School of Engineering

UNDERGRADUATE GUIDEBOOK

2026-2027

USC Viterbi

School of Engineering

USC Stevens

School of Computing and
Artificial Intelligence

TABLE OF CONTENTS



Welcome to Viterbi	4
Wellness	5
Your First Year Experience	6
Research & Global Programs	10
Community & Leadership Development	16
Viterbi Career Connections	20
Academic Advising	23

PROGRAMS

Aerospace & Mechanical Engineering	27
Astronautical Engineering	30
Biomedical Engineering	32
Chemical Engineering	35
Civil & Environmental Engineering	38
Computer Science	43
Electrical & Computer Engineering	54
Industrial & Systems Engineering	57
Artificial Intelligence	59
Progressive Degree Program	62
Viterbi Info & Resources	63

This page has been left intentionally blank.

YOUR VITERBI JOURNEY STARTS HERE



Welcome to USC Viterbi — we're so excited to have you and your family join our community. This is a major milestone, and you should feel incredibly proud of everything your student has accomplished to get here.

As both a current USC parent and the parent of two USC graduates, I understand the mix of pride, excitement, and anticipation that comes with this moment. Your students have worked hard to reach this point, and now they're stepping into a dynamic, supportive, and inspiring environment where they'll continue to grow.

At USC Viterbi, students will find countless opportunities — academically, professionally, and personally. I encourage them to explore boldly, try new things, and shape an experience that reflects who they are and who they want to become.

Equally important is their well-being. Success here isn't just about academics—it's about thriving as a whole person. We want every student to feel supported, confident, and empowered to pursue their passions, build meaningful connections, and find purpose along the way.

The Viterbi Admission and Student Engagement (VASE) office is here as a steady source of support—a true home base throughout their journey.

We're honored to be part of this next chapter and look forward to supporting your students every step of the way.

Warm Regards,

Kelly Goulis

Senior Associate Dean



EngageSC

Find events, student organizations, and campus opportunities — all in one place.

- Events & workshops
- Student organizations
- Campus resources

[Click here](#) to explore ways to get involved, build community, and support your academic, career, social, and wellness goals.

VITERBI WELLNESS & SUCCESS



Engineering can be challenging—you don't have to navigate it alone. Viterbi W.E.L.L. is here to help you stay balanced, connected, and supported throughout your academic journey.

Office of Student Wellness Team



Lorena Duran, LCSW, ED.D.
Director, Student Wellness
Supports: AME, ASTE, BME,
ISE, CEE, MFD
lduran@usc.edu

Marve Romero Aguiñaga, MSW
Well-Being Navigator
Supports: CS & ECE
maguinag@usc.edu



**[Click here to learn more
and/or start a self referral](#)**

How Can Viterbi W.E.L.L. Help?

Extra Support When You Need It

- Individual check-ins to help you find campus resources and support.
- Guidance if you're feeling overwhelmed, stuck, or unsure about next steps.

**[Follow us on
Instagram](#)**



**[Follow us on
EngageSC](#)**



Student-Led Wellness Breaks

Viterbi Student Wellness Ambassadors are fellow engineering students who host events and share resources designed for you.

USC Wellness Resources to Help You Thrive



Student Counseling Services

24/7 mental health
support
(213) 740-WELL (9355)



Engemann and Eric Cohen Health Services

Primary care and
physical health services.
[Learn more.](#)



Mindful USC

Workshops and classes
offered free of charge.
[Learn more & access web
resources.](#)



USC Basic Needs

Offers support for
students experiencing
food, housing, or financial
insecurity. [Learn more.](#)

YOUR FIRST YEAR EXPERIENCE

JOHN BROOKS SLAUGHTER CENTER FOR STUDENT LIFE



Named after the late John Brooks Slaughter, beloved USC Viterbi Professor and national engineering icon, the JBS Center unites a portfolio of co-curricular initiatives designed to support the whole Viterbi student—focusing on academic, social, wellness and professional support.



Rooted in Dr. Slaughter's vision, the Center ensures students have access to high-impact engagement experiences, a strong sense of purpose, and the resources to thrive throughout their educational journey and beyond.

Nora Sandoval

Assistant Dean & Director,
John Brooks Slaughter Center

The Four Success Areas



Achieving your individual goals and developing a growth mindset requires intentional engagement and strong support systems across four key areas:

**Academic, Social, Career,
and Wellness.**

Together, these interconnected dimensions form what we call the Four Success Areas.



FIRST YEAR EXPERIENCES



Whether you are joining USC directly from high school or transferring from another institution, your first year will be a time of exploration, transition, and foundational growth. It is an opportunity to discover your interests, build meaningful connections, and develop the skills and confidence that will support your success throughout your USC journey and beyond.

At Viterbi, we believe student success is strengthened through engagement in four interconnected areas: **Academic, Social, Career, and Wellness** — what we call the Four Success Areas. The clubs, organizations, programs, and events available both within and beyond Viterbi are designed to help you grow in each of these dimensions while encouraging you to explore new personal, professional, and academic experiences.

We encourage you to build community, step outside your comfort zone, and take advantage of the many opportunities available to you at USC. Remember that every student's path is different, and your experience will be unique to you. There is no single "right" way to navigate your first year, so give yourself grace as you learn, grow, and adapt. Most importantly, remember that your first year is only the beginning of your USC experience and the foundation for the journey ahead.



USC Viterbi WELCOME EXPERIENCE

FIGHT ON! 🙌

The Viterbi Welcome Experience

begins with orientation and continues through your first semester. Academic advisors will help you enroll in courses during orientation while peer

orientation advisors will be available to offer guidance as you transition to college. You will also have the chance to attend welcome week events across campus where you will get to meet your fellow students. Look out for the *Viterbi Welcome Experience* icon to register on the EngageSC platform and attend.

Mark your calendars for Viterbi's New Student Welcome on Thursday, August 20, 2026 at 11AM!

First-Year Academy - ENGR 102

All first-year students in Viterbi are invited to enroll in First-Year Academy, a two-credit class that encourages new Viterbi students to learn about different engineering fields, understand how engineers think and approach problem solving, and examine the ethical, societal and political impact of engineering. The course is supplemented with co-curricular activities, both in and outside the classroom, and will connect you with Academy coaches, peers, and guest lectures in the field! **Students will learn from:**

Coaches: Upper-division engineering students who serve as mentors and resources for questions about Viterbi student life

Faculty: Experiences and enthusiastic professors who get to know students individually and provide insight on their research & careers

Leaders in the Field: Professionals, innovators, researchers, and USC alumni in the engineering field who share their experiences with Academy students

STUDENT SUCCESS



The Student Success Program leads initiatives designed to cultivate belonging, connection, and empowerment for students navigating barriers to success, including those who may be the first in their families to attend college or pursue an engineering degree. Through intentional programming and community-building, the program helps students feel seen, supported, and valued as integral members of the Viterbi community.

Programming is centered around four key areas:

- **Wellness and Academic Support:** Providing resources and support that foster well-being, academic confidence, and a sense of belonging.
- **Speaker & Workshop Series:** Offering customized professional development workshops that expose students to engineering career pathways and opportunities for growth.
- **Mentorship:** Creating meaningful mentorship experiences that connect students with STEM role models and supportive networks.
- **Leadership Development:** Providing opportunities through strategic partnerships that strengthen leadership skills and empower students to lead with confidence.



VITERBI LEARNING PROGRAM



The Viterbi Learning Program (VLP) is your resource in enhancing your educational experience by supporting your classroom learning through peer mentoring, tutoring, academic success events, and group study sessions. Viterbi certified peer tutors are students who were once in your spot and can offer advice, insight and ability to help you hone in on specific course questions.



Neta Shubin

Computer Science & Computational Linguistics,
Class of 2027

Viterbi Involvement

- Grand Challenges Scholar
- CURVE Research Fellow

“Being a tutor is a way for me to share my love of mathematics and programming with others. I love seeing the spark that appears when a difficult concept suddenly starts making sense. I help students review and clarify topics they might find difficult by working together to solve practice problems. This one on one experience provides a more personalized learning environment that can truly make the difference between confusion and success.”



Ways VLP Can Help You

1

One-on-one tutoring with certified peer tutors

2

Tutor Scheduling Service to find available tutors for your classes

3

Academic Success Events for group study sessions, networking, and skill building

4

Drop-in tutoring for quick questions on specific subjects

5

Writing consultations for help on essays and research papers

RESEARCH & GLOBAL PROGRAMS

CENTER FOR UNDERGRADUATE RESEARCH IN VITERBI ENGINEERING (CURVE)



CURVE connects Viterbi students with faculty-led research early in their undergraduate experience. Through CURVE, students can explore real-world engineering questions, build technical skills, and gain mentorship from faculty and graduate students — all while being part of a paid research team.

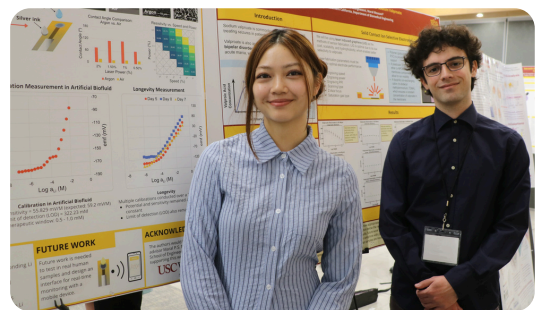
When do I get involved?

You don't need to start right away. Most students use their first year to adjust, build skills, and explore interests. Many begin looking into research by the end of first year and typically start in their second year or later.

Big Ideas. Real Impact.

Here are a few examples of the big ideas and real-world challenges current Viterbi students are exploring through research.

- Advancing Early Cancer Detection Through Deep Learning and Liquid Biopsy Imaging Generating
- Contextually-Relevant Navigation Instructions for Blind and Low Vision People
- Assessing Earthquake Impact on Community Resilience through Sentiment Analysis and Social Computing
- Sustainable Agriculture with LEAFS: A Low-Cost Electrochemical Analyzer of Foliage Stress
- Designing a Venus Atmospheric Droplet Sample Collection System
- Development of Quadrupedal Robot for Sensing During Locomotion



Why Undergraduate Research Matters

Research helps you apply what you learn, explore your interests, and build experience for internships or graduate school—while giving you early insight into whether a research path is right for you. **Learn more on our website:**

viterbiundergrad.usc.edu/research/curve

GRAND CHALLENGES SCHOLARS PROGRAM



The Viterbi Grand Challenges Scholars program promotes the ideals of life quality, health solutions, security, and sustainability through research, entrepreneurship, service, and global engagement. You can design your own unique educational experience by addressing one of the 14 challenges (*below*). Join a global network of students who graduate as a National Academy of Engineering (NAE) recognized Grand Challenge Scholar!

Why Viterbi GCSP?

Viterbi GCSP offers undergraduate students the opportunity to tailor their curricular and co-curricular experiences (student organizations, coursework, honors programs, design teams, research, study abroad experiences, etc) towards meaningful work, discovery, and academic pursuits that contribute to solving global society's most pressing issues.

This program is open to all Viterbi undergraduate students, and we hope you will join the ranks of the Viterbi Grand Challenges Scholars!

The Viterbi GCSP Student Experience

- Entry to an advisement cohort specific to crafting their curricular and co-curricular experiences towards pursuit of a Grand Challenge
- Access to support and events hosted by the GCSP student organization
- Additional guidance related to the many Viterbi and University programs and organizations
- Faculty support related to Grand Challenges and research opportunities
- Connection to the International GCSP Network

14 GRAND CHALLENGES*

Sustainability

- Make solar energy economical
- Provide energy from fusion
- Develop carbon sequestration methods
- Manage the nitrogen cycle
- Provide access to clean water

Health

- Engineer better medicines
- Advance health informatics
- Reverse-engineer the brain

Security

- Secure cyberspace
- Prevent nuclear terror
- Restore and improve urban infrastructure

Joy of Living

- Enhance virtual reality
- Advance personalized learning
- Engineer the tools of scientific discovery

**This list was created by the NAE in 2008, and may not fully represent all the changes occurring in the world currently. We encourage Viterbi students to utilize the four themes of GCSP to identify and explore societal challenges they are passionate about addressing.*



The Five Mindsets

GCSP students engage with each of the Five Mindsets needed to solve for Grand Challenges. Students who receive GCSP Designation in their senior year demonstrate understanding and commitment to the Five Mindsets, and thus are equipped to make impactful contributions as scholars and professionals. GCSP students are prepared to use an interdisciplinary approach to problem solving, with engineering as the foundation for the multifaceted ways in which they view the world.



**Talent/
Research**



**Social
Consciousness**



Multicultural



Entrepreneurship



**Multidisciplinary
Approach**

Get Rewarded for Your Exceptional Viterbi Journey

Awards and recognition for hard work are important at Viterbi. Our curriculum is notably rigorous as a means of preparing the next generation of engineers prepared and willing to tackle the biggest issues our global community face. "Engineering a Better World" is not just a saying at Viterbi - it is a part of our mission.

Students who earn the designation of Viterbi Grand Challenges Scholars receive:

- A transcript designation as a Viterbi Grand Challenges Scholar
- A medal to be worn at Commencement and all other end of year celebrations
- A recognition letter from the National Academy of Engineering's President
- Recognition from the international GCSP Network



Did You Know?

The GCSP - and its international network - was founded by three engineering Deans. One founder, former Viterbi Dean Yanniss C. Yortsos (left), remains at USC even today. He is still at the forefront of our commitment to train and prepare Viterbi students to address the Grand Challenges.

VITERBI GLOBAL PROGRAMS



Viterbi students can take advantage of a diverse range of Viterbi Global Programs to study, live, and learn at top overseas universities, and expand their worldview as future leaders in engineering.

- Viterbi International Exchange
- Viterbi GlobalXP Programs
- Viterbi Summer Research Programs
- Problems without Passports
- Viterbi iPodia Program
- USC Semester Abroad

Exchange Programs

Study, live, and learn at top universities around the world through the Viterbi Global Exchange Program! Open to undergraduate students, this program offers the opportunity to spend a semester or full academic year abroad, taking courses that complement their major and gain a deeper understanding of global engineering. Students immerse themselves in the academic and cultural life of their host institution, building international connections and experiencing new ways of learning & innovation.

Partner Universities

- National University of Singapore (Singapore)
- Hong Kong University of Science and Technology (Hong Kong)
- University of Edinburgh (Edinburgh, Scotland, United Kingdom)
- Inha University (Incheon, South Korea)
- Bilkent University of Turkey (Ankara, Turkey)
- RWTH Aachen University (Aachen, Germany)
- Technical University of Crete (Chania, Greece)
- University of Cyprus (Nicosia, Cyprus)



“Studying at NUS pushed me outside my comfort zone and showed me how much growth can come from embracing new cultures, ideas, and opportunities.”

– **Ilayda Karaatli, BS ISE/MS Engineering Management, Viterbi International Exchange NUS**

GlobalXP Programs

Viterbi GlobalXP programs are short-term, faculty-led experiences that examine a global Grand Challenge in a dynamic overseas city. Offered as Fall Lead, Spring Break, and Maymester, these programs allow students to earn academic credit while exploring global engineering in an immersive setting. Programs typically include 1–2 weeks abroad, featuring company visits, guest speakers, and cultural experiences.

Locations Abroad Include...

- Tokyo, Japan
- Sydney, Australia
- Berlin, Germany
- Goa, India
- ... and more!

TOP: Make friends even before your departure! Join a pre-trip meet-up to get to know your fellow student travellers.

MIDDLE: GlobalXP Program students tour leading engineering companies and visit engineering-related sights of interest while meeting expert local engineers, guides, and leaders.

BOTTOM: There's even more to explore! GlobalXP Program students experience many aspects of the local culture - for example, celebrating traditional music with taiko drumming in Tokyo, Japan!

"GlobalXP allowed me to gain a new prospective on universal needs that engineering can change."

**– Lauryn Hills, BS ECE,
Viterbi GlobalXP Berlin**





Start planning today!

- Students usually go abroad in their Sophomore to Senior year.
- Applications typically open a semester ahead. Applications open in December for the Fall exchange and open in August for Spring exchange

Viterbi Summer Research Overseas

Conduct hands-on research at leading international universities while gaining a global perspective on engineering. Students work alongside faculty in advanced labs, explore new research approaches, and experience different cultures. Programs are offered during the summer, with applications typically opening in the spring semester.

Research Locations Include...

- Tsinghua University (China)
- RWTH Aachen University (Germany)
- Technical University of Crete (Greece)

“Participating in this program has made me become very aware of the great business potential there is in Asia. It has made me consider finding an internship or full time job in Hong Kong or another Asian country as well as do business with Asian partners some day. I have also learned about the many social and environmental issues and challenges facing that part of the world, as well as some of the steps and solutions, which I may one day be able to adapt or replicate in other parts of the world such as my country.”

– Andres Engels Trevino, Viterbi International Exchange HKUST



COMMUNITY & LEADERSHIP DEVELOPMENT

STUDENT ORGANIZATIONS



Student organizations are a great way for you to get involved and connect with your peers. Many student organizations actively sponsor a number of professional, social, and service programs. If you can't find exactly what you are looking for, start your own student organization!

The Viterbi School of Engineering is home to over 50 unique Viterbi-affiliated student organizations, ranging from academic and social groups to community groups, and design and competition teams. We recognize that you are more than just an engineering student and that your classroom experiences, affiliations, and participation in organizations can intersect and overlap in dynamic ways.

Visit [EngageSC](#) to explore student organizations and events on campus!

Be on the lookout for student organization fairs at the start of each semester! To explore all USC student organizations, visit the *Involvement Fair*. To explore Viterbi-affiliated student organizations, visit the *Viterbi Get Connected! Fair*.

Types of Student Organizations at USC Viterbi

- **Academic & Social**
 - 3D For Everyone (3D4E)
 - Associated Students of Biomedical Engineering (ASBME)
 - Institute of Transportation Engineers (ITE)
 - Center for AI in Society Student Branch (CAIS++)
- **Community**
 - National Society of Black Engineers (NSBE)
 - Queens in Engineering, Science, and Technology (QuEST)
 - Society of Hispanic Professional Engineers (SHPE)
 - Society of Women Engineers (SWE)
- **Design & Competition**
 - Rocket Propulsion Laboratory (RPL)
 - USC Racing
 - Autonomous Underwater Vehicle (AUV)
 - AeroDesign Team (ADT)



VITERBI IMPACT PROGRAM



The Viterbi Impact Program (VIP) is your gateway to service, community engagement, and volunteer opportunities at Viterbi. Whether you are looking for a one-time volunteer experience or a semester-long commitment, VIP connects students to meaningful opportunities that support and engage the Los Angeles community.

From working alongside local non-profit organizations to inspiring the next generation of engineers through hands-on STEM activities, Viterbi Impact helps students contribute to meaningful change while building leadership skills, meaningful connections, and a stronger sense of community.

Viterbi K-12 STEM Center

VIP volunteers apply their skills to support programs such as Mathematics, Engineering, Science Achievement (MESA), CS@SC, Mission Science, and Career Path which provide students at local partner schools with access to STEM education through hands-on projects, activities, and interactive learning experiences.



Community Partners

Viterbi Impact partners with non-profit organizations such as South LA Robotics, The Engineer Factory, and Urban TXT to promote STEM education for youth across Los Angeles. Viterbi students serve as coaches, referees, and mentors who support students participating in robotics competitions, drone education programs, and other hands-on engineering and technology experiences.

Friends & Neighbors Day

Join us throughout the semester for one-time volunteer opportunities that support causes across Los Angeles. Students can help address food insecurity by joining us at the Los Angeles Regional Food Bank, participate in sustainability efforts alongside TreePeople, support premature infant care with Beanies for Preemies, and engage with the community at events like the annual LA Maker Faire.



Viterbi Student Organizations

Viterbi Impact partners with student organizations such as NSBE, SHPE, SciBAT, AIChE, IISE, ITE, USC Makers, SWE, 3D4E, and organize outreach events that promote STEM education for elementary, middle, and high school students across Los Angeles. Through interactive workshops, hands-on demonstrations, and by sharing their experiences as engineering students, these organizations help inspire and encourage the next generation of STEM leaders. Learn more about Viterbi-affiliated student organizations through [EngageSC](#).



ENGINEERING HONORS PROGRAM & DEAN'S LIST

W.V.T. Rusch Undergraduate Engineering Honors Program (EHP)

The W.V.T. Rusch Undergraduate Engineering Honors Program (EHP) is designed to enrich the academic experience of highly motivated and talented Viterbi undergraduate students.

EHP students will have the opportunity to enhance their engineering curriculum through the completion of a significant self-directed honors project in the form of either a thesis project (Research Track) or commercialization plan (Innovation Track). The vision of the Engineering Honors Program is to enhance the competitiveness of students for post-graduate opportunities. Attend an information session to learn more.

USC Viterbi Dean's List

The USC Viterbi School of Engineering recognizes students who have achieved a semester GPA of 3.5 or higher by including their names on the Dean's List. Recognized students can receive a Dean's List Certificate for their records. The Dean's List is released the following semester after final grades have been calculated.



VITERBI CAREER CONNECTIONS

Prepare and Connect! Viterbi Career Connections is committed to helping you achieve your future career goals through exploration and goal-setting opportunities, career advising, and connecting with employer partners and alumni at recruitment and professional development events. Start planning for graduate school or your future career path by focusing on what you can do now to achieve future success.

What We Offer:

1:1 Career Advising

Viterbi career advisors provide advising sessions tailored to meet individual student needs and goals. Meet with a career advisor to discuss your internship search strategy, review your resume, interview skills, evaluate a job offer, and more. Appointments and Drop-in hours are available.

Professional Development

Participate in staff and employer-led workshops, company site visits, resume review and mock interview days, and other events to get career and internship ready.

Recruitment Opportunities

Connect with employers and alumni in person and virtually through career expos, networking events, Handshake career services management platform, company information sessions, and on-campus recruiting.

Class of 2025, By the Numbers

The undergraduate class of 2025 shared their next steps, and the future looks bright. About 75% of our graduating class entered industry, while another 23% went on to graduate studies. The remaining 2% of students pursued service opportunities, their own ventures, or military service.

75%

BS students reporting employment after graduation

32,900+

Opportunities posted for engineering students in Handshake

23%

BS students reporting grad school enrollment after graduation

115

Employer info sessions offered

\$108,300

Average salary of Viterbi Class of 2025 (Bachelors)*

139

Employers registered for Career & Internship Expos

120

Career readiness & recruitment activities offered

PREPARING FOR THE FUTURE

Taylor White

Biomedical
(Mechanical)
Engineering,
Class of 2023



Viterbi Involvement

- Progressive Degree Program (PDP), Medical Device and Diagnostic Engineering
- WiSE Research Fellow
- Valero Lab Research Intern
- Viterbi Career Ambassador
- Alfred Mann Institute Intern
- Valero Lab Research Intern

USC Involvement

- Alpha Delta Pi Sorority
- PwC Cyber Risk and Regulatory Consulting Intern

“The Viterbi Career Center has helped me develop and transition from a student to a professional. With their guidance I have been able to gain exposure into an industry I hope to join after graduation through networking, interview preparation, and resume critiques. Everyone at the career center has a true passion for seeing the students of Viterbi succeed, and I am fortunate enough to have had the pleasure of working with them.”

About **70% of summer internship recruitment takes place in the fall semester.** Have your resume ready by mid-September.

Get Involved in Your First Year

1

How to Get Hired Series (HTGH)

Attend the HTGH series and develop key professional skills while connecting with Viterbi employer partners & alumni.

2

Information Sessions (Trojan Talks)

A great way to explore an organization or an industry! Employers provide insights on their organization, open positions & organizational culture.

3

Handshake

Handshake is USC's university-wide career services management platform where you can access career advising, search for internships and jobs, and view online career development resources.

4

Viterbi Career & Internship Expos

The Expo takes place in the fall and spring semesters. This multi-day event includes employer recruiting sessions, panels, demos, and a traditional career fair. A great opportunity to start researching employers and connect with those seeking new hires.

Viterbi Career Services Management Platform

The Handshake platform allows you to search for engineering internships, co-ops, and full-time opportunities, get information for recruitment and networking events, RSVP for professional development workshops, make career advising appointments, access resources, and more!

[Click here to visit Handshake](#)

Neysi Chegue Bustos,
Mechanical Engineering, Class of 2026

Viterbi Involvement

- SHPE President
- Viterbi Impact Program

USC Involvement

- USC Science Outreach

Internships

- General Electric Vernova (2x)



"The Viterbi Career Center is a valuable part of the engineering community here at USC. I love meeting students who are extremely ambitious about their dreams and I'm grateful for the opportunity to help them get one step closer. The team does an amazing job at guiding them and providing impactful events, not only because they are good at their job, but because they truly care about student success."

Viterbi Career Connections

Viterbi Career Connections offers professional development support to prepare you for learning experiences with employers as an intern or trainee during your undergraduate career. Take advantage of these opportunities.

CO-OPS: Co-ops offer more in-depth and extensive work experience over the course of two semesters, usually lasting a minimum six months.

INTERNSHIPS: Typically offered over the summer, internships are 8 to 12 weeks of on-the-job training in a particular field.

ACADEMIC ADVISING

As a Viterbi student, you are assigned an academic advisor, who is here to help you navigate from new student orientation all the way to graduation. Each semester, you and your advisor will work together to ensure that you are meeting your degree requirements, making progress toward your goals, and staying on track for graduation.

1

The First Three Weeks

The first three weeks of each semester is the add/drop period, when you can continue to make changes to your course schedule by adding new courses and dropping registered courses.

Talk with your advisor about adjusting your course registration and any other questions you have as you start the semester!

You'll meet with your advisor for a mandatory advising appointment prior to registration to check in about the current semester, discuss and plan courses for next semester, and explore your academic interests and goals.

Prepare for mandatory advising by reviewing your degree requirements on your STARS Report.

2

Mandatory Advising

3

Registration

You'll be able to start registration for next semester's classes at a specific date and time known as your **"registration appointment."** Before that date, you can explore classes and plan your schedule in Web Registration.

Your advisor is here to support you throughout the semester! Connect with them about any questions or concerns that come up as you finish the semester and look ahead to next semester.

4

End of Semester



DEGREE REQUIREMENTS

USC's General Education requirements, or "GEs" for short, provide the critical skills necessary to function effectively, thoughtfully, and productively in a complex world. GE requirements prepare you to be an informed citizen of the twenty-first century, able to understand current challenges and participate in the debates of your time.

GE A The Arts

GE B Humanistic Inquiry*

GE C Social Analysis*

GE D Life Sciences

GE E Physical Sciences

GE F Quantitative Reasoning

GE G Global Perspectives I

GE H Global Perspectives II

GESM General Education Seminar

* 2 Classes Required

GESM, GE G, and GE H courses can double-count for two requirements. Your GESM course should be taken in Category A, B, or C. Talk to your advisor and check your STARS Report.

GENERAL EDUCATION SEMINAR

All first-year students must take one of the Core Literacy courses in the GE Seminar (GESM) format. These specially-designed seminars take place in a small classroom setting.

WRITING REQUIREMENT

All majors are required to complete two writing courses: WRIT 150 (Writing and Critical Reasoning) and WRIT 340 (Advanced Writing and Critical Engagement) as part of your degree requirements.

EXAM CREDIT

Students may receive a combined maximum of 32 units for college courses taken prior to high school graduation and/or examinations (e.g., AP, IB, or other international exams) taken before matriculation at a two-year or four-year college.

ADVANCED PLACEMENT (AP) EXAMS SCORE OF 4 OR 5

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 + GE-D
 Computer Science A → CSCI 102
 Physics → GE-E
 Art History → GE-A
 Statistics → GE-F
 Macroeconomics → GE-F
 Microeconomics → GE-F
 European History → GE-H
 U.S. History → GE-H
 World History → GE-H

INTERNATIONAL BACCALAUREATE (IB) HL EXAMS SCORE OF 5, 6, or 7

Mathematics → MATH 125 + GE-F
 Chemistry (6 or 7) → CHEM 105AL + GE-E
 Biology → BISC 120L + GE-D
 Physics → GE-E
 Economics → GE-F
 History of Africa & the Middle East → GE-H
 History of Asia/Oceania → GE-H
 History of the Americas → GE-H
 History of Europe → GE-H
 Dance, Film, Music, Theatre, or Visual Arts → GE-A
 Global Politics → GE-G

A-LEVEL EXAMS SCORE OF B OR BETTER

Mathematics → MATH 125 + GE-F
 Chemistry → CHEM 105AL + GE-E
 Biology → GE-D
 Physics → GE-E

Special Physics note for Artificial Intelligence, Computer Science, Electrical & Computer Engineering, and Industrial & Systems Engineering
 AP Physics C (Mechanics and Electricity/Magnetism), IB Physics HL and A-level Physics exams are **not** equivalent to PHYS 151 or PHYS 152 but students may be able to fulfill the science requirements for these majors with exam credits. Talk to your academic advisor if you took any of these exams.



USC Viterbi

School of Engineering

ACADEMIC PROGRAMS



AEROSPACE & MECHANICAL ENGINEERING



Aerospace and mechanical engineers (AME) 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 to near-earth, planetary, interplanetary and galactic space.

Join an AME Design Team

- Advanced Spacecraft Propulsion and ENergy (ASPEN)
- AeroDesign Team (ADT)
- USC Racing (FSAE)
- USC Formula Electric
- Recumbent Vehicle Design Team (RVDT)
- Advanced Robotic Combat
- Autonomous Underwater Vehicle*
- Advanced Composites Design Team (ACDT)



Popular Study Abroad Sites

- University of Auckland
- University of Edinburgh
- University of Melbourne
- Queen Mary, London

Professional Student Organizations

- American Institute of Aeronautics and Astronautics (AIAA)
- SAE International
- American Society of Mechanical Engineers (ASME)

Thinking about studying abroad? AME Advisors typically recommend studying abroad during the spring of your sophomore year.

CAREERS

Alejandro Gonzalez

Class of 2019,
Aerospace Engineering

Advanced Concepts Engineer at The Boeing Company

My job is to create future aircraft and aircraft technologies. Specifically, I use engineering tools to evaluate new concepts that can be applied to aircraft in order to better improve them for customers and the world as a whole.

I love that I get to do exactly what I went to school for. You often hear that people attend college and get a degree that they “never use” but I use the fundamentals and skills that I learned at USC every day.

Advice? Get involved with the AeroDesign Team!



RESEARCH

Dr. Paul Ronney

LAB: Combustion Physics Lab

RESEARCH FOCUS: Combustion problems but more generally on “chemically-reacting flows”

RESEARCH PROJECT: Efficient propulsion systems for clusters of small satellites

COURSES: AME 101 (Intro to Mechanical Engineering) and AME 436 (Automotive & Flight Propulsion)

FUN FACT: Dr. Ronney was the Payload Specialist Astronaut (Alternate) for two 1997 Space Shuttle missions



AEROSPACE ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
WRIT 150 4	GESM (GE B) [#] 4	AME 201 MATH 125 or 126 or 226 4	AME 261 4	GE D* 4	GE C 4	MASC 310L 4	WRIT 340 WRIT 150 4
AME 105 4	GE B 4	GE A 4	AME 204 AME 201 4	AME 301 AME 201, (MATH 245) 4	AME 310 PHYS 151 and MATH 125 or 126 or 226 4	GE C 4	AME 436 AME 310 4
MATH 125 (GE F)* 4	MATH 126 or MATH 129* MATH 125 4	MATH 226 or MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	AME 308 AME 204, (AME 301) 4	AME 309 AME 201, (MATH 245) 4	AME 451 AME 302a, AME 302b 4	AME 481 4
CHEM 105AL or MASC 110L* 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	PHYS 152L PHYS 151L, (MATH 226) 4	AME 208 co-req--MATH 245 4	AME 341aL PHYS 152, AME 208 4	AME 341bL AME 341a 4	AME 441aL AME 308, AME 341a, AME 341b 4	PHYS 153 PHYS 152 4
ENGR 102 2	TAC 168 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	AME 302a MATH 245 2	AME 302b AME 302a, MATH 245 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

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

Engineering (70 Units)

- AME 105: Intro. to Aerospace Engineering
- AME 201: Statics
- AME 204: Mechanics of Materials & Structures
- AME 208: Computational Methods in Engineering
- AME 261: Basic Flight Mechanics
- AME 301: Dynamics
- AME 302a: Systems
- AME 302b: Systems
- AME 308: Computer-Aided Engineering
- AME 309: Dynamics of Fluids
- AME 310: Engineering Thermodynamics I
- AME 341aL: Mechoptronics Laboratory
- AME 341bL: Mechoptronics Laboratory
- AME 436: Automotive & Flight Propulsion
- AME 441aL: Senior Projects Laboratory
- AME 451: Linear Control Systems I
- AME 481: Aircraft Design
- ENGR 102: Engineering Freshman Academy
- TAC 168: Introduction to MATLAB
- MASC 310L: Materials Behavior and Processing

Writing (8 Units)

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

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)

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 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.
- **Physics Requirement:** PHYS 161-163 and PHYS 171-173 are acceptable towards this requirement.

MECHANICAL ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
WRIT 150 4	GESM (GE B)# 4	GE C 4	AME 208 co-req: MATH 245 4	GE C 4	MASC 310L 4	GE B 4	WRIT 340 WRIT 150 4
AME 101L (MATH 125) 4	GE A* 4	AME 201 MATH 125 or 126 or 226 4	AME 204 AME 201 4	AME 301 AME 201, (MATH 245) 4	AME 310 PHYS 151 and MATH 125 or 126 or 226 4	AME 431 AME 310, (AME 309) 4	GE D 4
MATH 125 (GE F)* 4	MATH 126 or MATH 129* MATH 125 4	MATH 226 or MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	AME 308 AME 204, (AME 301) 4	AME 309 AME 201, (MATH 245) 4	TECHNICAL ELECTIVE 4	TECHNICAL ELECTIVE 4
CHEM 105AL or MASC 110L* 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	PHYS 152L PHYS 151L, (MATH 226) 4	PHYS 153L PHYS 152 4	AME 341aL PHYS 152, AME 208 4	AME 341bL AME 341a 4	AME 441aL AME 308, AME 341a, AME 341b 4	CAPSTONE ELECTIVE 4
ENGR 102 2	TAC 168 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	AME 302a MATH 245 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

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

Engineering (68 Units)

- AME 101L: Intro. to Mechanical Engineering
- AME 201: Statics
- AME 204: Mechanics of Materials & Structures
- AME 208: Computational Methods in Engineering
- AME 301: Dynamics
- AME 302a: Systems
- AME 308: Computer-Aided Engineering
- AME 309: Dynamics of Fluids
- AME 310: Engineering Thermodynamics I
- AME 341aL: Mechoptronics Laboratory
- AME 341bL: Mechoptronics Laboratory
- AME 431: Heat Transfer
- AME 441aL: Senior Projects Laboratory
- AME CAPSTONE ELECTIVE
- ENGR 102: Engineering Freshman Academy
- TAC 168: Introduction to MATLAB
- MASC 310L: Materials Behavior & Processing
- TECHNICAL ELECTIVES

Writing (8 Units)

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

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)

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- **Physics Requirement:** PHYS 161-163 and PHYS 171-173 are acceptable towards this requirement.
- **AME Capstone:** See academic advisor for approved course list.
- **Technical Electives:** Any upper-division course in engineering, chemistry, physics or mathematics.
- **Optional Electives:** Consult with your academic advisor to explore optional elective courses. These courses are not required.

ASTRONAUTICAL ENGINEERING



The Astronautical Engineering (ASTE) program provides the fundamentals of science and engineering with specialized courses in astronautic and technical electives. 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 operates the Space Engineering Research Center which builds and launches spacecraft as well as prototypes and flies new inventions in space technology. For instance, CLINGERS, a docking system based on a device patented by faculty member Berok Khoshnevis, is currently flying on the International Space Station.



Popular Study Abroad Sites

- University of Auckland
- National University of Singapore
- Hong Kong University of Science & Technology

Join an ASTE Student Organization

- Rocket Propulsion Lab
- Liquid Propulsion Lab
- Students for the Exploration & Development of Space (SEDS) USC Chapter

CAREERS

Lauren Potterat

BS, MS 2021, Astronautical Engineering, Executive Engineer, Rocket Propulsion Laboratory '20-21



Starship Software Engineer, SpaceX

At SpaceX, I design and implement simulation software that stress tests Starship's various operational configurations. I work closely with hardware, software, and flight operations engineers who use this software to verify vehicle readiness for flight. I have traversed several roles at SpaceX (including Mission Control Operations, Operator Training and Mission Management) and have found my experience in USC RPL critical in building the foundational engineering skills I apply daily - grit, willingness to fail quickly and iterate, and the importance of the interpersonal connections as we endeavor to make human spaceflight safer, faster, and more accessible than ever before.

The most valuable lesson I learned from my time at USC (particularly USC RPL) was to fail forward, fail fast, and frequently (almost unapologetically) question your assumptions. Per aspera ad astra!

RESEARCH

Dr. Dan Erwin

AREA OF RESEARCH: Astrodynamics, autonomous vehicles

RESEARCH PROJECT: AI for low thrust spacecraft trajectory design

COURSES: ASTE 101 (Introduction to Astronautics) and ASTE 280 (Foundations of Astronautical Engineering)

FUN FACT: Dr. Erwin likes to ride motorcycles and mentors the Rocket Propulsion Lab



ASTRONAUTICAL ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
WRIT 150 4	GESM (GE B) [#] 4	AME 310 PHYS 151, MATH 125 4	AME 204 AME 201 4	PHYS 153L PHYS 152L 4	AME 341bL AME 341aL 4	GE C 4	GE B 4
ASTE 101L 4	GE A* 4	AME 201 MATH 125 or 126 or 129 4	AME 208 MATH 245 4	ASTE 331 ASTE 280 (PHYS 153) 4	ASTE 421 ASTE 331 or ASTE 331ab 4	TECHNICAL ELECTIVE 2	TECHNICAL ELECTIVE 4
MATH 125 (GE F)* 4	MATH 126 or MATH 129* MATH 125 4	MATH 226 or MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	AME 301 AME 201 4	ASTE 305 PHYS 153, AME 310 (MATH 245) 4	ASTE 475 PHYS 152L and ASTE 305 or AME 309 4	WRIT 340 WRIT 150 4
CHEM 105aL or MASC 110L* 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	PHYS 152L PHYS 151L, (MATH 226) 4	ASTE 280 PHYS 152 4	AME 341aL PHYS 152, AME 208 4	AME 308 AME 204, (AME 301) 4	AME 441a 4	GE C 4
ENGR 102 2	TAC 168 2	OPTIONAL ELECTIVE 2	TECHNICAL ELECTIVE (ASTE 490/491) 1	TECHNICAL ELECTIVE (ASTE 490/491) 1	OPTIONAL ELECTIVE 2	GE D* 4	

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

Engineering (70 Units)

- AME 201: Statics
- AME 204: Strength of Materials
- AME 208: Mathematical Methods in ENGR
- AME 301: Dynamics
- AME 308: Comp. Aided Analysis for Design
- AME 310: Engineering Thermodynamics I
- AME 341aL: Mechoptronics Laboratory I
- AME 341bL: Mechoptronics Laboratory II
- AME 441a: Senior Projects Laboratory
- ASTE 101L: Intro. to Astronautics
- ASTE 280: Foundations of Astronautics
- ASTE 305: Astronautics Gas Dynamics
- ASTE 331: Spacecraft Systems Engineering
- ASTE 421: Space Mission Design
- ASTE 475: Rocket Propulsion
- ENGR 102: Engineering Freshman Academy
- TAC 168: Introduction to MATLAB
- TECHNICAL ELECTIVES

Writing (8 Units)

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

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)

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a 4-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- **Technical Electives:** Any upper-division course in engineering, chemistry, physics, and mathematics. See academic advisor for exceptions/substitutions.

BIOMEDICAL ENGINEERING



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.

Interested in Pre-Med?

BME programs can adapt to include most medical school prerequisites, while also providing applied technical training beyond the basic life sciences.

Join a BME Student Organization

- The Associated Students of Biomedical Engineering (ASBME)
- MEDesign

Popular Study Abroad Sites

- Queen Mary, London
- University of Queensland
- University of Melbourne
- University of Galway
- University of Edinburgh



CAREERS

Rhea Choudhury

Class of 2019,
Biomedical Engineering,
Healthcare Studies Minor



Systems R&D Engineer at Edwards Lifesciences

I design, develop and test products that monitor patients in the ICU. Think of every hospital scene where there's a beeping machine displaying the patient's heart rate — my work is centered on making sure those machines display key patient information, are user-friendly to nurses and physicians, and that all the connected sensors that collect anatomical data directly from patients are accurate. I'm lucky that my role is hands on and cross-functional. I get to work in an actual research lab, designing, testing and perfecting products for most of my day. Coming out of college, I really wanted a position where I could exercise my love of engineering and problem solving, while feeling like I was still making a tangible impact in the healthcare world, for patients. An R&D role, especially on the kinds of monitoring products I work on, allows me to fundamentally shape the products that go out into hospitals, and simultaneously learn from cutting edge industry experts about the progress of the field as a whole.

RESEARCH

Dr. Maral Mousavi

LAB: MADLAB

RESEARCH FOCUS: Affordable
Point-of-Care Diagnostics



RESEARCH PROJECT:

Our research focuses on developing engineered tools to improve healthcare and patient outcomes, while simultaneously make it accessible for all. We accomplish this using ubiquitous and inexpensive materials, such as paper and thread, to create unique and accessible sensors for a variety of applications. To learn about the new bioanalytical tools being developed, check out the project areas below.

COURSES:

BME 450: Introduction to Biosensors and Diagnostics Devices, and BME 650: Biomedical Measurement and Instrumentation

BIOMEDICAL ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
BME 101 or GE A/B/B/C/C 4	BME 101 or GE A/B/B/C/C 4	BME 202 MATH 126 or 129 4	BISC 220L (GE D) 4	EE 202L PHYS 152L, (MATH 245) 4	TECHNICAL ELECTIVE 4	BME 302 EE 202L 4	BME 415 2
WRIT 150 4	GESM 4	GE A/B/B/C/C (gw or gp as needed) 4	BME 210 (MATH 245) 4	BME 423 MATH 245 4	GE A/B/B/C/C (gw or gp as needed) 4	BISC 320L, BISC 312 or HBIO 301L *See Special Note* 4	GE A/B/B/C/C (gw or gp as needed) 4
MATH 125 (GE F)* 4	MATH 126 OR MATH 129* MATH 125 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	MATH 245 MATH 226 or 229 4	CHEM 322aL CHEM 105bL 4	WRIT 340 4	BME 445aL Senior Project Prereq: BME 210 Co-req: EE 202 2	BME 445bL Senior Project BME 445aL 2
CHEM 105aL (GE E)* 4	CHEM 105bL CHEM 105aL 4	MATH 226/229 4	PHYS 152L PHYS 151L, (MATH 226) 4	BME ANCHOR COURSE 4	CHEM 322bL or 400-level BME Course 4	BME 413 PHYS 152L 4	BME 403L Prereq: BISC 220 & MATH 245 Co-req: EE 202 4
ENGR 102 Recommended 2	TAC 165 or OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	TECHNICAL ELECTIVE 2	TECHNICAL ELECTIVE 4

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

Engineering (55 Units)

- BME 101: Intro. to Biomedical Engineering
- BME 202: Control/Comm. in Nervous System
- BME 210: Biomed. Comp. Simulation Methods
- BME 302L: Medical Electronics
- BME 403L: Physiological Systems
- BME 413: Bioengineering Signals & Systems
- BME 415: Regulation of Medical Products
- BME 423: Statistical Methods in BME
- BME 445aL: Senior Projects
- BME 445bL: Senior Projects
- EE 202L: Linear Circuits
- ENGR 102: Engineering Freshman Academy
- BME ANCHOR COURSE: BME 404, BME 410L, BME 430, BME 450, or BME 451
- TECHNICAL ELECTIVES (10 UNITS)

Biology (8 Units)

- BISC 220L: Cell Biology & Physiology
- Choice between: BISC 320L, BISC 312, or HBIO 301L

Writing (8 Units)

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

Chemistry/Materials Science (16 Units)

- CHEM 105aL: General Chemistry*
- CHEM 105bL: General Chemistry
- CHEM 322aL: Organic Chemistry
- CHEM 322bL: Organic Chemistry
- **OR** 400-level BME course

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)

SPECIAL NOTES

- BISC 320L has a prerequisite of CHEM 105bL. BISC 312 and HBIO have no prerequisites.
- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#**: GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- **Technical Electives**: Taken from ONE of the following three areas of specialization:
 - Bioelectronics/Computers: BME 201, BME 426, BME 427, BME 430, BME 451, BME 453, CSCI 445, EE 109L, EE 209, EE 338, EE 348L, EE 352L, EE 354L, EE 454L, ENGR 345 or TAC 308
 - Biomechanics: AME 201, AME 204, AME 301, AME 302, AME 308 or TAC 308, AME 309, BME 201, BME 404, BME 408, BME 412, BME 426, BME 427, BME 453 or MASC 310
 - Molecular-Cellular Engineering: BME 201, BME 406, BME 412, BME 430, BME 453, BME 459, CHE 330, CHE 350, CHE 460L, ENGR 305, TAC 308, or MASC 310
- The **Organic Chemistry option** allows students in BME, BMEL, and BMEN to replace one semester of Organic Chemistry with an additional 4-unit 400-level BME course.

EMPHASIS COURSE TRACKS FOR BIOMEDICAL ENGINEERING

The Biomedical Engineering (BME) curriculum covers foundational concepts during the first few semesters. Students following the standard program will have the opportunity to take more technical electives, while students pursuing one of the optional specializations will take courses related to that content area.

Electrical (BMEN)

SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING
BME 202 MATH 126 or 129 4	EE 109L ITP 165 4	EE 202L PHYS 152L, (MATH 245) 4	FIRST TRACK COURSE: EE 338 or EE 250 4	BISC 320L, BISC 312 or HBIO 301L *See Special Note #1 on Pg 25* 4	CHEM 322aL CHEM 105bL or 400-LEVEL BME COURSE 4
GE A/B/B/C/C 4	BME 210 (MATH 245) 4	BME 423 MATH 245 4	GE A/B/B/C/C 4	SECOND TRACK COURSE: EE 348 or EE 354 4	THIRD TRACK COURSE: BME 302/EE 447 or EE 454/EE 459/ EE 477 4
MATH 226 or MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	WRIT 340 WRIT 150 4	BISC 220L 4	BME 413 PHYS 152L 4	BME 403L BISC 220L, MATH 245, EE 202L 4
PHYS 151L (GE E) MATH 125 or 126 or 226 4	PHYS 152L PHYS 151L, (MATH 226) 4	TECHNICAL ELECTIVE 2	TECHNICAL ELECTIVE 3	BME 445aL Senior Project 2	BME 445bL Senior Project 2
OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	TECHNICAL ELECTIVE 4	OPTIONAL ELECTIVE 2	GE A/B/B/C/C 4	BME 415 2

ELECTRICAL TRACKS

ANALOG TRACK

1st Track Course: EE 338

2nd Track Course: EE 348

3rd Track Course: BME 202 OR
EE 447

DIGITAL TRACK

1ST Track Course: EE 250

2ND Track Course: EE 354

3RD Track Course: EE 454, EE
459 OR EE 477

Technical Electives (9 UNITS)

Mechanical (BMEL)

SECOND YEAR			
SPRING			
AME 201 4	BME 210 (MATH 245) 4	MATH 245 MATH 226 or 229 4	PHYS 152L PHYS 151L, (MATH 226) 4
THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
BME 404* 4	GE A/B/B/C/C (gw or gp as needed) 4	BISC 320L**, BISC 312 or HBIO 301L *See Special Note #1 on Pg 25* 4	AME 309/ AME 416/ CHEM 322aL/ MASC 310 4
AME 204 3	AME 301 4	BME 413 PHYS 152L 4	GE A/B/B/C/C (gw or gp as needed) 4
BME 423 4	BISC 220 4	BME 445aL Senior Projects 2	BME 445bL Senior Projects 2
EE 202 4	TAC 308 4	BME 403L 4	BME 415 4
OPTIONAL ELECTIVE 2	TECHNICAL ELECTIVE 2	WRIT 340 4	TECHNICAL ELECTIVE 3

Molecular-Cellular (BMCE)

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
BISC 320L CHEM 105bL 4	GE A/B/B/C/C 4	THIRD PANEL COURSE 4	BME 403L 4
FIRST PANEL COURSE 4	SECOND PANEL COURSE 4	EE 202L PHYS 152L, (MATH 245) 4	FOURTH PANEL COURSE 4
CHEM 322aL CHEM 105bL 4	CHEM 322bL CHEM 322aL 4	GE A/B/B/C/C 4	WRIT 340 WRIT 150 4
BME 423 MATH 245 4	BISC 330L CHEM 322aL 4	BME 413 PHYS 152L 4	BME 415 2
OPTIONAL ELECTIVE 2-4	OPTIONAL ELECTIVE 2-4	BME 445aL Senior Projects 2	BME 445bL Senior Projects 2

BMEL

- *(offered "even" falls - or replacement (HBIO 408/BME 504))
- **(fall only) or replacement HBIO 301L (fa/sp) or BISC 312 (sp)
- Technical Electives (5 UNITS)

BMCE

- Panel Course Options: BME 406, BME 410L, BME 430, or BME 459L
- Technical Electives (2 UNITS)

CHEMICAL ENGINEERING

THE MORK FAMILY DEPARTMENT OF CHEMICAL ENGINEERING



Chemical engineers design, control, and optimize large-scale chemical, physiochemical, and biochemical processes. They are 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 uniquely qualified to provide solutions to pressing problems in the fields of energy, environment, and materials science and are employed in diverse industries:

- Chemicals
- Pharmaceuticals
- Biotechnology
- Environmental
- Energy
- Materials (including bio- and nanomaterials)

Join a CHE Student Organization

- American Institute of Chemical Engineers (AIChE)
- Women in Chemical Engineering (WICHE)
- Society of Petroleum Engineers (SPE)
- Materials Research Society (MRS)



CAREERS

Shuntaro Nishi

Class of 2019,
Chemical Engineering
(Nanotechnology)



Technical Analyst at Kite Pharma

I am part of a two-year program where I rotate among four different business units (manufacturing, quality, process development, and supply chain) to diversify my skill set and gain expertise in the cell therapy industry. The opportunity to gain so much exposure within the first two years out of college, while working for a company whose mission is to cure cancer, has been an invaluable and meaningful experience.

Being a Viterbi Student Ambassador was the most valuable experience throughout my years at USC. The ability to speak in front of large audiences along with asking the right questions through my time on the Viterbi Voices Podcasts are both things that I take with me in my career.

RESEARCH

Dr. Shaama Sharada



RESEARCH FOCUS:

Explores the need for sustainable, energy- and material-efficient transformations

LAB: Our research group includes five PhD students, one masters, and two undergraduate students. We are always on the lookout for students with a penchant for chemistry, modeling, simulation, and coding

RESEARCH PROJECT: We seek to harness the power of the sun to convert greenhouse gases like CO₂ into useful products like fuels and chemicals

COURSES: CHE450 (Elective on Sustainable Energy)

FUN FACT: In the sustainable energy class, my students learn that paper cups can be more unsustainable

CHEMICAL ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
WRIT 150 4	CHE 120 (MATH 125, CHEM 105AL) or GE A 4	CHE 330 (MATH 226g) 4	PHYS 152L PHYS 151L, (MATH 226) 4	GE C 4	GE B 4	GE D* 4	GE C 4
CHE 120 (MATH 125, CHEM 105a) or GE A 4	MATH 126 or MATH 129* MATH 125 4	MATH 226 or MATH 229 MATH 126 or 129 4	CHEM 322aL CHEM 105bL 4	CHE ELECTIVE 4	CHE 444cL CHE 330, 444bL (CHE 447) 2	CHE 460L CHE 120, (MATH 245) 4	CHE 480 CHE 485 4
MATH 125 (GE F)* 4	CHEM 105bL CHEM 105aL 4	PHYS 151L (GE E) MATH 125 or 126 or 226 4	MATH 245 MATH 226 or 229 4	CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	CHE 442 MATH 245, CHE 443 4	CHE 485 CHE 442, CHE 443 4	CHEMISTRY ELECTIVE 4
CHEM 105aL (GE E)* 4	GESM (GE B)# 4	CHE 305 MATH 125 or 126 or 226 4	CHE 444aL CHE 120, (CHE 330) 2	CHE 447 MAT305I5, CHE 443 4	CHE 448 CHE 330, 447 4	WRIT 340 WRIT 150 4	STEM ELECTIVE 4
ENGR 102 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	CHE 443 (CHE 350 or MATH 245) 4	CHE 444bL CHE 330, (CHE 443) 2	OPTIONAL ELECTIVE 4	ENGINEERING ELECTIVE 4	OPTIONAL ELECTIVE 2

Engineering (58 Units)

- CHE 120: Intro. to Chemical Engineering
- CHE 305: Numerical & Statistical Analysis for Chemical Engineers
- CHE 330: Chemical Engr. Thermodynamics
- CHE 442: Chemical Reactor Design
- CHE 443: Viscous Flow
- CHE 444aL: Chemical Engineering Lab
- CHE 444bL: Chemical Engineering Lab
- CHE 444cL: Chemical Engineering Lab
- CHE 447: Heat and Mass Transfer in Chemical Engineering Processes
- CHE 448: Separation Processes in Chemical Engineering
- CHE 460L: Chem. Proc. Dynamics & Control
- CHE 480: Chem. Process and Plant Design
- CHE 485: Computer Aided Chemical Process Design
- ENGR 102: Engineering Freshman Academy
- CHE ELECTIVE
- ENGINEERING ELECTIVE
- STEM ELECTIVE

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.

Writing (8 Units)

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

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

Chemistry (20 Units)

- CHEM 105aL: General Chemistry*
- CHEM 105bL: General Chemistry
- CHEM 322aL: Organic Chemistry
- CHEM 430: Physical Chemistry: Thermodynamics & Kinetics
- CHEMISTRY ELECTIVE

SPECIAL NOTES

- Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- 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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- CHE Elective:** An upper-division chemical engineering course.
- Chemistry Elective:** CHEM 300, CHEM 322b, or CHEM 431
- ENGINEERING ELECTIVE:** An upper-division engineering course (subject to advisor approval).
- STEM Elective:** An upper-division elective course in math, science, or engineering (subject to advisor approval).

EMPHASIS COURSE TRACKS FOR CHEMICAL ENGINEERING

The Chemical Engineering (CHE) curriculum covers foundational concepts for the first several semesters. Students following the standard program will have the opportunity to take more technical electives, while students following one of the emphasis course tracks will take specific courses towards that specialization.

Biological & Pharmaceutical Engineering

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
GE C 4	EMPHASIS ELECTIVE 4	GE B 4	GE C 4
BISC 320L (GE D)* CHEM 105bL, 108, 115b OR BISC 330L CHEM 322a OR 325a 4	CHE 442 MATH 245 and CHE 443 4	WRIT 340 WRIT 150 4	GE D** 4
CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	EMPHASIS ELECTIVE 4	CHE 460L CHE 120, (MATH 245) 4	EMPHASIS ELECTIVE 4
CHE 447 MATH 245, CHE 443 4	CHE 444cL CHE 330, (CHE 447) 2	CHE 485 CHE 442, 443 4	OPTIONAL ELECTIVE 4
CHE 444bL CHE 330, (CHE 443) 2	CHE 448 CHE 330, 447 4	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

Energy & Sustainability

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
GE C 4	GE B 4	GE D** 4	GE C 4
CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	EMPHASIS ELECTIVE 4	CHE 460L CHE 120, (MATH 245) 4	EMPHASIS ELECTIVE 4
CHE 447 MATH 245, CHE 443 4	CHE 442 MATH 245, CHE 443 4	CHE 485 CHE 442, CHE 443 4	CHE 480 CHE 485 4
CHE 463 MATH 245, PHYS 151, CHEM 105A 4	CHE 448 CHE 330, 447 4	CHE 450 CHE 330 4	WRIT 340 WRIT 150 4
CHE 444bL CHE 330, (CHE 443) 2	CHE 444cL CHE 330, CHE 444bL, (CHE 447) 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

* Satisfies GE D (life sciences requirement)

** Should a student not fulfill the GE D requirement through the completion of BISC 320, then they must enroll in an alternative GE D course.

Petroleum & Subsurface Engineering

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	GE C 4	GE D** 4	GE B 4
CHE 447 MATH 245, CHE 443 4	PTE 464L PTE 463L 4	CHE 485 CHE 442, CHE 443 4	GE C 4
PTE 461 4	CHE 442 MATH 245, CHE 443 4	CHE 460L CHE 120, (MATH 245) 4	CHE 480 CHE 485 4
PTE 463L MATH 245, CHEM 105aLg or 115aLg, PHYS 151L 4	CHE 448 CHE 330, 447 4	PTE 465L PTE 464L 3	WRIT 340 WRIT 150 4
CHE 444bL CHE 330, (CHE 443) 2	CHE 444cL CHE 330, CHE 444bL, (CHE 447) 2	OPTIONAL ELECTIVE 3	OPTIONAL ELECTIVE 2

Materials Engineering

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
CHEM 430 CHEM 300L or 322aL, MATH 226, PHYS 151L 4	GE B 4	GE D** 4	GE C 4
CHE 447 MATH 245, CHE 443 4	EMPHASIS ELECTIVE 4	CHE 485 CHE 442, CHE 443 4	EMPHASIS ELECTIVE 4
MASC 310 4	CHE 442 MATH 245, CHE 443 4	CHE 460L CHE 120, (MATH 245) 4	CHE 480 CHE 485 4
GE C 4	CHE 448 CHE 330, 447 4	WRIT 340 WRIT 150 4	EMPHASIS ELECTIVE 4
CHE 444bL CHE 330, (CHE 443) 2	CHE 444cL CHE 330, CHE 444bL, (CHE 447) 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

CIVIL & ENVIRONMENTAL ENGINEERING



Civil and Environmental Engineering (CEE) 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.

Civil Engineering

- Structural & geotechnical engineering
- Construction
- Transportation
- Environmental
- Water resources

Environmental Engineering

- Safe drinking water
- Maintain air quality
- Protect the environment
- Impact energy systems

Popular Study Abroad Locations

- University of Queensland
- University of Auckland
- University of Edinburgh

Join a CEE Student Organization

- Construction Management Association of America (CMAA)
- American Society of Civil Engineers (ASCE)
- American Academy of Environmental Engineers and Scientists (AAEES)

CAREERS

Junco Nelson

Class of 2020,
Civil Engineering (Construction)

Project Engineer, Hathaway Dinwiddie Construction Company



As a general contractor, we work with clients, architects, and engineers to understand the design intent for a project, and then we manage subcontractors to perform that work. It takes a lot of collaboration, design coordination, logistics and trips to the field to see the work put into action.

My favorite part of my job is seeing the whole construction process, starting with drawings and ending up being installed in the field. It's really exciting to see the direct results of my hard work.

Advice? I learned valuable technical skills and networking connections by being very involved in civil engineering student organizations on campus. The Construction Management Association of America taught me so much about what I do at work now and helped me get an internship, which then led to my full-time position. The American Society of Civil Engineers also offered chances to interact with USC alumni in LA and helped me meet upper-division students who gave me valuable advice on how to grow my career.

RESEARCH

Dr. Kandis Leslie Abdul-Aziz

RESEARCH FOCUS: Developing advanced materials and catalytic systems for sustainable energy, carbon management, and environmental remediation.

LAB: The Sustainable Catalysis and Materials Laboratory

RESEARCH PROJECTS: The laboratory is specially designed to conduct material and reduced-, large- and full-scale structural testing

COURSES: CE 363L (Environmental Chemistry and Laboratory) and ENE 440 (Machine Learning for Sustainability)

FUN FACT: Outside of the lab, Dr. Abdul-Aziz enjoys learning new languages and training for fitness competitions.



CIVIL ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CHEM 105aL (GE E)* 4	GESM (GE B)# 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 330 CE 119 2	CE 408 (MATH 245) 2	DESIGN ELECTIVE 4	WRIT 340 WRIT 150 4	ADVANCED COMPUTING ELECTIVE 4
WRIT 150 4	GE C 4	BIOLOGY REQ/ GE D 4	CE 107 2	CE 334L CE 225 or ABE 204, CHEM 105aLg, or 115aLg, PHYS 152L 4	CE 483 (CE 215) 4	DESIGN ELECTIVE 4	GE C 4
MATH 126 (GE F)* MATH 125 4	MATH 226 or MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	GE A* 4	CE 358 CE 225 4	CE 451 CE 309 4	CE 471 MATH 226g or 227 or 229 4	CE 480 CE 408 and either CE 456, 457, 476 or 485 4
CE 106 2	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 215 PHYS 151Lg 4	CE 225 CE 215 4	CE 456 CE 225 4	CE 467L CE 225 4	CE 453 CHEM 105aLg or 115aL, (CE 309) 4	CE ELECTIVE 2-4
ENGR 102 2	CE 108 2	CE 119 (MATH 245) 2	CE 309 MATH 226g or 229, (CE 225) 4	GE B 4	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 3-5
OPTIONAL ELECTIVE 2							

Engineering (72-74 Units)

- CE 106: Introduction to Civil Engineering
- CE 107: Intro. To Civil Engineering Graphics
- CE 108: Intro. to CE Computer Methods
- CE 119: Probability Concepts & Civil Engr
- CE 215: Statics & Dynamics
- CE 225: Mechanics of Deformable Bodies
- CE 309: Fluid Mechanics
- CE 330: Computational Methods in ENGR
- CE 334L: Mechanical Behavior of Materials
- CE 358: Elementary Theory of Structures
- CE 408: Risk & Decision Analysis in Civil Engr.
- CE 450: Coastal Engineering & Design
- CE 451: Water Resources Coastal Engineering
- CE 453: Water Quality Science & Engineering
- CE 456: Structural Design I
- CE 457: Structural Design 2
- CE 458: Computational Structural Analysis
- CE 459: Intro to Structural Dynamics
- CE 460: Construction Engineering
- CE 465: Water Supply & Sewerage System Design
- CE 467L: Geotechnical Engineering
- CE 471: Principles of Transportation Engr.
- CE 480: Civil & Environmental Engineering Capstone Design
- CE 482: Water & Wastewater Treatment Design
- CE 483: Engineering Economics in Civil Engineering
- ENGR 102: Engineering Freshman Academy
- CE ELECTIVE
- DESIGN ELECTIVES
- ADVANCED COMPUTING ELECTIVES

Other Science (4 Units)

- CHEM 105aL: General Chemistry*

Writing (8 Units)

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

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)

Physics (8 Units)

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

Mathematics (12 Units)

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

SPECIAL NOTES

- Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- 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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- GE D (Biology Requirement):** Must be an approved BISC course as listed in your STARS report.
- Optional Elective:** Consult with your academic advisor to explore optional elective courses. These courses are not required.
- CE 215, 225, AND 309:** Minimum grade of "C" is required.
- Civil Engineering Elective:** Choose at least two units of upper division CE coursework that is not already required.
- Design Electives:** Choose eight units from CE 450, 457, 465, 476, 482, or 485.
- Advanced Computing Elective:** Choose one course from CE 423 or ENE 440.
- MATH 125:** For students starting with Calculus I, the advanced computational course will be waived for your requirements.

CIVIL ENGINEERING (BUILDING SCIENCE)

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CHEM 105aL (GE E)* 4	GESM (GE B)# 4	PHYS 152L PHYS 151, (MATH 226) 4	CE 309 MATH 226g or 229, (CE 225) 4	GE D* 4	CE 467L CE 225 4	CE 408 (MATH 245) 2	ADVANCED COMPUTING ELECTIVE 4
WRIT 150 4	GE C 4	ARCH 205aL CE 106 4	ARCH 205bL ARCH 205aL 4	ARCH 305aL ARCH 205bL 4	ARCH 305bL ARCH 305aL 4	ARCH 405aL ARCH 305bL 4	ARCH 405bL ARCH 405aL 4
MATH 126 or MATH 129* MATH 125 4	MATH 226 or MATH 229 MATH 126 or 129 4	MATH 245 MATH 226 or 229 4	BIOLOGY REQ/ GE D 4	CE 358 CE 225 4	CE 457 CE 358L, CE 456 4	WRIT 340 WRIT 150 4	GE C 4
CE 106 2	CE 108 2	CE 215 PHYS 151Lg 4	CE 225 CE 215 4	CE 456 CE 225 4	CE 458 CE 358L 4	CE 334L CE 225 or AME 204, CHEM 105aLg, or T15aLg, PHYS 152L 4	CE 460 4
ENGR 102 2	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 119 (CE 108, MATH 245) 2	OPTIONAL ELECTIVE 2	ARCH 214ag 4	CE 330 CE 119 2	OPTIONAL ELECTIVE 2	ARCH 214bg 4
OPTIONAL ELECTIVE 2							

Engineering (52 Units)

- CE 106: Introduction to Civil Engineering
- CE 108: Intro. to CE Computer Methods
- CE 119: Probability Concepts and Civil Engineering
- CE 215: Statics & Dynamics
- CE 225: Mechanics of Deformable Bodies
- CE 309: Fluid Mechanics
- CE 330: Computational Methods in ENGR
- CE 334L: Mechanical Behavior of Materials
- CE 358: Elementary Theory of Structures
- CE 408: Risk & Decision Analysis in Civil Engr.
- CE 456: Structural Design I
- CE 457: Structural Design II
- CE 458: Computational Structural Analysis
- CE 460: Construction Engineering
- CE 467L: Geotechnical Engineering
- ENGR 102: Engineering Freshman Academy

Writing (8 Units)

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

Architecture (30 Units)

- ARCH 214ag: World History of Architecture
- 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

Other Science (4 Units)

- CHEM 105aL: General Chemistry*

Mathematics (12 Units)

- 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

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)

SPECIAL NOTES

- Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- 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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- GE D (Biology Requirement):** Must be an approved BISC course as listed in your STARS report.
- Optional Electives:** Consult with your academic advisor to explore optional elective courses. These courses are not required.
- CE 215, 225, AND 309:** 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.
- Advanced Computing Electives:** CE 423 OR ENE 440
- MATH 125:** For students starting with Calculus I, Advanced Computing Elective will be waived for your requirements.

ENVIRONMENTAL ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CHEM 105aL (GE E)* 4	GSEM (GE C)# 4	ENE 215 PHYS 151Lg 4	CE 330 CE 119 2	CHE 330 (MATH 226) 4	ENE 428 MATH 245, PHYS 151, CHEM 105b 4	GE B 4	ADVANCED COMPUTING ELECTIVE 4
WRIT 150 4	GE A* 4	MATH 245 MATH 226 or 229 4	ENE 200 CHEM 105aL, PHYS 151L, MATH 126, (CHEM 105bL) 4	CE 408 (MATH 245) 2	ENE 300 ENE 410 or CE 309, MATH 245, PHYS 151Lg 4	CE 410L BISC 220, CHEM 105bL or 115bL 4	ENE 426 4
MATH 126 (GE F)* MATH 125 4	MATH 226 OR MATH 229 MATH 126 or 129 4	PHYS 152L PHYS 151L, (MATH 226) 4	CE 309 MATH 226 (CE 225) 4	GE C OR ENE 415 4	CE 451 ENE 410 or CE 309 4	GE C OR ENE 415 4	CE 480 CE 408 and either CE 456, 457, 476 or 485 4
CE 110 2	PHYS 151L (GE E) MATH 125 or 126 or 226 4	CE 119 (MATH 245) 2	BISC 220L (GE D)* 4	WRIT 340 WRIT 150 4	CE 363L ENE 200, CHEM 105aL 4	CE 485 CE 453, CE 363L 4	OPTIONAL ELECTIVE 4
ENGR 102 2	CE 108 2	CE 215 PHYS 151Lg 4	GE B 4	ENE DESIGN ELECTIVE 4	CE 483 CE 215 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2
OPTIONAL ELECTIVE 2							

Engineering (70 Units)

- CHE 330: Chemical Engineering Thermodynamics
- CE 108: Intro. to CE Computer Methods
- CE 110: Intro. to Environmental Engineering
- CE 119: Probability Concepts and Civil Engineering
- CE 215: Statics and Dynamics
- CE 309: Fluid Mechanics
- CE 330: Computational Methods in Engineering
- CE 363L: Water Chemistry and Analysis
- CE 408: Risk & Decision Analysis in Civil Engr
- CE 410L: Introduction to Environmental Engineering Microbiology
- CE 408: Risk & Decision Analysis in Civil Engr
- CE 423: Principles of Autonomy in Civil Engr
- CE 450: Coastal Engineering & Design
- CE 451: Water Resources Coastal Engineering
- CE 480: Civil & Environmental Engr Capstone Design
- CE 483: Engineering Economics in Civil Engineering
- CE 485: Wastewater Treatment Design
- CHE 330: Chemical Engr. Thermodynamics
- ENE 200: Environmental Engr. Principles
- ENE 215: Energy Systems & Environmental Tradeoffs
- ENE 300: Contaminant Transport in the Environment
- ENE 410: Environmental Fluid Mechanics
- ENE 415: Environmental Organic Chemistry
- ENE 426: Particulate Air Pollutants: Properties Behavior/ Measurement
- ENE 428: Air Pollution Fundamentals
- ENE 440: Machine Learning for Climate Change and Sustainability
- ENGR 102: Engineering Freshman Academy

Physics (8 Units)

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

Other Science (4 Units)

- BISC 220L: Cell Biology and Physiology*

Writing (8 Units)

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

Chemistry (4 Units)

- CHEM 105aL: General 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)

Mathematics (12 Units)

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

SPECIAL NOTES

- Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- 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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 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 309:** Minimum grade of "C" is required.
- MATH 125:** For students starting with Calculus 1, ENGR 102 will be waived for your requirements.
- Design Electives:** CE 450 or CE 465
- Advanced Computing Electives:** CE 423, CE 427, OR ENE 440.

OPTIONAL COURSE TRACKS FOR CIVIL & ENVIRONMENTAL ENGINEERING

The Civil & Environmental Engineering (CEE) curriculum covers foundational concepts for the first several semesters. Students following the standard program will have the opportunity to take more technical electives, while students following one of the optional course tracks will take specific courses towards that specialization.

Construction

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
CE 408 (MATH 245) 2	DESIGN ELECTIVE 4	GE C 4	WRIT 340 WRIT 150 4
CE 334L CE 225 or AME 204, CHEM 105aLg, or 115aLg, PHYS 152L 4	CE 483 CE 215 2	CE 482 CE 467L 4	ADVANCED COMPUTING ELECTIVE 4
CE 358 CE 225 4	CE 451 CE 309 4	CE 471 MATH 226g or 227 or 229 4	CE 480 CE 408 and either CE 456, 457, 476 or 485 4
CE 456 CE 225 4	CE 467L CE 225 4	CE 460 4	CE ELECTIVE 2-4
GE B 4	OPTIONAL ELECTIVE 4	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2-8

Structural

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
CE 334L CE 225 or AME 204, CHEM 105aLg, or 115aLg, PHYS 152L 4	CE 457 CE 358L, CE 456 4	CE 471 MATH 226g or 227 or 229 4	CE 460 4
CE 358 CE 225 4	CE 483 CE 215 2	CE 408 (MATH 245) 2	ADVANCED COMPUTING ELECTIVE 4
CE 456 CE 225 4	CE 458 CE 358L 4	CE 459 CE 458 2	GE B 4
GE C 4	CE 467L CE 225 4	WRIT 340 WRIT 150 4	CE 480 CE 408 and either CE 456, 457, 476 or 485 4
OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 4	CE 482 CE 467L 4	OPTIONAL ELECTIVE 2
		OPTIONAL ELECTIVE 2	



COMPUTER SCIENCE



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, data science, artificial intelligence, machine learning, and robotics.

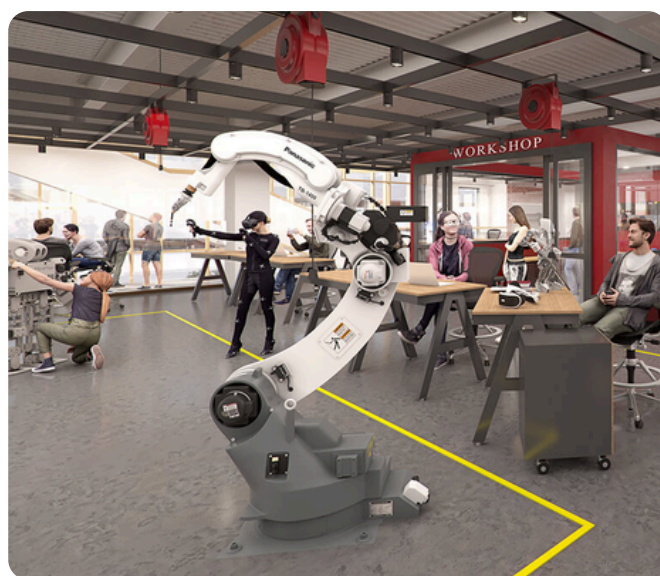
Join a CS Student Organization

Explore coding, artificial intelligence, hackathons, app development, virtual reality, and professional development through one of the many CS student orgs, including:

- Computing Machinery (ACM)
- CAIS++
- HackSC Project Athena
- Scope
- Women in Computing

Industry Affiliate Program

This program fosters dynamic, mutually-beneficial, and collaborative relationships between academic and industry leaders, such as: Google, Lyft, Didi, Microsoft, Mesmer, PLUGandPLAY, United Technologies Research Center, Facebook



CAREERS

Jean Tu

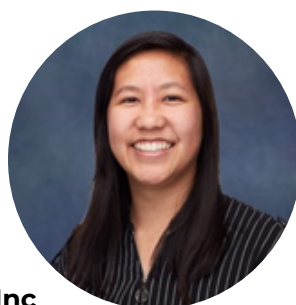
Class of 2018, Computer Science & Business Administration
Minor in Applied Computer Security

Software Engineer, Cisco Systems Inc

I create automation tools to help my team focus on fixing the vulnerabilities within our suite of products.

On a typical day I check to make sure that none of the automation tools are broken, holding meetings with my team members to understand the scope of the project as well as needed modifications and spending time with my friends from the Early in Career Network at Cisco.

I love that I have opportunities to solve problems that will help us remain compliant with our service-level agreements with our customers. I also have the wonderful opportunity to help lead the Early in Career Network within Cisco to help new grads form connections with other young professionals!



RESEARCH

Dr. Swabha Swayamdipta

RESEARCH FOCUS: Language Models and Artificial Intelligence

LAB: DILL (Data, Interpretability, Language and Learning Lab)

RESEARCH PROJECT: Building language models which can reveal their hidden inputs.

COURSES: CSCI 444 (Natural Language Processing)

FUN FACT: I wrote my first piece of code in 4th grade, using LOGO to draw a square.



COURSE TRACKS FOR COMPUTER SCIENCE

The Computer Science (CSCI) program prepares students to work in the areas of software design, development, application, and maintenance. CSCI 102 is the introductory course for this program and the appropriate course for students with limited or no prior computer programming experience. Students who earn a 4 or 5 on the AP Computer Science A exam or pass the CSCI 102 Challenge Exam are able to begin in the next level of courses.

**Please review the prerequisites for upper-division CSCI courses on the next page.*

Computer Science — Begin with CSCI 103

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
WRIT 150 4	GESM (GE B)# 4	EE 109L CSCI 102 4	CSCI 310 or 353 or 356 or 360 4	GE A* 4	CSCI 310 or 353 or 356 or 360 4	WRIT 340 WRIT 150 4	TECHNICAL ELECTIVE IV 4
MATH 125 (GE F)* 4	MATH 129 or MATH 126* MATH 125 4	CSCI 270 CSCI 104L, CSCI 170 4	MATH 229 or MATH 226 MATH 129 or 126 4	MATH 225 or MATH 235 MATH 126 or 129 4	TECHNICAL ELECTIVE II 4	TECHNICAL ELECTIVE III 4	CSCI 350 CSCI 201, CSCI 356 4
CSCI 103L CSCI 102 4	CSCI 104 CSCI 103L, CSCI 170 4	CSCI 201L CSCI 104L 4	TECHNICAL ELECTIVE I 4	CSCI 310 or 353 or 356 or 360 4	EE 364 MATH 225 OR MATH 245 4	CSCI 310 or 353 or 356 or 360 4	CSCI 401 CSCI 270, CSCI 310 OR CSCI 404 CSCI 201, CSCI 270 4
CSCI 170 CSCI 102 4	GE C 4	GE C 4	LIFE SCIENCES (GE D) 4	PHYSICAL SCIENCES (GE E) 4	GE B 4	OPTIONAL ELECTIVE 6	ELECTIVE 6
ENGR 102 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2		

Computer Science — Begin with CSCI 102

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
WRIT 150 4	CSCI 103L CSCI 102 4	EE 109L CSCI 102 4	CSCI 270 CSCI 104L, CSCI 170 4	GE A* 4	CSCI 310 or 353 or 356 or 360 4	WRIT 340 WRIT 150 4	TECHNICAL ELECTIVE IV 4
MATH 125 (GE F)* 4	CSCI 170 CSCI 102 4	CSCI 104 CSCI 103L, CSCI 170 4	CSCI 201L CSCI 104L 4	TECHNICAL ELECTIVE I 4	CSCI 310 or 353 or 356 or 360 4	TECHNICAL ELECTIVE II 4	CSCI 350 CSCI 201, CSCI 356 4
CSCI 102 2	MATH 129 or MATH 126* MATH 125 4	MATH 229 or MATH 226 MATH 129 or 126 4	MATH 225 or MATH 235 MATH 126 or 129 4	CSCI 310 or 353 or 356 or 360 4	EE 364 MATH 225 OR MATH 245 4	CSCI 310 or 353 or 356 or 360 4	CSCI 401 CSCI 270, CSCI 310 OR CSCI 404 CSCI 201, CSCI 270 4
GE C 4	GESM (GE B)# 4	GE C 4	LIFE SCIENCES (GE D) 4	PHYSICAL SCIENCES (GE E) 4	GE B 4	OPTIONAL ELECTIVE 6	TECHNICAL ELECTIVE III 4
ENGR 102 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2		OPTIONAL ELECTIVE 2
OPTIONAL ELECTIVE 2							

Computer Science (CSCI) *Please see previous page.*

Mathematics (16 Units)

- MATH 125: Calculus I*
- MATH 126 or MATH 129: Calculus II*
- MATH 226 or MATH 229: Calculus III
- MATH 225: Linear Algebra & Diff. Equations
- **OR** MATH 235: Linear Algebra & Applications

Statistics And Probability (4 Units)

- EE 364: Intro to Probability & Statistics

Life Sciences (4 Units)

Take one of the following life science courses, each of which also satisfies the GE-D Life Sciences requirement.

- BISC 120 General Biology: Organismal Biology and Evolution*
- BISC 121 Advanced General Biology: Organismal Biology and Evolution
- BISC 220 General Biology: Cell Biology and Physiology

Physical Sciences (4 Units)

Take one of the following science courses, each of which also satisfies the GE-E Physical Sciences requirement.

- CHEM 105a General Chemistry*
- CHEM 115a Advanced General Chemistry
- PHYS 151 Fundamentals of Physics I: Mechanics and Thermodynamics*
- PHYS 161 Advanced Principles of Physics I

Engineering (52 Units) *(With Prerequisites)*

- CSCI 102L: Fundamentals of Computation
- CSCI 103L: Introduction to Programming (*CSCI 102*)
- CSCI 104L: Data Structures & Object Oriented Design (*CSCI 103 and CSCI 170*)
- CSCI 170: Discrete Methods in Comp. Science (*CSCI 102*)
- CSCI 201L: Princ. of Software Development (*CSCI 104*)
- CSCI 270: Intro. to Algorithms & Theory of Computing (*CSCI 104 and CSCI 170*)
- CSCI 310: Intro. to Software Engineering (*CSCI 201*)
- CSCI 350: Introduction to Operating Systems (*CSCI 201 and CSCI 356*)
- CSCI 353: Introduction to Internetworking (*CSCI 201*)
- CSCI 356: Introduction to Computer Systems (*CSCI 104*)
- CSCI 360: Introduction to Artificial Intelligence (*CSCI 104 and CSCI 170*)
- CSCI 401: Capstone: Design and Construction of Large Software Systems (*CSCI 270 and CSCI 310*)
- **OR** CSCI 404: Capstone: Creating Your High-Tech Startup (*CSCI 201, CSCI 270 and TAC 466*)
- EE 109: Introduction to Embedded Systems (*CSCI 102*)
- ENGR 102: Engineering Freshman Academy

General Education (20 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 (8 Units)

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

Technical Electives (16 Units)

- Take at least FOUR 4-unit 300- or 400-level CSCI courses for a minimum of 16 units.

Free Elective (4 Units)

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 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 102, 103, 170, 104 & 201). Courses with a grade of C- or below must be repeated; courses may only be retaken once with department approval.
- **Technical Electives:** Required CSCI major courses cannot double count for technical elective credit.

COURSE TRACKS FOR COMPUTER SCIENCE GAMES (CSGA)

The Computer Science Games degree (CSGA) offers technical and creative training for the video game industry. CSCI 102 is the introductory course for this program and the appropriate course for students with limited or no prior computer programming experience. Students who earn a 4 or 5 on the AP Computer Science A exam, or pass the CSCI 102 Challenge Exam, are able to begin in the next level of courses.

**Please review the prerequisites for upper-division CSCI courses on the next page.*

Computer Science Games — Begin with CSCI 103

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CSCI 170 CSCI 102 4	PHYS 151L (GE E)* MATH 125 or 126 or 226* 4	CSCI 201L CSCI 104L 4	CSCI 270 CSCI 104L, CSCI 170 4	CSCI ELECTIVE (350, 353, 356, 360 or 420) 4	WRIT 340 WRIT 150 4	CSCI 491aL 4	CSCI 491bL 4
CSCI 103L CSCI 102 4	CSCI 104L CSCI 103L, CSCI 170 4	MATH 129 or MATH 126* MATH 125 4	TAC 380 CSCI 104 4	GE A* 4	CSCI ELECTIVE (350, 353, 356, 360 or 420) 4	GE C 4	GE B 4
MATH 125 (GE F)* 4	CTIN 488 4	WRIT 150 4	FREE ELECTIVE 4	MATH 225 or MATH 235 MATH 126 or 129 or EE 141L 4	GE C 4	FREE ELECTIVE 4	FREE ELECTIVE 4
CTIN 190 4	GESM (GE B)# 4	GAMES ELECTIVE 4	CTIN 489L CTIN 488 4	GE D* 4	OPTIONAL ELECTIVE 6	FREE ELECTIVE 4	FREE ELECTIVE 6
ENGR 102 2	GAMES ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 4	OPTIONAL ELECTIVE 2			

Computer Science Games — Begin with CSCI 102

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CSCI 102L 2	GESM (GE B)# 4	CSCI 104L CSCI 103L, CSCI 170 4	CSCI 270 CSCI 104L, CSCI 170 4	CSCI ELECTIVE (350, 353, 356, 360 or 420) 4	CSCI ELECTIVE (350, 353, 356, 360 or 420) 4	CSCI 491aL 4	CSCI 491bL 4
WRIT 150 4	MATH 125 (GE F)* 4	MATH 129 or MATH 126* MATH 125 4	TAC 380 CSCI 104 4	GE A* 4	GE C 4	GE C 4	GE B 4
CTIN 488 4	CSCI 170 CSCI 102 4	PHYS 151L (GE E)* MATH 125 or 126 or 226 4	CSCI 201L CSCI 104L 2	MATH 225 or MATH 235 MATH 126 or 129 or EE 141L 4	FREE ELECTIVE 4	FREE ELECTIVE 4	WRIT 340 WRIT 150 4
CTIN 190 4	CSCI 103L CSCI 102 2	GAMES ELECTIVE 4	CTIN 489L CTIN 488 4	GE D* 4	OPTIONAL ELECTIVE 6	FREE ELECTIVE 4	FREE ELECTIVE 4
ENGR 102 2	GAMES ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2			FREE ELECTIVE 4
OPTIONAL ELECTIVE 2							

Computer Science Games. Please see previous page.

Mathematics (12 Units)

- MATH 125: Calculus I*
- MATH 126 or 129: Calculus II*
- MATH 225: Linear Algebra & Diff. Equations
- **OR** MATH 235: Linear Algebra & Applications
- **OR** EE 141L: Applied Linear Algebra for Engineering

Physics (4 Units)

- PHYS 151L: Mechanics and Thermodynamics*
- **OR** PHYS 161L: Advanced Principles of Physics I

General Education (24 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)

Game Development Core (16 Units)

(With Prerequisites)

- TAC 380: Video Game Programming
- CTIN 190: Intro to Interactive Entertainment (CSCI 104)
- CTIN 488: Game Design Workshop
- CTIN 489L: Intermediate Game Design Workshop (CTIN 488)

Game Development Core Electives (6 Units)

- Choose at least 6 units of elective from approved elective list. [Click here to review.](#)

Games Capstone (8 Units)

Senior Status Required (With Prerequisites)

- CSCI 491AL: Final Game Project
- CSCI 491BL: Final Game Project (CSCI 491AL)

Engineering (2 Units)

- ENGR 102: Engineering Freshman Academy

Writing (8 Units)

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

Computer Science Core (22 Units)

(With Prerequisites)

- CSCI 102L: Fundamentals of Computation
- CSCI 103L: Introduction to Programming (CSCI 102)
- CSCI 104L: Data Structures & Object Oriented Design (CSCI 103 and CSCI 170)
- CSCI 170: Discrete Methods in Comp. Science (CSCI 102)
- CSCI 201L: Princ. of Software Development (CSCI 104)
- CSCI 270: Intro. to Algorithms & Theory of Computing (CSCI 104 and CSCI 170)

Computer Science Core Electives (8 Units)

(With Prerequisites)

Choose at least 8 units of elective:

- CSCI 350: Introduction to Operating Systems (CSCI 201 and CSCI 356)
- CSCI 353: Introduction to Internetworking (CSCI 201)
- CSCI 356: Intro. to Computer Systems (CSCI 104)
- CSCI 360: Intro. to Artificial Intelligence (CSCI 104 and CSCI 170)
- CSCI 420: Computer Graphics (CSCI 104 and 1 from MATH 225 or EE 141 & MATH 126 or EE 141 & MATH 129)

Free Electives (18 Units)

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 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.

COURSE TRACKS FOR COMPUTER SCIENCE BUSINESS ADMINISTRATION (CSBA)

The Computer Science / Business Administration program (CSBA) allows students to study both computer science and business in four years, focusing on the core subjects of each discipline. CSCI 102 is the introductory course for this program and the appropriate course for students with limited or no prior computer programming experience. Students who earn a 4 or 5 on the AP Computer Science A exam, or pass the CSCI 102 Challenge Exam, are able to begin in the next level of courses.

***Please review the prerequisites for upper-division CSCI courses on the next page.*

Computer Science Business Administration — Begin with CSCI 103

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
GESM (GE B) [#] 4	CSCI 103L CSCI 102 4	WRIT 150 4	BASIC SCIENCE (GE D OR E) [*] 4	BUAD 310 or 312 or EE 364 MATH 225 or MATH 407 MATH 226 4	CSCI ELECTIVE 4	WRIT 340 WRIT 150 4	GE E or D [*] 4
MATH 125 (GE F) [*] 4	MATH 126 OR 129 [*] MATH 125 4	MATH 225 or MATH 235 MATH 126 or 129 or EE 141L 4	CSCI 201L CSCI 104L 4	BUAD 302 4	CSCI 310L CSCI 201L 4	BUSINESS ELECTIVE 2-4	GE B 4
GE C 4	ECON 351 MATH 125 or 126 or 226 4	ECON 352 (ECON 351) 4	CSCI 270 CSCI 104L, CSCI 170 4	GE A [*] 4	GE C 4	CSCI 401 CSCI 270, CSCI 310 4	BUAD 497 ACCT 410x and ECON 352 4
BUAD 304 4	CSCI 170 CSCI 102 4	CSCI 104L CSCI 103L, CSCI 170 4	ACCT 410x 4	BUAD 307 4	BUAD 306 4	BUAD 311 or BUAD 313 BUAD 310 or BUAD 312 or EE 364 or MATH 407 4	CSCI/BUSINESS ELECTIVE 4
ENGR 102 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2-4	OPTIONAL ELECTIVE 2

Computer Science Business Administration — Begin with CSCI 102

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
GE C 4	GESM (GE B) [#] 4	BUAD 302 4	CSCI 104L CSCI 103L, CSCI 170 4	BUAD 310 or 312 or EE 364 MATH 225 or MATH 407 MATH 226 4	CSCI ELECTIVE 4	WRIT 340 WRIT 150 4	GE E or D [*] 4
MATH 125 (GE F) [*] 4	MATH 126 OR 129 [*] MATH 125 4	ECON 352 (ECON 351) 4	MATH 225 or MATH 235 MATH 126 or 129 or EE 141L 4	CSCI 201L CSCI 104L 4	CSCI 310L CSCI 201L 4	BUSINESS ELECTIVE 2-4	GE B 4
WRIT 150 4	ECON 351 MATH 125 or 126 or 226 4	CSCI 170 CSCI 102 4	BUAD 307 4	GE A [*] 4	GE C 4	CSCI 401 CSCI 270, CSCI 310 4	BUAD 497 ACCT 410x and ECON 352 4
BUAD 304 4	BASIC SCIENCE (GE D OR E) [*] 4	CSCI 103L CSCI 102 4	ACCT 410x 4	CSCI 270 CSCI 104L, CSCI 170 4	BUAD 306 4	BUAD 311 or BUAD 313 BUAD 310 or BUAD 312 or EE 364 or MATH 407 4	CSCI/BUSINESS ELECTIVE 4
ENGR 102 2	CSCI 102L 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2-4	OPTIONAL ELECTIVE 2

Computer Science Business Administration. Please see previous page.

Mathematics (12 Units)

- MATH 125: Calculus I*
- MATH 126 or MATH 129: Calculus II*
- MATH 225: Linear Algebra & Diff. Equations
- or MATH 235: Linear Algebra & Applications
- or EE 141: Applied Linear Algebra for Engineering

Statistics & Probability (4 Units)

- BUAD 310: Applied Business Statistics
- BUAD 312: Statistics and Data Science for Business
- or EE 364: Intro to Probability & Statistics
- or MATH 407: Probability Theory

General Education (24 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)

Basic Science (4 Units)

- BISC 120L: General Biology
- BISC 121: Advanced General Biology
- CHEM 105a: General Chemistry
- CHEM 115a: Advanced General Chemistry
- PHYS 151: Fundamentals of Physics I
- PHYS 161: Advanced Principles of Physics I

Business Requirements (36 Units)

(With Prerequisites)

- 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
- or BUAD 313: Advanced Operations Management & Analytics
- BUAD 497: Strategic Management
- ECON 351: Microeconomics for Business
(ACCT 410 and ECON 352)
- ECON 352: Macroeconomics for Business.
(1 from: MATH 118 or MATH 125 or MATH 126 or MATH 226)

Computer Science (32 Units)

(With Prerequisites)

- CSCI 102: Fundamentals of Computation
- CSCI 103L: Introduction to Programming (CSCI 102)
- CSCI 104L: Data Structures & Obj. Orient. Design (CSCI 103 and CSCI 170)
- CSCI 170: Discrete Methods in Comp. Science (CSCI 102)
- CSCI 201L: Princ. of Software Development (CSCI 104)
- CSCI 270: Intro. to Algorithms & Theory of Computing (CSCI 104 and CSCI 170)
- CSCI 310: Intro. to Software Engineering (CSCI 201)
- CSCI 401: Capstone: Design & Construction of Large Software Systems (CSCI 270 and CSCI 310)
- or 404: Capstone: Creating Your High-Tech Startup (CSCI 201, CSCI 270 and TAC 466)
- ENGR 102: Engineering Freshman Academy

Technical Electives (8 Units)

- Computer Science Electives: Take at least one 4-unit 300- or 400-level CSCI course.
- Business Electives: Take at least four units of 300- or 400-level courses offered by the Marshall School, specifically with a prefix of ACCT, BAEP, BUCO, BUAD, DSO, FBE, MKT, MOR, or RISK.

Writing (8 Units)

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

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 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:** EE 459L.
- **Technical Electives:** See approved tech elective list on CS webpage.

Computer Engineering & Computer Science (Embedded Systems).

Please see previous page.

Mathematics (16 Units)

- MATH 125: Calculus I*
- MATH 126 or 129: Calculus II*
- MATH 226 or 229: Calculus III
- MATH 225: Linear Algebra & Diff. Equations
- **OR** MATH 235: Linear Algebra & Applications
- **OR** EE 141: Applied Linear Algebra for Engineering

Physics (8 Units)

- PHYS 151L: Mechanics and Thermodynamics*
- **OR** PHYS 161: Advanced Principles of Physics I
- PHYS 152L: Electricity and Magnetism*
- **OR** PHYS 162: Advanced Principles of Physics II

Statistics & Probability (4 Units)

- EE 364: Intro to Probability & Statistics

Engineering (68 Units)

- CSCI 102: Fundamentals of Computation
- CSCI 103L: Introduction to Programming
- CSCI 104L: Data Structures & Object Oriented Design
- CSCI 170: Discrete Methods in Comp. Science
- CSCI 270: Introduction to Algorithms & Theory of Computing
- CSCI 350: Introduction to Operating Systems
- EE 109: Introduction to Embedded Systems
- EE 202: Linear Circuits
- EE 250: Distributed Systems for the Internet of Things
- EE 301: Linear Systems
- EE 354L: Introduction to Digital Circuits
- EE 457: Computer Systems Organization
- EE 459: Embedded Systems Design Laboratory
- EE 454: Introduction to System-on-Chip
- **OR** EE 477: MOS VLSI Circuit Design
- EE 460: Machine Learning for Engineers
- **OR** CSCI 360: Introduction to Artificial Intelligence
- **OR** CSCI 467: Introduction to Machine Learning
- ENGR 102: Engineering Freshman Academy
- TECHNICAL ELECTIVES (4 Units)
- FREE ELECTIVES (4-6 Units)

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 (8 Units)

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

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 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.

Computer Engineering & Computer Science (Computing Systems).

Please see previous page.

Mathematics (16 Units)

- MATH 125: Calculus I*
- MATH 126 or 129: Calculus II*
- MATH 226 or 229: Calculus III
- MATH 225: Linear Algebra & Diff. Equations
- **OR** MATH 235: Linear Algebra & Applications
- **OR** EE 141: Applied Linear Algebra for Engineering

Physics (8 Units)

- PHYS 151L: Mechanics and Thermodynamics*
- PHYS 152L: Electricity and Magnetism*
- **OR** PHYS 161: Advanced Principles of Physics I
- PHYS 162: Advanced Principles of Physics II

Engineering Core (44 Units)

(With Prerequisites)

- CSCI 102L: Introduction to Programming
- CSCI 103L: Introduction to Programming (*CSCI 102*)
- CSCI 104L: Data Structures & Obj. Orient. Design (*CSCI 103 and CSCI 170*)
- CSCI 170: Discrete Methods in Comp. Science (*CSCI 102*)
- CSCI 270: Intro. to Algorithms & Theory of Computing (*CSCI 104 and CSCI 170*)
- CSCI 350: Fundamentals of Operating Systems (*CSCI 356 or EE 354 & CSCI 201 or EE 250*)
- EE 109: Introduction to Embedded Systems (*CSCI 102*)
- EE 250: Distributed Systems for the Internet of Things (*EE 109*)
- EE 354L: Introduction to Digital Circuits (*EE 109*)
- EE 457: Computer Systems Organization (*EE 354*)
- CSCI 360: Artificial Intelligence: Principles and Foundations (*CSCI 104 OR CSCI 114 and CSCI 170*)
- or CSCI 467: Foundations of Machine Learning (*CSCI 270, MATH 225 and EE 364 or MATH 407*)
- or EE 460: Machine Learning for Engineers
- ENGR 102: Engineering Freshman Academy

General Education (24 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)

Computing Systems Track (20 Units)

(With Prerequisites)

- CSCI 201L: Princ. of Software Development (*CSCI 104*)
- CSCI 353: Introduction to Internetworking (*CSCI 201*)
- EE 451: Parallel and Distributed Computation (*CSCI 104*)
- EE 454: System-on-Chip (*EE 354*)

One of the following senior design projects:

- CSCI 401: Capstone: Design and Construction of Large Software Systems (*CSCI 270 and CSCI 310*)
- EE 459: Embedded Systems Design Laboratory (*EE 354*)
- EE 496: Capstone Design (*EE 354 or EE 348 or EE 460 or EE 483*)

Technical Electives (4 Units)

- Technical Electives must be chosen from 4-unit 300- or 400-level CSCI or EE courses.

Writing (8 Units)

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

Statistics & Probability (4 Units)

- EE 364: Intro to Probability & Statistics

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 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.

ELECTRICAL AND COMPUTER ENGINEERING



Electrical and Computer Engineers are fundamental to the development of technological advances in the information age. We design and build devices and systems and develop theory, algorithms and software that operate in the real world. Applications include sensing, computing, robotics, autonomy, communications, networks, imaging, human health, biomedicine, entertainment, and scientific discovery.

Participate in Research or Join an ECE Student Organization

- Opportunities for research during the academic year or over the summer in faculty labs
- The Institute of Electrical and Electronics Engineering (IEEE)
- Makers - Work with a community of USC students passionate about going beyond the textbook and turning ideas into real engineering projects
- Become an electronics lead for the Liquid Propulsion Lab and the Rocket Propulsion Lab



CAREERS

Hannah Rose

Class of 2024,
B.S. Electrical and Computer Engineering; Minor in Entertainment Industry



Project Controls, Walt Disney Imagineering

Working in Project Controls, my job is to keep my project on schedule. Our projects at Walt Disney Imagineering often involve ambitious, creative ideas for new experiences that require a huge team of people to make possible. That means a lot of disciplines and activities to coordinate ahead of opening day!

My job leans more on the Project Management side, but I am grateful for my background in electrical engineering as I am better equipped to communicate with the engineers on my team, read and understand their technical drawings, and understand their process enough to do my job.

RESEARCH

Yasser Kahn

LAB: Khan Lab

RESEARCH FOCUS:

Wearable, implantable, and ingestible bioelectronics

COURSES: EE 105



RESEARCH PROJECT: We work on interdisciplinary projects at the intersection of engineering, medicine, and artificial intelligence. Our research focuses on additive manufacturing and hardware-enabled AI to create nextgeneration wearables, implantables, and ingestibles for precision health and psychiatric applications. Much like printing a newspaper, we use advanced printing techniques to fabricate transistors, sensors, and circuits. Our wearables are ultra-thin, flexible, and stretchable—designed to conform to the body seamlessly. In parallel, we are developing implantable brain interfaces and ingestible devices for the gut to monitor neural activity, neurochemical dynamics, and the bidirectional communication between the brain and the gut.

ELECTRICAL AND COMPUTER ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
EE 141L 4	MATH 129* MATH 125 4	MATH 229 MATH 129 4	MATH 245 MATH 229 4	EE 364 MATH 245 4	EE ELECTIVE 4	EE ELECTIVE 4	EE 496 4
EE 155L 4	PHYS 151L (GE E) MATH 125 4	PHYS 152L PHYS 151 or 161 4	PHYS 153L PHYS 152/162 4	EE 370 PHYS 152/162, EE 202 4	EE 355 EE 155L 4	GE B 4	GE C 4
EE 105 4	EE 109L EE 155L 4	EE 250L EE 109L 4	EE 202L MATH 245 Co-Req 4	EE 301L EE 141 & MATH 126/129 4	EE 460 EE 141L & 155L 4	EE ELECTIVE 4	EE ELECTIVE 4
WRIT 150 4	GESM (GE B)# 4	GE A* 4	GE C 4	WRIT 340 WRIT 150 4	#GE D* (Biology Requirement) 4	GENERAL ELECTIVE 4	GENERAL ELECTIVE 2
ENGR 102 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

Mathematics (12 Units)

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

Physics (12 Units)

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

Writing (8 Units)

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

Engineering (66 Units)

- EE 105L: Intro to Electrical Engineering
- EE 109L: Intro to Embedded Systems
- EE 141L: Applied Linear Algebra for Engineering
- EE 155L: Intro. to Comp. Programming for EE
- EE 202L: Linear Circuits
- EE 250L: Distributed Systems for the Internet of Things
- EE 301L: Linear Systems
- EE 370L: Electromagnetics for Engineering Systems
- EE 355: Software Design for Engineers
- EE 364: Intro to Probability & Statistics
- EE 460: Machine Learning for Engineers
- EE 496: Capstone Design
- ENGR 102: Engineering Freshman Academy
- EE ELECTIVES (16 Units)

Other Courses (6 Units)

- General Electives

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)

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- **REQUIRED ELECTIVES:** Required electives are needed to meet minimum unit requirement and can be met with AP/IB and transfer credit.
- **EE ELECTIVES:** Minimum 16 units of advisor approved, upper-division EE Electives.
- **#GE D (Biology Requirement):** Must be an approved BISC course as listed in your STARS report.

ELECTRICAL AND COMPUTER ENGINEERING

In addition to studying a common core of subjects, students choose among three broad areas based on your individual interests.

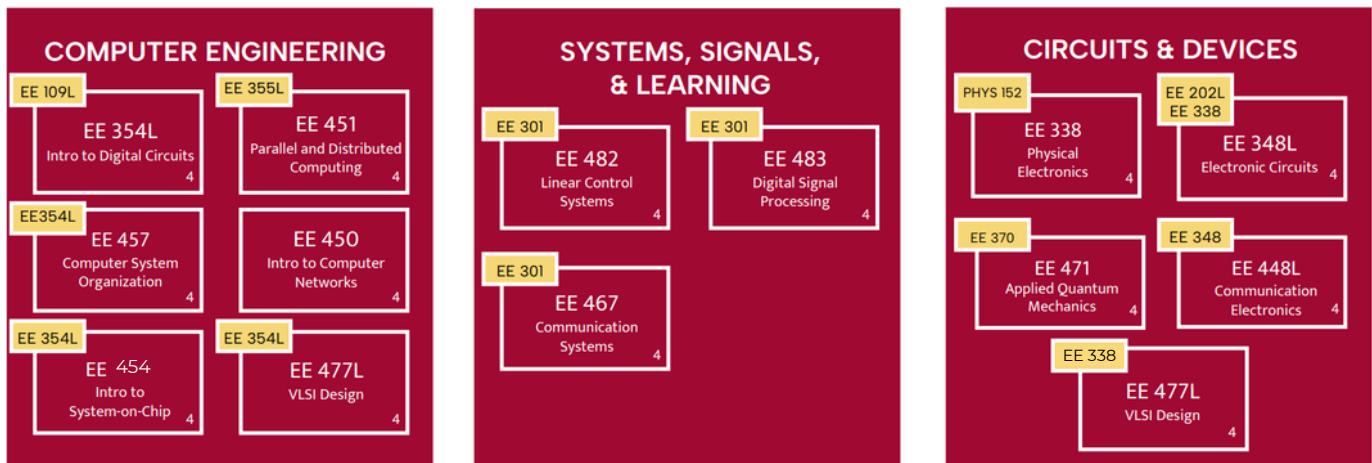
- Computer Engineering: computer systems, computer networks, embedded systems, digital hardware, system-on-chip, and VLSI design.
- Signals, Systems and Learning: machine learning, signal processing, communications, autonomy and control, robotics.
- Circuits and Devices: integrated-circuit technology, mixed-signal electronics, micromechanical devices, power systems.

Your degree culminates in a Capstone Design Project or research-based thesis that draws on everything you've learned at USC.

Core Curriculum: Required Courses



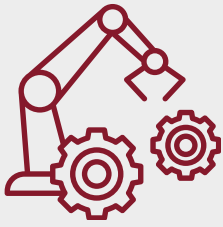
EE ELECTIVES: Take minimum 12 units of advisor-approved, upper-division electives



CAPSTONE



INDUSTRIAL & SYSTEMS ENGINEERING



Industrial and systems engineers (ISE) work to improve processes, systems, and organizations. Industrial and systems engineering provides the skills and foundations needed to design, analyze, and optimize complex systems. Industrial and systems engineers are productivity catalysts, managing the combination of physical resources and human capital needed to produce and deliver valuable goods and services.

Get Involved at ISE

- Institute of Industrial and Systems Engineers (IISE)
- Pursue one of 6 Progressive Degree Programs to pursue your masters degree in conjunction with your bachelors
- Opportunities for research during the academic year or over the summer with faculty

Popular Study Abroad Sites

- University of Auckland
- University of Melbourne
- National University of Singapore
- Hong Kong University of Science & Technology



CAREERS

Ashley Morris

Class of 2016,
Industrial and Systems
Engineering

**Senior Associate, SAP
GRC Advisory, KPMG**



I'm a tech consultant, specializing in SAP, which is a system a lot of companies use worldwide (think Amazon, Google, and Under Armour!). My team identifies risks in our clients' business processes and technologies and helps them come up with solutions to prevent things from going wrong. What do I love about my job? My manager, my team, the flexibility, the responsibility and freedom, the trust. Management supports me in taking ownership and starting initiatives to implement that change. They trust me to interact with clients who are levels above me or executing meetings how I see fit, so we can reach the finish line together successfully.

Advice? Do what brings you joy. Don't do something because you think you have to. You didn't get that internship? So what? Trust me. You'll end up employed.

RESEARCH

Dr. John Carlsson

AREA OF RESEARCH: Algorithms for solving problems in continuous location theory, including optimization problems with some kind of geographic element. My research is supported by DARPA, the Office of Naval Research, the Air Force Office of Scientific Research, the National Science Foundation, and the US Department of Transportation

COURSES: ISE 330 and ISE 331 (Introduction to Operations Research, Deterministic and Stochastic Models)



FUN FACT: I was a music major before falling in love with Industrial & Systems Engineering

INDUSTRIAL & SYSTEMS ENGINEERING

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
ENGR 102 2	ISE 150 4	ISE 220 MATH 126 4	ISE 225 ISE 220 4	ISE 315L ISE 225 4	ISE 435L ISE 150, ISE 225 4	ISE 350 ISE 225 4	ISE 410 ISE 330 4
ISE 105 2	PHYS 151L (GE E) MATH 125 4	CHEM 150aL or MASC 110* 4	ISE 330 MATH 225 4	ISE 370L 4	ISE 495a ISE 225, ISE 382 2	ISE 495b ISE 315, ISE 370, ISE 435 2	ISE 440 4
MATH 125 (GE F)* 4	MATH 126 or MATH 129* MATH 125 4	MATH 225 MATH 126 4	GE B 4	ISE 382 4	PHYS 152L PHYS 151, MATH 126 4	WRIT 340 WRIT 150 4	ISE APPROVED ELECTIVE 4
WRIT 150 4	GESM (GE A)# 4	GE C 4	FREE ELECTIVE 4	MATH 226 OR MATH 229 4	GE C 4	ISE APPROVED ELECTIVE 4	BIOLOGY ELECTIVE (GE D)* 4
GE B 4	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	FREE ELECTIVE 4	OPTIONAL ELECTIVE 4	OPTIONAL ELECTIVE 2

Mathematics (16 Units)

- MATH 125: Calculus I*
- MATH 126 **OR** MATH 129: Calculus II*
- MATH 226 **OR** MATH 229: Calculus III
- MATH 225: Linear Algebra and Diff. Equations

Science (16 Units)

- CHEM 105aL: General Chemistry*
- **OR** MASC 110L: Materials Science
- PHYS 151L: Mechanics and Thermodynamics
- PHYS 152L: Electricity and Magnetism
- BIOLOGY ELECTIVE

Engineering (60 Units)

- ENGR 102: Engineering Freshman Academy
- ISE 105: Intro. to Industrial and Systems Engineering
- ISE 150: Solving Engineering Problems using Python
- ISE 220: Foundations of Probability Modeling
- ISE 225: Foundations of Data Analysis
- ISE 315L: Engineering Project Management
- ISE 330: Optimization
- ISE 350: Principles and Practices of Systems Engineering
- ISE 370L: Human Factors in Work and Systems Design
- ISE 382: Database Systems: Storage and Retrieval using SQL
- ISE 410: Planning and Scheduling for Production and Supply Chains
- ISE 435L: Discrete Systems Simulation
- ISE 440: Socio-Technical Systems and Work Organizations
- ISE 495a: Senior Design Project
- ISE 495b: Senior Design Project
- ISE APPROVED ELECTIVES

Writing (8 Units)

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

General Education (20 Units)

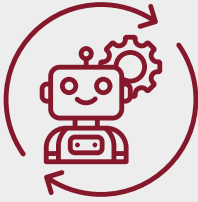
- GE A The Arts (1 Course)*
- GE B Humanistic Inquiry (2 Courses)
- GE C Social Analysis (2 Courses)
- GE D Life Sciences (1 Course)*
- GE E Physical Sciences (1 Course)*
- GE F Quantitative Reasoning (1 Course)*
- GE G,H Global Perspectives (2 Courses)*
- GESM General Education Seminar (1 Course)

Free Electives (8 Units)

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM#:** GESM can be taken from GE categories: A, B, C, or D. Courses listed in the guide are options for a four-year course plan.
- **GE:** ISE students satisfy GE D with BIOLOGY ELECTIVE, GE E with CHEM 105aL or PHYS 151L, and GE F with MATH 125. 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 AP/IB. Additionally, your GESM course should be taken in categories A, B, C, or D only. See page 17 for more information and consult your advisor for detailed assistance.
- **ISE Approved Electives:** 8 units of coursework. See academic advisor for approved list of courses.
- **Biology Elective:** Select one among BISC 103, BISC 104, BISC 230, or HBIO 205

ARTIFICIAL INTELLIGENCE



Artificial Intelligence (AI) engineers design, build, and train models for tasks like image recognition, natural language processing, and recommendation systems. They use large datasets to create intelligent features in software, power autonomous systems like robots and self-driving vehicles, and develop custom AI chips. With expertise in machine learning, algorithm design, and decision-making, they're equipped for the rapidly evolving AI landscape. This interdisciplinary degree blends core concepts from Computer Science, Electrical and Computer Engineering, and Industrial and Systems Engineering.

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CSCI 113 4	CSCI 114 CSCI 113 4	CSCI 170 CSCI 113 4	CSCI 360 CSCI 114, 170 4	CSCI 270 CSCI 114, 170 4	CSCI 467 CSCI 114, CSCI 170, EE 141, ISE 225 or EE 460 CSCI 113 4	TRACK COURSE 4	TRACK CAPSTONE 4
ENGR 102 2	ENGR 103 (CSCI 113) 2	ENGR 203 ENGR 103 (CSCI 114) 2	ISE 220 MATH 126 or 129 4	ISE 225 ISE 220 4	TRACK COURSE 4	TRACK COURSE 4	TRACK COURSE 4
MATH 125* (GE F) 4	MATH 126 or MATH 129* MATH 125 4	MATH 226 or MATH 229 MATH 126 or 129 4	ISE 330 EE 141, MATH 126 or 129 4	EIS 370 4	BIOLOGY ELECTIVE* 4	GE A 4	GE C 4
WRIT 150 4	EE 141 4	EE 109 CSCI 113 4	PHYS 151 or 161* (GE E) MATH 126 or 129 or 226 4	TRACK COURSE 4	WRIT 340 WRIT 150 4	GE B 4	FREE ELECTIVE 4
GE C 4	GESM (GE B) 4	OPTIONAL ELECTIVE 4	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

See next page for course listing.



ARTIFICIAL INTELLIGENCE

PLEASE SEE PREVIOUS PAGE.



Mathematics (16 Units)

- MATH 125: Calculus I*
- MATH 126 or MATH 129: Calculus II*
- MATH 226 or MATH 229: Calculus III
- EE 141: Applied Linear Algebra for Engineering

Science (8 Units)

- PHYS 151: Mechanics, Oscillations, and Waves*
- **OR** PHYS 161: Advanced Principles of Physics I
- Biology Elective*

Engineering (74 Units)

- ENGR 102: Viterbi First-Year Academy
- ENGR 103: Artificial Intelligence: An Introduction
- ENGR 203: Artificial Intelligence: Exploration in Current Applications
- CSCI 113: Programming Fundamentals for Computing
- CSCI 114: Programming for Applications of Computing
- CSCI 170: Discrete Methods in Computer Science
- CSCI 270: Introduction to Algorithms and Theory of Computing
- CSCI 360: Artificial Intelligence: Principles and Foundations
- CSCI 467: Foundations of Machine Learning
- **OR** EE 460: Machine Learning for Engineers
- EE 109: Introduction to Embedded Systems
- ISE 220: Foundations of Probability Modeling
- ISE 225: Foundations of Data Analysis
- ISE 330: Optimization
- EIS 370: Ethical Issues in Artificial Intelligence

Writing (8 Units)

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

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)

Track Courses/Capstone

- See next page for Track options

SPECIAL NOTES

- **Courses with the * symbol** may be satisfied with AP, IB or A-Level exams. See page 18 for more information.
- **GESM and GE Courses:** Specific GE categories listed in the course plan are options; GE requirements can be fulfilled in any order. The GESM can be taken from GE categories A, B, or C. Students are encouraged to satisfy GE G and GE H with courses that also satisfy GE A, B, or C. See page 17 for more information about GE requirements, and consult your advisor for detailed assistance.
- **Biology Elective:** Choose from BISC 104, BISC 120, BISC 121, BISC 221, BISC 220, BISC 230, HBIO 205, PHIL 246
- **Grade Qualifier:** A grade of a C (2.0) or better is required for CSCI 113, CSCI 114, CSCI 170, EE 141, MATH 125, MATH 126/129, and MATH 226/229. Courses with a grade of C- or below must be repeated; courses may only be retaken once with department approval.

MAJOR TRACKS FOR ARTIFICIAL INTELLIGENCE

AI Systems and Operations Engineering

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
CSCI 270 CSCI 114, 170 4	CSCI 467 CSCI 114, CSCI 170, EE 141, ISE 225 or EE 460 CSCI 113 4	ISE 382 4	ISE 430 MATH 226/229, ISE 325, 330 4
ISE 225 ISE 220 4	ISE 325 CSCI 113, ISE 225, EE 141, MATH 226/229 4	TRACK ELECTIVE 4	ISE 480 CSCI 113, ISE 382 4
EIS 370 4	BIOLOGY ELECTIVE* 4	GE A 4	GE C 4
ISE 227 4	WRIT 340 WRIT 150 4	GE B 4	FREE ELECTIVE 4
OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

Choose **one** Track Elective from the following:
ISE 315, ISE 435, ISE 440, ISE 470

Hardware Systems for AI

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
CSCI 270 CSCI 114, 170 4	CSCI 467 CSCI 114, CSCI 170, EE 141, ISE 225 or EE 460 CSCI 113 4	EE 462 EE 460 or CSCI 467 4	EE 496 EE 354 or EE 460 4
ISE 225 ISE 220 4	EE 354 EE 109 4	TRACK ELECTIVE 4	EE 461 CSCI 114, EE 460 or CSCI 467 4
EIS 370 4	BIOLOGY ELECTIVE* 4	GE A 4	GE C 4
EE 250 EE 109 4	WRIT 340 WRIT 150 4	GE B 4	FREE ELECTIVE 4
OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

Choose **one** Track Elective from the following:
EE 451, EE 454, EE 456, EE 457, EE 477

Computational Foundations and Applications

THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING
CSCI 270 CSCI 114, 170 4	CSCI 467 CSCI 114, CSCI 170, EE 141, ISE 225 or EE 460 CSCI 113 4	TRACK ELECTIVE 4	CSCI 460 CSCI 201, CSCI 360, EIS 370, CSCI 467 or EE 360 4
ISE 225 ISE 220 4	TRACK ELECTIVE 4	TRACK ELECTIVE 4	TRACK ELECTIVE 4
EIS 370 4	BIOLOGY ELECTIVE* 4	GE A 4	GE C 4
CSCI 201 CSCI 114 4	WRIT 340 WRIT 150 4	GE B 4	FREE ELECTIVE 4
OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2	OPTIONAL ELECTIVE 2

Choose **four** Track Electives from the following:
CSCI 444, CSCI 445, CSCI 452, CSCI 461, CSCI 468,
CSCI 469, EE 456

PROGRESSIVE DEGREE PROGRAM

There are countless ways to get to your end goal. Being a student organization president, completing an internship, or studying abroad are all experiences that prepare you for life after college. **Are you thinking about grad school?**

The Progressive Degree Program (PDP) is a great way to earn a master's degree from the Viterbi School of Engineering in as little as one additional year.

Alec Mnatzakanian

B.S. Aerospace Engineering,
M.S. Mechanical Engineering,
Class of 2026



Viterbi Involvement

- Member, USC Rocket Propulsion Lab
- Viterbi School of Engineering Dean's List
- Participant, Viterbi Trek
- Summer Internship, SpaceX
- Summer Internship, Mason Controls
- Viterbi PDP Ambassador

USC Involvement

- President, Alpha Epsilon Omega Fraternity
- Graduating with Magna Cum Laude honors
- USC ITS Service Desk Analyst
- Professional Development Chair, Armenian Students Association
- Founder & President, Armenian Engineers and Scientists Association

"Viterbi's one-of-a-kind Progressive Degree Program puts me on track to earn my Master's in mechanical engineering the same year that I complete my Bachelor's in aerospace engineering, to make me a uniquely potent engineer when it's time to enter the job market post-grad!"

PDP is an accelerated master's degree open to USC's academically outstanding undergraduate juniors and seniors. **It allows you to begin taking master's-level courses while finishing the final semesters of your bachelor's degree.** Blending your undergraduate and graduate degrees via PDP may reduce the number of graduate units required for degree completion. **Interested in two different fields of engineering?** Consider pursuing one field as a B.S. and one as an M.S. through PDP.

[Click here to visit the PDP Website.](#)

PDP Eligibility Requirements

**64+ completed
undergraduate units,**
excluding AP, IB and
A-level exams

3.2+ GPA

VITERBI INFO & RESOURCES

VITERBI STUDENT SERVICES OFFICES

Academic Services - OHE 106

John Brooks Slaughter Center - RTH 210

Career Connections - RTH 218

Viterbi Student Wellness - RTH 110

Viterbi Learning Program - RTH 222

ACADEMIC CALENDAR 2026-2027

Fall Semester 2026

Open Registration: August 17-21

Move-In: August 19

Classes Begin: August 24

Labor Day Holiday: September 7

Fall Recess: October 8-9

Veterans Day Holiday: November 11

Thanksgiving Holiday: November 25-29

Classes End: December 4

Study Days: December 5-8

Exams: December 9-16

Winter Recess: December 17-January 10

Spring Semester 2027

Open Registration: January 7-8

Classes Begin: January 11

Martin Luther King's Birthday: January 18

President's Day: February 15

Spring Recess : March 14-21

Classes End: April 30

Study Days: May 1-4

Exams: May 5-12

Commencement: May 12-15

