



ECE & CSE

Bachelor's to Master's Pathways

Emelye Neff

CSE Graduate Student Advisor
cse-gradadvising@ucsc.edu

Dr. Roberto Manduchi

CSE Graduate Director
manduchi@ucsc.edu

Jennifer Cornwell

ECE Graduate Student Advisor
ece-gradadvising@ucsc.edu

Dr. Ricardo Sanfelice

ECE Graduate Director
rsanfelice@ucsc.edu

Elaina Boncich

Baskin Engineering Undergraduate
Student Advisor
bsoeadvising@ucsc.edu

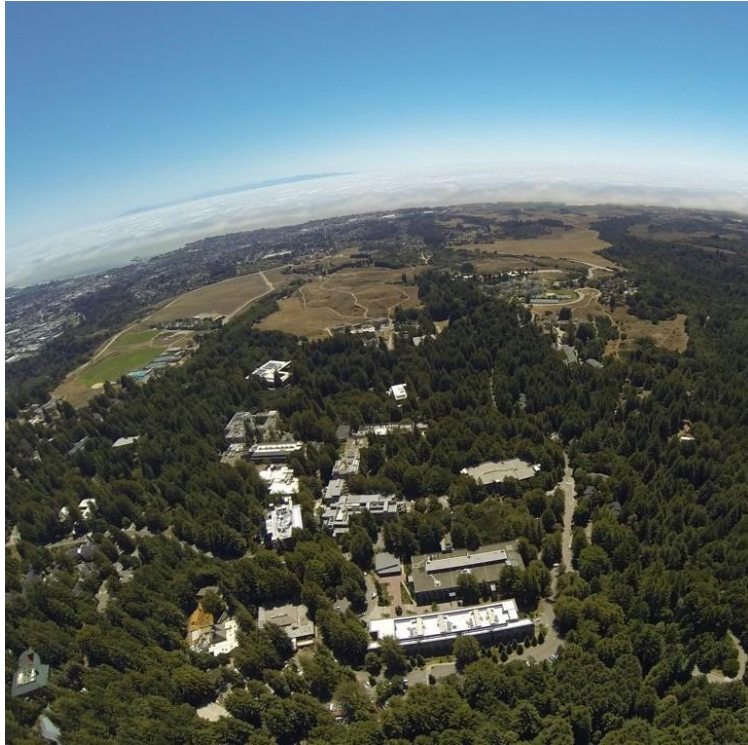
Undergraduate Inquiries by Appointment Only:

<http://grad.soe.ucsc.edu/contacts>

UC SANTA CRUZ

**Baskin
Engineering**

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
- Baskin Graduate Student Experience

Graduate School @ Baskin

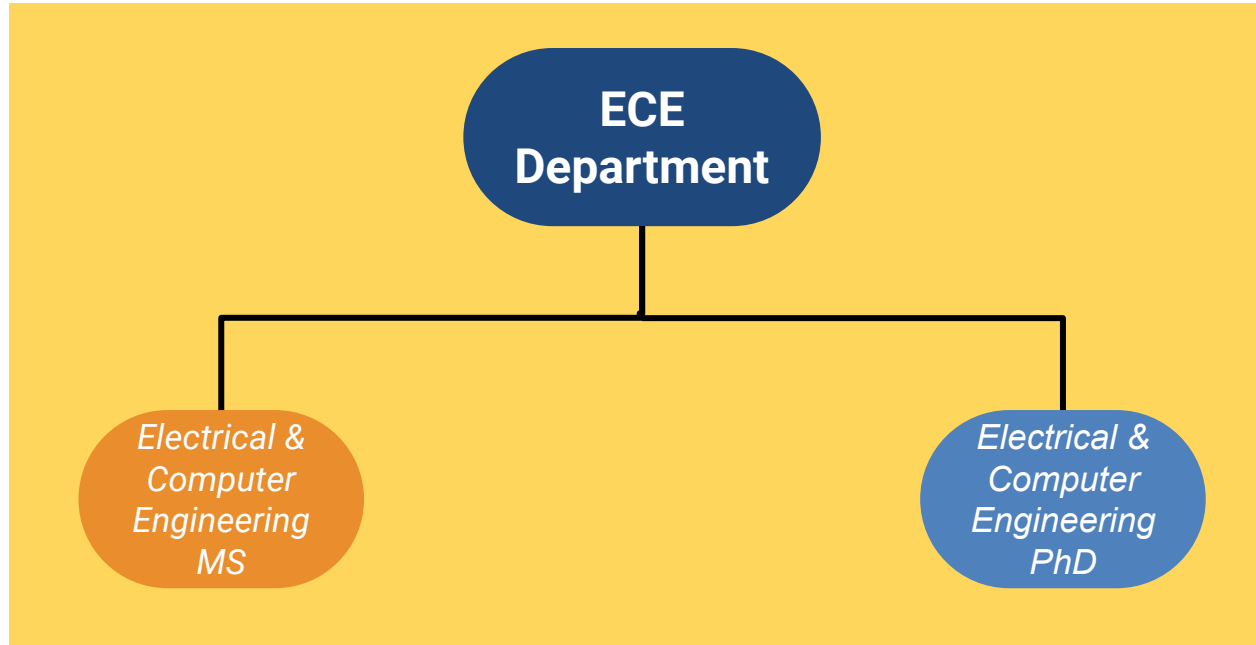


- 17 Graduate Programs
 - 11 MS Programs
 - 5 Pathway Programs
 - 6 PhD Programs
 - 6 Designated Emphases
- 3 Satellite Campuses
- 32 Research Areas

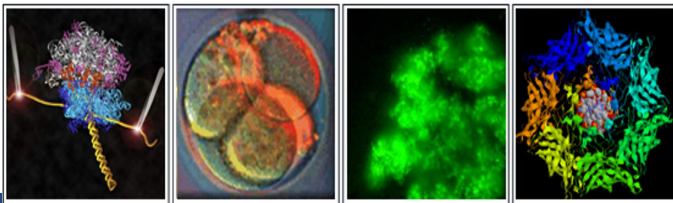
Learn more about our graduate programs & research:

engineering.ucsc.edu

Electrical & Computer Engineering @ BSOE



W. M. KECK CENTER FOR NANOSCALE OPTOFLUIDICS



 **Cyber-Physical Systems
Research Center**

The Center for Sustainable Energy and Power Systems
CENSEPS

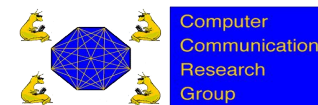
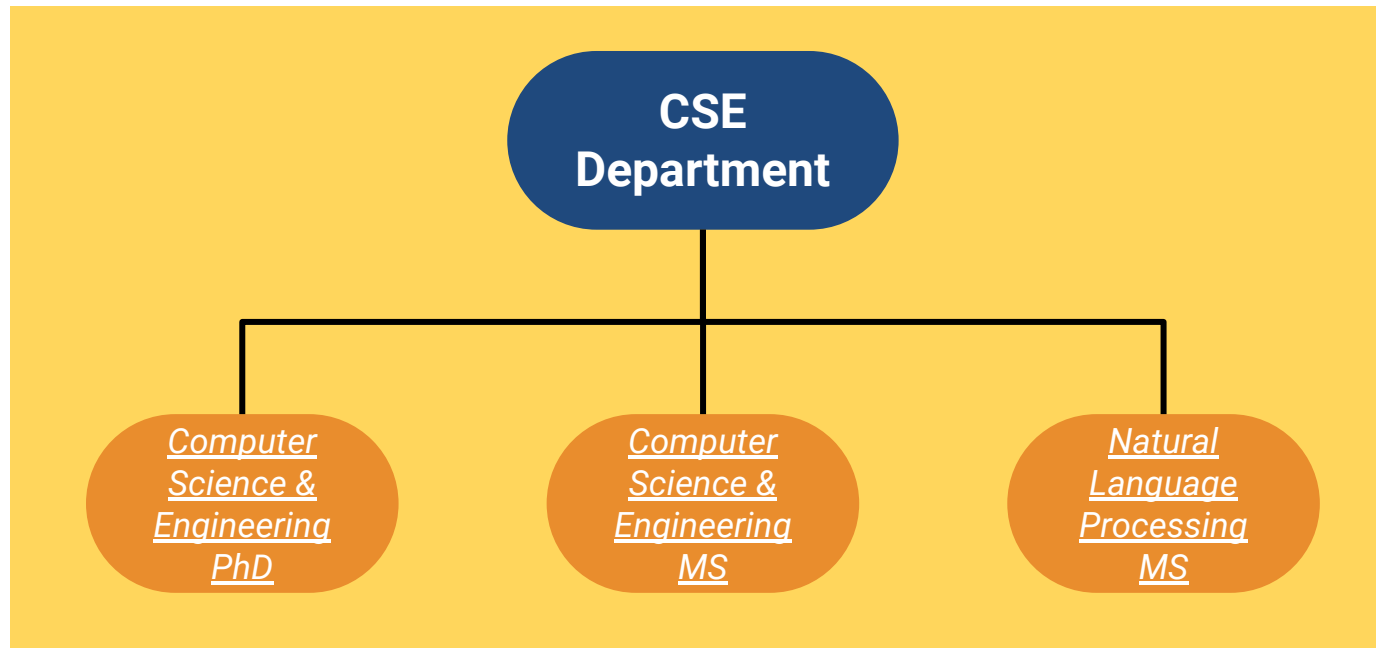


A complete list of research areas in the ECE Department is available on [the Baskin website](#).

UC SANTA CRUZ

 **Baskin
Engineering**

Computer Science & Engineering @ BSOE



CENTER FOR RESEARCH IN
OPEN SOURCE SOFTWARE

A complete list of research areas in the CSE Department is available [on the Baskin website.](#)

UC SANTA CRUZ



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.

UC SANTA CRUZ

Baskin
Engineering

Where are our ECE Master's Alumni?



Where are our CSE Alumni?



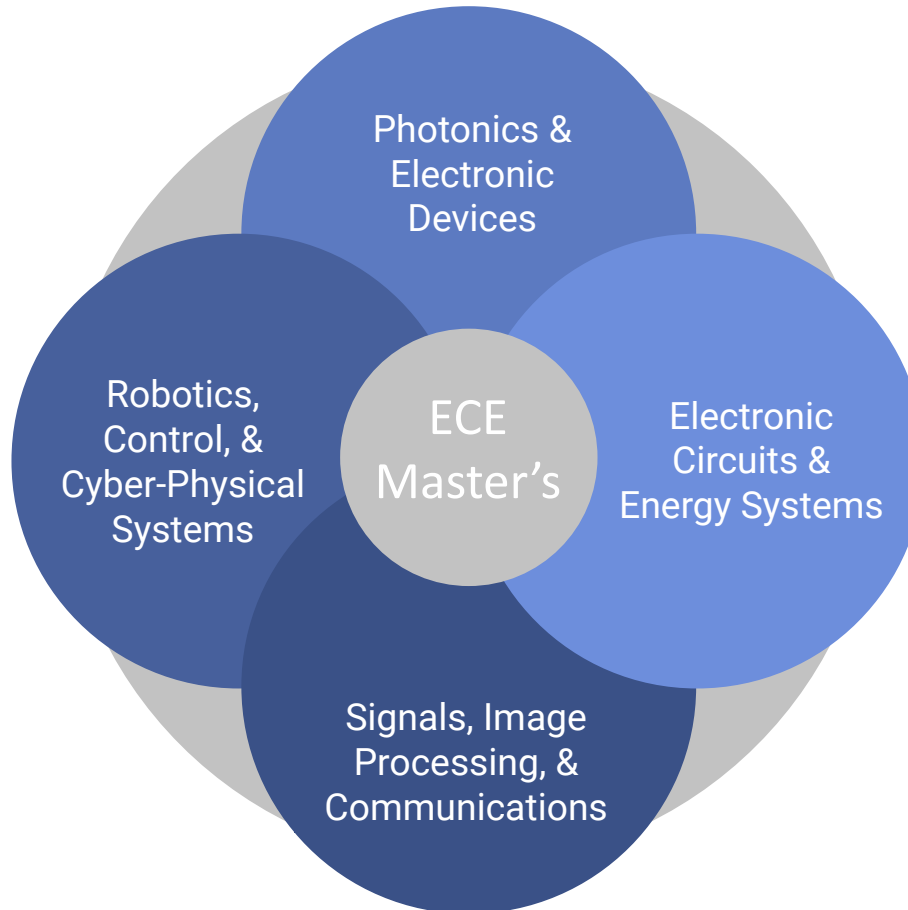
The Electrical & Computer Engineering 5-Year Contiguous Bachelor's / Master's Pathway

ECE Contiguous 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 bachelor's/master'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 Pathway eligibility form](#) **AND** the formal [ECE MS application](#).

ECE Contiguous Pathway:

Depth Areas



[Learn more about depth areas here.](#)

ECE Depth Areas:

Course Requirements for Pathway

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

ECE Contiguous Pathway:

What Can I Do as an Undergraduate?

- **Declare your major or minor**
 - [Major qualification criteria](#)
 - [Major declaration process](#)
 - [Minor declaration process](#)
- **Advanced academic planning**
 - [“How to make a BE Academic Plan”](#)
- **Come to drop-in Advising to have your plan reviewed**
 - [Peer Advisors chat hours](#): 9:30-11:30 am and 2:00-4:00 pm PT M-F
 - Staff Advising [Zoom drop-in](#): 2:00-4:00 pm PT M-F

ECE Contiguous Pathway:

Maximizing the Pathway as an Undergrad

Step 1

Complete required courses in your track to qualify for the Pathway

- Review the list of courses and pathway requirements [here](#)

To count, you must earn a grade of B+ or higher in each course

Step 2

Enroll in graduate level courses if you have room in your schedule

- Graduate courses taken as an undergrad can count toward the MS if the credits are not applied to your bachelor's degree
- Must earn B- or higher

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

ECE Contiguous Pathway: Degree Requirements

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 Baskin courses
 - At least 25 of the 45 required units must be in Electrical & Computer Engineering

ECE MS Degree Tracks

```
graph TD; A([ECE MS Degree Tracks]) --- B([Exam Track]); A --- C([Project Track]); A --- D([Thesis Track]);
```

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.

The Computer Science & Engineering 5-Year Contiguous Bachelor's / Master's Pathway

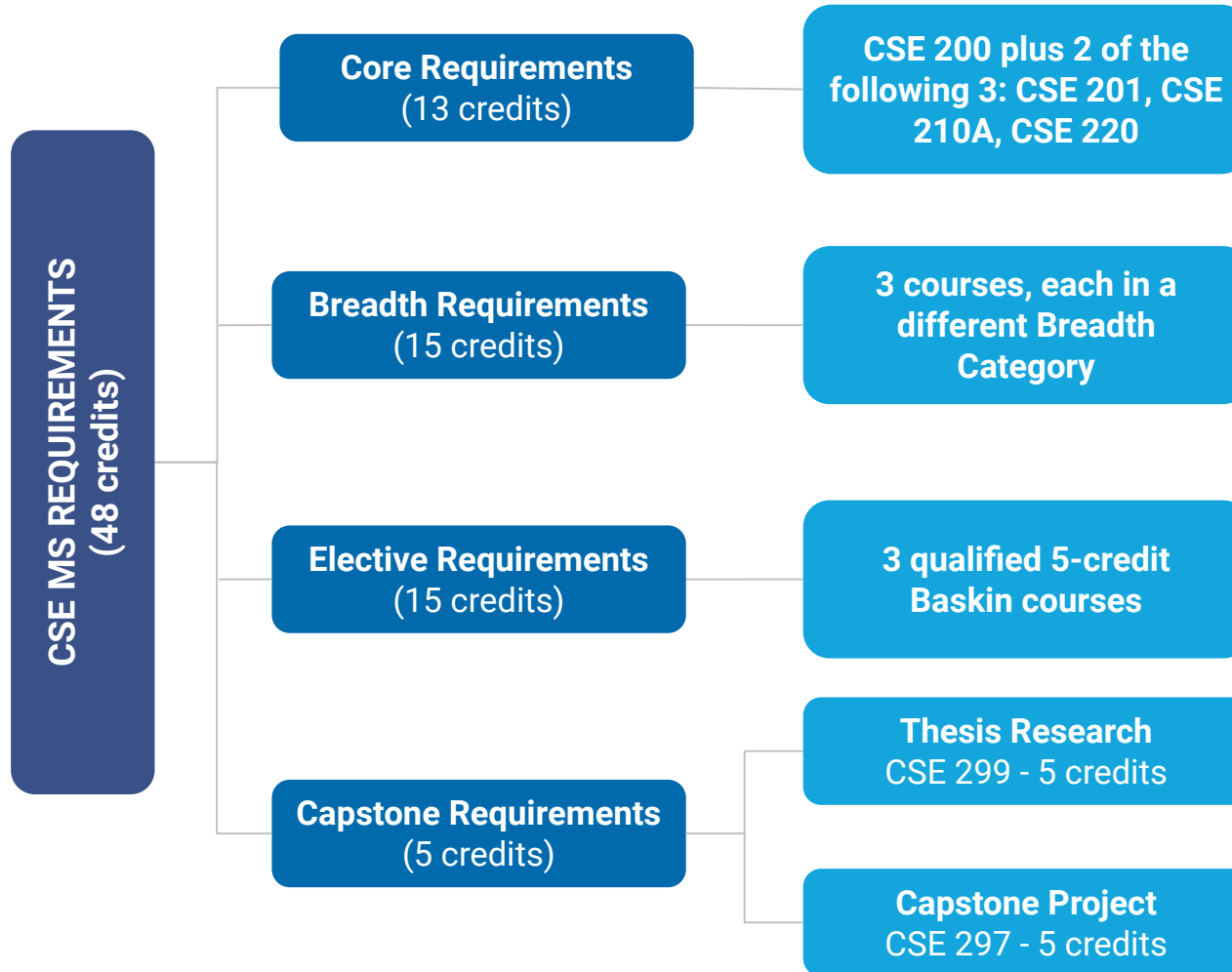
CSE Contiguous Pathway: Eligibility

- 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: At a Glance

- 48-credit Program
- Can be completed in 4 quarters with advance planning
- Capstone Component sponsored by faculty advisor
 - Thesis - University publication, 2-3 quarters
 - Project - greater flexibility, 1-2 quarters
- Core requirements: Programming Languages, Analysis of Algorithms & Computer Architecture
- Breadth requirement: Enables students to gain skills & experience in 3 CSE fields
- Can earn a Concentration or a Designated Emphasis to indicate a level of specialization in CSE field
- Opportunity to pursue doctoral studies in CSE at Baskin

CSE Contiguous Pathway: Degree Requirements*



*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

```
graph TD; A[CSE MS Degree Tracks] --> B[Thesis Plan I]; A --> C[Capstone Plan II]
```

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).

CSE Contiguous Pathway: Opportunities for Specialization

CSE MS Concentrations

- Listed on professional websites, job & PhD applications, letters of recommendation
- 4 Concentration Areas:
 - Artificial Intelligence
 - Hardware Systems
 - Software Systems
 - Theory
- Courses may double-count toward degree requirements
- Capstone research sponsored by affiliated faculty member

Designated Emphases

- Noted on students' transcripts and degree diplomas
- Equivalent of a graduate minor
- May require 1-2 additional quarters beyond CSE MS degree requirements
- Thesis research sponsored by affiliated faculty member
- Options for MS students:
 - Human Language Media & Modeling
 - Robotics & Control
 - Scientific Computing

**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.*

UC SANTA CRUZ

 Baskin
Engineering

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:

What can I do as an Undergraduate?

- **Similar to ECE, but there are some differences**
 - Qualify for your major and declare your major or minor
 - Advanced academic planning
 - Some grad-level courses already approved for CSE majors can count toward your CSE Pathway
 - Come to PA [drop-in advising](#) to have your plan reviewed
- **BE Course substitution process**
 - [Submit a course substitution petition](#)
- **Consider engaging in research**
 - Some majors may allow an [independent study](#) for major elective credit or thesis credit but will need approval from the Department, consult with your Advisor for more information

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.**
- Check if you are eligible for a fee exemption:
<https://www.gradadmissions.ucsc.edu/application-fee>
- 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.**



CSE
Eligibility
Form



ECE
Eligibility
Form

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 January 24th, 2022.
- The ECE MS application deadline is February 14th, 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/

ECE MS Application Requirements

- 2 Letters of Recommendation are required
- GRE is **waived**
- **Application fee for Fall 2022 admission consideration is waived for qualified ECE Pathway applicants (contact ece-gradadvising@ucsc.edu before submitting application)**
- Personal History Statement - is **waived** for the 2022-23 application
- 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 Baskin Engineering Graduate Admissions FAQ for more detailed information: 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 1-2 pages, single-spaced
- [Statement of Purpose](#) - typically 1-2 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/
- CSE Graduate Admissions: grad.soe.ucsc.edu/cse/admissions

QUESTIONS?

More Information
at Baskin Engineering Graduate Advising

grad.soe.ucsc.edu

