

# CU Boulder Electrical, Computer, and Energy Engineering Prospective PhD Webinar



University of Colorado  
Boulder



# Our PhD Program



- You can read all about our program [here](#).
  - You can apply with or without a master's degree.
  - $\frac{1}{2}$  of our admits are right out of undergrad.

We admit ~30 PhD students each year and receive ~250 applicants.



# CU Boulder, Our College & Our Department

As one of the top college towns in America, and the best place to live in the USA, learn more about [living here](#). You can also check out our virtual campus tour features [here for the graduate school](#) and [here](#) for other aspects of campus.

## College of Engineering & Applied Science:

- Ranked #19 in US News & World Report 2023
- In 2023, 28 PhDs were awarded NSF-Graduate Research Fellowships (including 4 in ECEE).
- In Fall 2023 we admitted our largest and most diverse class of PhDs ever and have increased our total number of PhD students by 25% over the past five years.

## ECEE:

- Our PhD program has around 125 students at any time, with 40 tenure-track faculty members.
- You can see the degree requirements [here](#).
- Our [departmental PhD student groups](#) include IEEE, the Electrical Engineering Graduate Association, Women in ECEE, the Optical Society of America and the CU Energy Club.



- Our PhDs are from 28 states and 16 countries: 64% domestic and 36% international.
- Our PhDs range in ages from 20s-60s.
- 28% of ECEE PhDs are women. In the past two years, 38% of new PhD admits have been women. 18% of Tenure-Track faculty in the ECEE department are female.

# Our Research Collaborations & Recent Awards

There are many exciting research endeavors that ECEE faculty engage in, such as designing and testing circuits for quantum computing; designing the world's largest wind turbines; fabricating the most sensitive biosensors possible; and manipulating light for nanoscale imaging, lithography, and optical communications. With the world moving rapidly toward electrification, the ECEE department affords prospective students open-ended career possibilities for a rapidly evolving world.

We have four national laboratories in Boulder we collaborate with:

- National Center for Atmospheric Research (NCAR)
- National Oceanic and Atmospheric Administration (NOAA)
- National Institute of Standards and Technology (NIST)
- National Renewable Energy Laboratory (NREL)

The National Science Foundation's [Convergence Accelerator program](#) has awarded CU Boulder \$5 million for ["GHOST: 5G Hidden Operations through Securing Traffic."](#) The goal of the work is to ensure American soldiers, businesses, and non-governmental organizations (NGOs) can use 5G cellular networks in foreign countries without untrusted or potentially hostile network operators being able to extract user information.

A multi-university research team, including engineers and physicists from CU Boulder, will build technology and tools to improve measurement of important climate factors by observing atoms in outer space.

More recent news on our research and students can be found on LinkedIn:

<https://www.linkedin.com/company/cu-boulder-electrical-engineering/>

We also commonly work with the Department of Defense, Lockheed Martin, Ball Aerospace, Raytheon, Qualcomm, and others based in the greater Denver area.



# Our Climate

The Department of Electrical, Computer and Energy Engineering at CU Boulder is committed to fostering inclusive excellence; increasing the diversity of our faculty, staff and student voices; and providing a positive, equitable and welcoming departmental community.

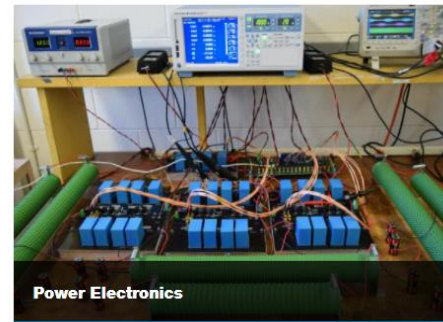
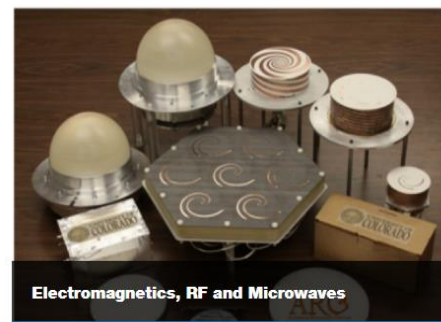
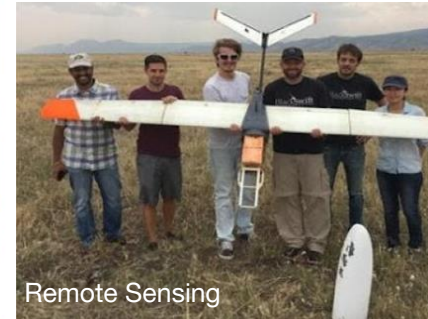
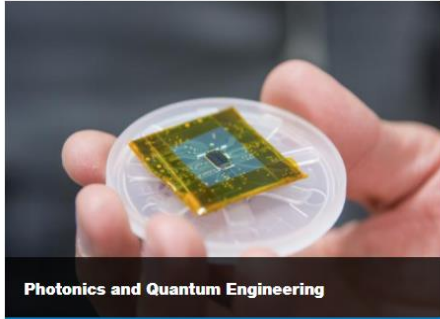
In 2021-2022, the University conducted a climate survey of the campus. The College of Engineering and Applied Science is proud to note:

- 81%+ of graduate students answered they felt well-supported and a sense of belonging in their program of study
- 96% of CEAS grad students feel positive about the knowledge they have gained
- 84% would choose CU Boulder again for graduate study
- 92% of all CEAS grad students feel the climate and community in their dept/program is “positive and welcoming”
- 93% of CEAS URM graduate students find their climate and community “positive and welcoming”





# Our Research Areas



Please ignore any others listed on our Research Areas page. These are part of our cross-collaborating teams made up from faculty in these core areas.

Electrical, Computer and Energy Engineering research at CU Boulder is [concentrated in seven broad areas](#). This includes innovative and impactful research in everything from biomedical engineering to solar energy.

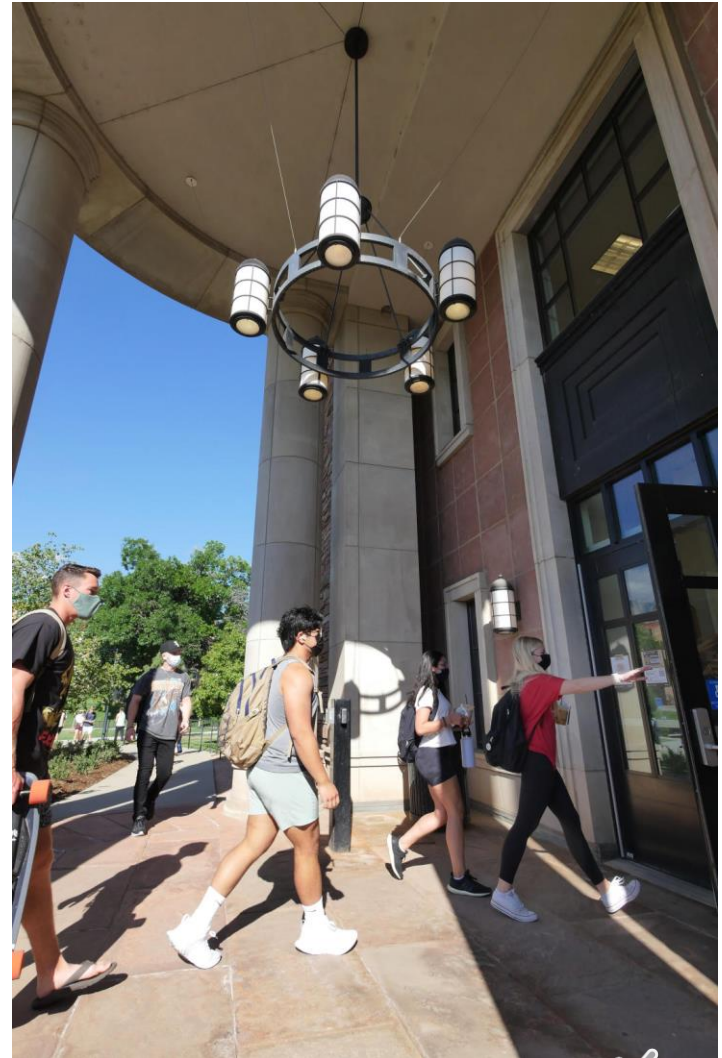


# Our Classes

We keep an active, live, up-to-date list of classes [here](#).

Students can review this list to plan their courses and see what is required for their degree area.

Scroll right to the “Recommended for PhD prelim” to see the generally required courses for your area of interest. These are the core courses used as building blocks for the PhD.



# Program Milestones and Checkpoints

## Years 1-3 (this is an estimate):

Coursework (minimum 30 credit hours required; you must maintain a cumulative GPA of 3.0):

- 18 credit hours of ECEN 5000-level or above courses are required.
- The remaining 12 credit hours can be ECEN courses or technical courses in science, mathematics, or engineering. All of these should be at the 5000-level or above.
- Submit Transfer of Credit form upon completion of 6 CU Boulder course credits.
  - You can transfer 21 credits max; these must be approved by advisor, ECEE Grad. Director and Dean.
- You must earn a grade of B- or better in all classes applying toward your degree.
  - Grades below B- still count toward your GPA., but not toward your degree.
- You must have no incomplete course work.
- Non-technical courses will not count toward your degree (i.e. telecomm, cybersecurity & eng. mgmt). If you are unsure if your course meets technical requirements, contact your advisor.
  - Generally, a 'technical' courses is one with technical undergraduate or graduate pre-reqs, and is not policy focused, but is math/engineering problem-solving focused.

Example: Term, Course #, Name, Credits			

- Complete at least 1 (of 2) **practicum assignment**. More information to be released in February 2023.
- **Establish your first support committee. This should include three mentors that can guide your early research.**

Chair:
Member 2:
Member 3:

- Pass **Preliminary Exam** (you have two attempts; this is only offered once per year).
- Develop research/dissertation project & enroll in dissertation hours (ECEN 8990).





**Years 4-6\*** (this is an estimate - if you are close to going past six years alert your advisor!):

- **Thesis/Dissertation Hours** (ECEN 8990) (30 credits total):

**Enrollment Requirements:** The minimum amount of credits to be enrolled full-time varies based on your PhD status (pre/post comps exam).

- You must be continuously registered for either 3 part-time status) or 5 (full-time status) dissertation hours each fall and spring semester after passing the comprehensive exam and have at least 6 semesters of full-time registration on the Boulder campus (two part-time semesters = one full-time).
- Rules and regulations are subject to change.
- Have the Graduate School approve of your **Comprehensive Exam Committee** with GFAs & [Comprehensive Exam Form](#) (list committee below):

Chair	
Member	
Member	
Member	
Member	

- Pass **Comprehensive Exam**.
- Submit [Application to Candidacy Form](#) to Graduate Program Advisor. [Form instructions here](#).
  - Be admitted into candidacy.

**Final Semester Steps** (follow the [Graduate School deadlines](#); these cannot be altered [\(+ PhD requirements\)](#)):

- You must be registered as a full-time student.
- [Apply online to graduate](#).
  - If you are an international student in F-1 or J-1 status, ask an advisor in ISSS about immigration requirements for the semester following your defense.
- Have the Graduate School approve of your **Final Defense Committee** with GFAs & [Final Exam Form](#) (list committee below):

Chair	
Member	
Member	
Member	
Member	

- Successfully **defend your dissertation**.
- Have your department submit a **final grade card** for dissertation hours.
- **Submit dissertation & Thesis Approval Form**.
- Complete **Survey of Earned Graduates**.

## Semesterly Reviews

In the tenth week of Fall & Spring semesters we check-in with PhD students and their advisors to gauge progress on these milestones. This way students have a semesterly notification on their progress.

During this check-in we collect information on your accomplishments, publications, presentations, etc. so we can celebrate you!

We also ask for any concerns in the advising relationship or concerns about the PhD. This allows us to make sure everyone knows when they are on track and that any concerns are met in a timely manner.

Our goal is for everyone to always feel informed, in control, and confident.



# Our Funding



- All PhD applicants are automatically considered for funding when you apply. You do not need to submit any additional information or secure funding in advance.
- Our PhD students are funded on 50% Graduate Research Appointments (20-hours-per-week, which is considered full-time for a student). We rarely use Teaching Assistant appointments.
- The Research Appointments pay \$3,000 per month (pre taxes). This includes student fees & 91% of health insurance costs, if you opt-in.



# Our Advisors

When you apply, you will [select a research area](#) in your application.

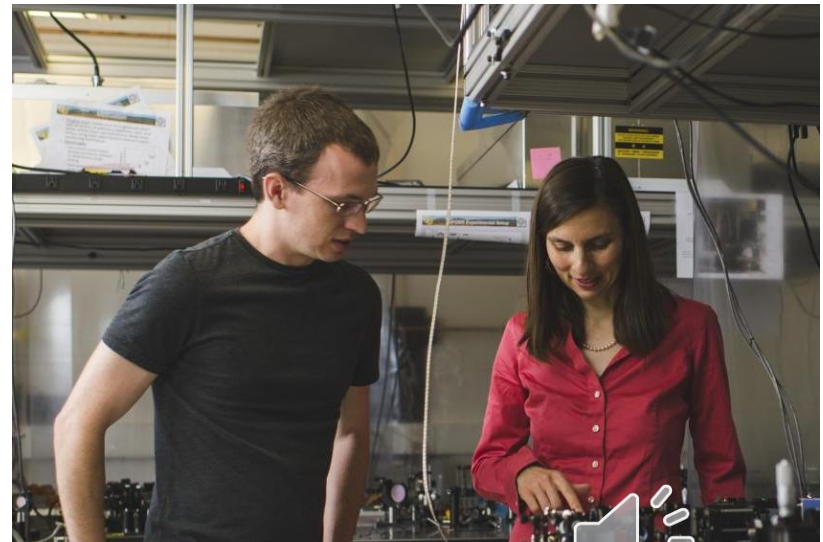
This will indicate which faculty will review your application.

All faculty in that group will read it and determine if your interests align with their work / have potential for a complementary advising relationship.

If there is someone you specifically want to work with, indicate that! Explain why.

Please Note: Admissions are restricted to faculty having available research funds/space for the students they wish to admit.

- This policy is to protect admitted/current students.
- Some faculty may not be recruiting in some years because they are fully funding current PhDs/their groups are full.
- If you wish to come to CU to only work with one specific person, email them directly to see if they are recruiting before spending money on an application.





# Our Application Process

You can find full details of the application process [here](#).

- Complete the application & pay the application fee (\$60 domestic applicants/\$80 international applicants).
  - Fee waiver information is on the next slide.
- If needed, submit unofficial English proficiency scores (TOEFL, IELTS, Duolingo).
  - Not required for applicants from India or Nigeria.
  - [More details on other countries here](#).
  - You only submit official scores if you are accepted and choose to attend.
- You need 3 letters of recommendation: [Tips for Requesting Letters](#).
- Unofficial copies of all transcripts – we take care of foreign transcript evaluation no WES needed.
  - You only submit official transcripts if you are accepted and choose to attend.
- Statement of Purpose – 500-750 words, double-spaced.
  - Note which of our faculty you want to work with and why
  - Tell us about the research you are passionate about and what you hope to accomplish.
  - Take care in this statement! Make sure you are listing the correct school!
  - Make sure we do the research you are interested in! Use <https://www.colorado.edu/ecee/research>.
    - VLSI and Embedded Systems are not PhD research areas we offer.
- The GRE is optional.

The deadline for Fall 2024 is December 15.

We do not review any applications until after the December 15 deadline.

Applicants will be notified of the decision in late February – April 15.

Email [Lori.Meehan@colorado.edu](mailto:Lori.Meehan@colorado.edu) with any questions.



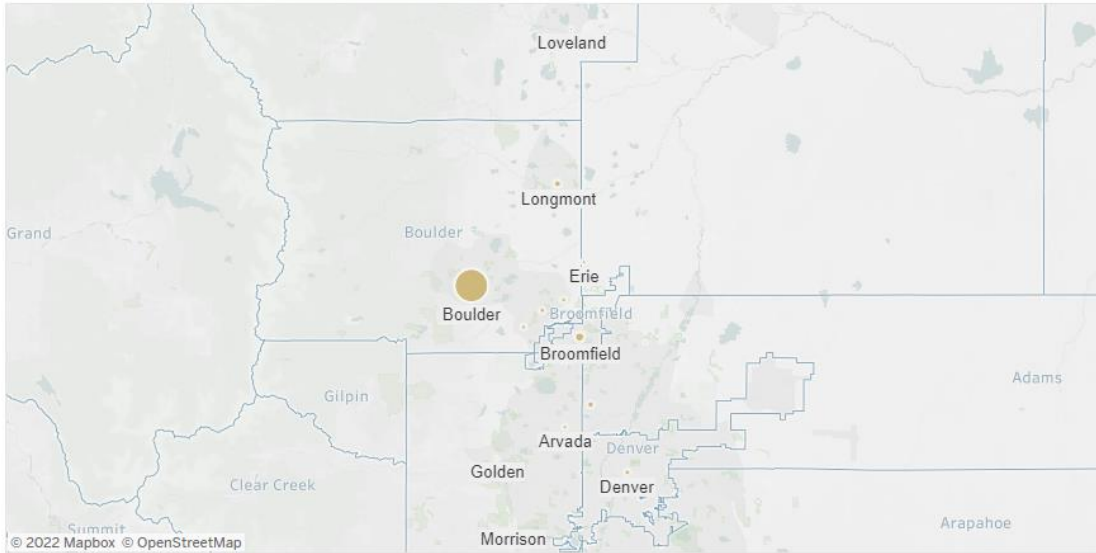
# Fee Waivers

- The College [offers application fee waivers as listed.](#)
  - This includes fee waivers for qualified U.S. citizens and permanent residents until November 15.
- If you are undocumented and/or a Deferred Action for Childhood Arrivals (DACA) beneficiary, please contact [gradadm@colorado.edu](mailto:gradadm@colorado.edu) to inquire about possible fee waivers.
- International students who want to be considered an international application fee waiver should complete the [Fall 2024 International Application Fee Waiver Form](#). Please Note: We receive many requests, but we cannot guarantee all applicants will receive a fee waiver.
- The ECEE department will review other PhD applicant need-based fee waiver requests up until November 15. Applicants who have financial hardship can [fill out this form](#). Faculty will review all submissions, but there is no guarantee of receiving a fee waiver. You do not need to email specific faculty regarding a fee waiver; you do need to complete this form to be considered.



# Living in Boulder

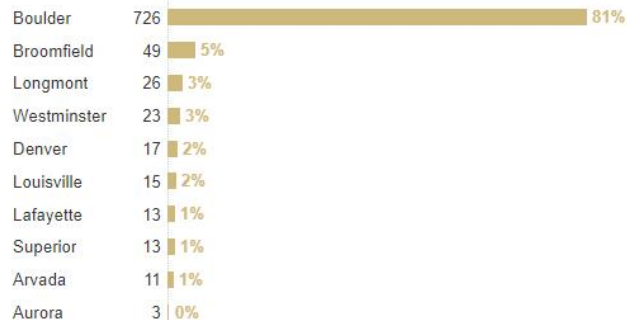
Most graduate students live in or within 30 miles of Boulder, CO



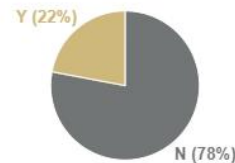
81% of CU Boulder College of Engineering graduate students live in the city of Boulder.

22% live in family/graduate housing and the Housing and Residence Life teams are working to reserve more housing for graduate students, particularly international students.

Top 10 cities graduate students choose to live



Proportion of graduate students **living in family/graduate housing**





# Most Commonly Asked Questions

## **Do I need to secure an advisor before applying?**

No. All faculty in your area of interest will review your application for admittance to their group.

## **Do I need to secure funding before applying / Do I need to fill out a separate application for funding?**

No. All our PhD offers include funding, unless the applicant has other stated means (tuition remission with employer, home country government scholarships, etc.) You only need to complete the one application.

## **Do I need to submit English proficiency scores?**

It depends. See the rules here: <https://www.colorado.edu/graduateschool/admissions/where-begin/international-students/english-proficiency-requirements>

## **What is the most commonly made application mistake?**

Not researching an advising match with our faculty. At the level of a PhD, research is so specific that only a few people globally may work on that project. Be sure we are actively researching what you are passionate about before applying.

Have more questions? Email [Lori.Meehan@colorado.edu](mailto:Lori.Meehan@colorado.edu)

