CSE & ECE
Bachelor’s to Master’s Pathways

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Agenda

• Graduate School at Baskin
• Pathways Overview
• Where are our Master’s Alumni Now?
• ECE Contiguous Pathway
• CSE Contiguous Pathway
• How to Apply
• Application Timeline & Requirements
• Questions
Graduate School @ Baskin

- 17 Graduate Programs
  - 11 MS Programs
    - 5 Pathway Programs
  - 6 PhD Programs
  - 6 Designated Emphases
- 3 Satellite Campuses
- 32 Research Areas

Learn more about our graduate programs & research:

soe.ucsc.edu
A complete list of research areas in the ECE Department is available on the BSOE website.
A complete list of research areas in the CSE Department is available on the BSOE website.
ECE & CSE Pathways...

- are bachelor’s to master’s programs that enable UCSC undergraduate students to earn bachelor’s AND master’s degrees in as little as 5 years with appropriate planning
- waive the GRE requirement
- count qualified UCSC credits taken as an undergrad toward a master’s degree*
- provide students with opportunities to advance prior research or explore a new research area
- help students gain a competitive edge as industry leaders and researchers
- enable students to apply experience gained as a UCSC undergrad toward advancing career plans without “having to go back” later for a master’s or PhD

*Rules regarding how qualified credits can be counted toward MS requirements vary by program. Please review the UCSC General Catalog for more information about each Pathway Program.
Where are our ECE Master’s Alumni?

Employed @ Microsoft, Google, Amazon, Sandia Natl Labs, PG&E, Baidu, Qualcomm, Redfin & more!

Researchers & Data Analysts
Backend Developers & Product Designers
Software Engineers
Where are our CSE Alumni?

Engineers @ Apple, Cisco, Google, HP, Microsoft, Oracle, Palantir, SRI, Uber & more!

Researchers, Analysts & Professors

Directors of Engineering @ Intel, LinkedIn, Splunk & more!

CEOs, CTOs & Founders
The Electrical & Computer Engineering
5-Year Contiguous Bachelor’s / Master’s Pathway
ECE BS/MS Pathway: Eligibility

1. A UCSC student enrolled in a bachelor’s program when formally applying with plans to enroll in the MS program the fall quarter immediately after completing undergrad requirements.

2. Must pass 2 undergrad courses in one of the 4 core areas from the list with a grade of B+ or higher before starting the M.S. year of the B.S./M.S. contiguous pathway program.

3. Must maintain a **3.0 GPA or higher** until the completion of undergraduate requirements.

4. Must complete BOTH the [ECE BS/MS Pathway eligibility form](#) AND the formal [ECE MS application](#).
ECE Contiguous Pathway: Depth Areas

- Robotics, Control, & Cyber-Physical Systems
- Photonics & Electronic Devices
- Electronic Circuits & Energy Systems
- Signals, Image Processing, & Communications

Learn more about depth areas here.
ECE Depth Areas:
Course Requirements for 4+1

Pass 2 courses in one core area with B+ or higher

- **Photonics & Electronic Devices**
  - ECE 102, ECE 130, ECE 135

- **Electronic Circuits and Energy Systems**
  - ECE 157, ECE 171, ECE 172, ECE 173, ECE 177 (Circuits)
  - or
  - ECE 171, ECE 175, ECE 176, ECE 177 (Energy Systems)

- **Robotics, Controls, and Cyber-Physical Systems**
  - ECE 141 (required), ECE 118, ECE 121, ECE 167

- **Signals, Image Processing, and Communications**
  - ECE 151, ECE 153

Degree requirements are subject to change pending approval from the Graduate Council. Please contact the ECE Graduate Student Advisor and refer to the UCSC General Catalog for any updates.
ECE MS Degree Requirements (45 units)

• Complete 15 Units (3 classes) in One of Four Depth Areas
  ○ Photonics and Electronic Devices
  ○ Signals, Image Processing, and Communications
  ○ Electronic Circuits and Energy Systems
  ○ Robotics, Control, and Cyber-Physical Systems

• Seminar Requirement (5 units)
  ○ All students must complete 5 units of seminar (ECE 290/291)

• Electives (25 units)
  ○ All other courses must be 5-unit grad-level BSOE courses
  ○ At least 25 of the 45 required units must be in ECE.
Degree requirements are subject to change pending approval from the Graduate Council. Please contact the ECE Graduate Student Advisor and refer to the UCSC General Catalog for any updates.

**ECE MS Degree Tracks**

- **Exam Track**
  - Default track for students entering the MS program.
  - Fastest to complete.
  - Must pass 3 comprehensive exams in your chosen depth area.
  - Comprehensive exams are offered at the end of the quarter for ECE grad classes.
  - Students register to take the exams in advance.

- **Project Track**
  - Hybrid (coursework & research focus).
  - Can count a maximum of 5 independent study credits toward the 45 required for MS degree.

- **Thesis Track**
  - For students interested in academia or continuing on to a PhD program. Most exposure to research.
  - Can count a maximum of 10 credits of independent study credits toward the 45 required credits for MS degree.

*Degree requirements are subject to change pending approval from the Graduate Council. Please contact the ECE Graduate Student Advisor and refer to the UCSC General Catalog for any updates.*
The Computer Science & Engineering 5-Year Contiguous Bachelor’s / Master’s Pathway
CSE Contiguous Pathway: Eligibility

1. Any UCSC School of Engineering undergraduate major may apply.

2. Enrolled in a bachelor’s program when formally applying with plans to enroll in the MS program the fall quarter immediately after completing undergrad requirements.

3. Must maintain a **3.0 GPA or higher** until the completion of undergraduate requirements.

4. Must complete **BOTH** the [CSE Pathway eligibility form](#) AND the formal [CSE MS application](#).
CSE Contiguous Pathway:  
Degree Requirements

**CSE MS Degree Requirements*** (48 units)

- Core Requirements (13 units)
- **Breadth Courses** (15 units) - Three 5-unit courses from three different breadth categories.
- Electives (15 units) - All other courses must be 5-unit grad-level BSOE courses. Please review the General Catalog for more information.
- Capstone Requirements (5 units)
  - Thesis Plan I required to take CSE 299 (5 credits) and may count additional 5 credits of CSE 299 toward electives.
  - Capstone Plan II (Project) required to take CSE 297 (5 credits).
CSE Contiguous Pathway: Core Requirements*

**CSE MS Core Requirements** (18 units)

- Research & Teaching (3 units)
- CSE 200
  Taken in First Fall Quarter
- Analysis of Algorithms
  CSE 201 - 5 units
- Programming Languages
  CSE 210A - 5 units
- Computer Architecture
  CSE 220 - 5 units
- Thesis Research
  CSE 299 - 5 units
- Capstone Project
  CSE 297 - 5 units

Select TWO Core Areas (10 units)

- CSE 200
- Analysis of Algorithms
- Programming Languages
- Computer Architecture

**Capstone Requirements** (5 units)

- Capstone Project
  CSE 297 - 5 units

*Degree requirements are subject to change pending approval from the Graduate Council. Please contact the CSE Graduate Student Advisor and refer to the UCSC General Catalog for any updates.
CSE MS Degree Tracks

Thesis Plan I
Ideal for students seeking to work in academia or research after graduating.
Thesis becomes a publication of the university.
Thesis can be listed on resumes for job or PhD applications.
2-3 Quarters to Complete
Must take 5 credits of CSE 299 (thesis research) but can also count additional 5 credits of 299/297.

Capstone Plan II
Ideal for students seeking to work in industry after graduating.
Can be team-based depending on chosen research area.
Flexible outcomes: Project expectations & report determined with faculty advisor.
1-2 Quarters to Complete
Must take 5 credits of CSE 297 (ind. study)

*Degree requirements are subject to change pending approval from the Graduate Council. Please contact the CSE Graduate Student Advisor and refer to the UCSC General Catalog for any updates.
Interested in Concentrations? Review the Concentration requirements. Learn more about designated emphases on the BSOE Grad Advising website.
CSE Contiguous Pathway: Maximizing the Pathway as an Undergrad

Option 1*
Count up to 13 credits of grad-level courses
- Can double-count grad courses toward bachelor’s degree
- Must be from CSE or SOE
- Must earn B- or higher

To enroll in graduate level courses as an undergrad, request a permission code from the instructor.

Option 2*
Count up to 8 grad-level credits + 5 undergrad upper-division credits
- CSE upper-div can’t count toward bachelor’s degree
- SOE grad-level credits can be double-counted
- Must earn B- or higher

To enroll in graduate level courses as an undergrad, request a permission code from the instructor.

Please note you cannot combine these separate options. A maximum total of 13 credits taken as an undergraduate can be counted toward your master’s degree.

*These options are subject to change pending approval from the Graduate Council. Please contact the CSE Graduate Student Advisor and refer to the UCSC General Catalog for any updates.
CSE Contiguous Pathway: Grading Policy

● Letter grades are required for **ALL** 5-unit courses applied toward the CSE MS degree with the exception of the following courses:
  - CSE 200 - Research & Teaching
  - CSE 297 - Individual Study
  - CSE 299 - Thesis Research
How to Apply
Tips for Applying

• Complete the Pathway eligibility forms at any time **before the application deadline**. Please notify CSE/ECE Advisors every academic year if you want us to continue tracking your eligibility.

• Apply formally to either program the Fall Quarter **before** you plan to graduate from a bachelor’s program. **Cannot take a year off between programs.**

• Get a head start on the required letters of recommendation and prioritize letters from faculty in the department you are applying to.

• Engage in undergraduate research and build rapport with CSE/ECE faculty. Visit the [Undergraduate Research Opportunities](#) website.

• Utilize campus resources like the Career Center and writing support services to polish your resume, Statement of Purpose, and Personal History Statement.
How to Apply for the CSE or ECE Pathway

Step One:
• Complete the eligibility form online for a Pathway:
  ○ [CSE Contiguous Pathway eligibility form]
  ○ [ECE Contiguous Pathway eligibility form]
• If you are eligible, you will be added to the Pathway’s internal tracking database.
• You can complete this step at any time prior to the formal application deadline.

Step Two:
• Complete the [formal application] for the CSE MS OR the ECE MS degree (only one per year).
• Note: Eligibility for a Pathway does not guarantee admission.
Application Timeline

- Fall 2022 applications open on October 1st, 2021.
- GRE requirement waived for eligible pathway applicants.
- The CSE MS application deadline is **to be determined**. Check the [Graduate Admissions site](http://graduate.ucsc.edu) in October for the deadline.
- The ECE MS application deadline is February 14, 2022.
  - For **ECE pathway applicants**, 1 letter of recommendation and the personal history statement are waived for the MS application.
- The formal application for either program is online at: [applygrad.ucsc.edu/apply/](http://applygrad.ucsc.edu/apply/)
ECE MS Application Requirements

• 2 Letters of Recommendation.
• Personal History Statement - typically a description of the skills, knowledge, and relevant experience you have acquired, and how you would contribute to the program and/or BSOE community. *(Waived for the 2021-22 application)*
• GRE is waived
• Statement of Purpose - typically a description of your short-term and long-term goals or career plan, and how a master’s degree at UCSC would help you reach these goals.
• Unofficial Transcripts
• TOEFL/IELTS waived for international students earning a bachelor’s degree at UCSC.
• See the BSOE Graduate Admissions FAQ for more detailed information: [gradadmissions.ucsc.edu/](http://gradadmissions.ucsc.edu/)
CSE MS Application Requirements

• 3 Letters of Recommendation - can be from UCSC faculty and job/internship/research supervisors involved in computer science

• **Personal History Statement** - typically 1-3 pages, single-spaced

• **Statement of Purpose** - typically 2-4 pages, single-spaced

• Unofficial Transcripts

• Resume/CV

• TOEFL/IELTS - waived for international students earning a bachelor’s degree at UCSC.

• **NOTE**: GRE requirement is waived for pathway applicants

For more information, check out:

- Graduate Admissions FAQs: [gradadmissions.ucsc.edu/](http://gradadmissions.ucsc.edu/)
- CSE Graduate Admissions: [grad.soe.ucsc.edu/cse/admissions](http://grad.soe.ucsc.edu/cse/admissions)
QUESTIONS?

More Information at BSOE Graduate Advising

grad.soe.ucsc.edu