


CE Computer Engineering Home Research Undergraduate Graduate Directory

Message from the Director



Computer Engineering continues to be one of the most marketable degrees and with some of the best salaries. In fact, Computer Engineers are in the best position to help solve some of our society's most pressing problems by [designing novel systems with emerging technologies](#).

The CE Undergraduate Program at UCSB starts with a foundation of hardware and software fundamentals and extends that foundation with advanced elective sequences. Students then bring all this knowledge together in a Senior Computer Systems Project sequence (ECE or CS 189) that culminates in a final presentation event.

Our website was created with the student in mind. We wanted [prospective](#) and [current](#) students to have access to a [Freshman to Senior Year Timeline & Advising Information](#) and CE's curriculum including the [4 Year Course Plan](#), [Senior Elective Sequences](#), and the [Senior Capstone Project](#).

If students would like to move on, Graduate degrees for current CE undergraduate students are offered with the BS/MS option or incoming students can pursue a CE-focused degree from either the ECE or CS departments.

We're sure you will find what you need on our website. If you don't, feel free to call us at [805/893-5615](tel:805/893-5615) or email at info@ce.ucsb.edu.

We look forward to the 2021-22 academic year — Li-C. Wang, Director, CE Program

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News Briefs

- UCSB COVID-19 Info: [Up-to-date info for our campus and community](#)
- Dr. Yogananda Isukapalli – [UCSB Distinguished Teaching Award](#)
- Ass't. Prof. Kerem Camsari – [IEEE Magnetics Soc. Early Career Award](#)
- CS Grad Student Deeksha Dangwal – [UCSB Grad Slam Runner Up](#)
- Prof. Tim Sherwood – [UCSB Graduate Mentor Award](#)

Announcements

Employment
Assistant Professor – Tenure Track in Computer Engineering


Ugrad Admissions 2022
UC Fall 2022 application opens Aug 1 w/ submissions Nov 1-30, 2021

[Apply](#) [How to Apply](#)

Our Program

An interdisciplinary program of study from the departments of Electrical & Computer Engineering and Computer Science.

Student Projects



'21 Virtual Event – ECE 189 Sr. Projects

New Venture Finals

CONGRATULATIONS!

1st Place & People's Choice – EEL Armor
Nazar Rybil

Honorable Mention – Scopen
Boning Dong | Trenton Rochelle
3 CEs Awarded at Competition Finals

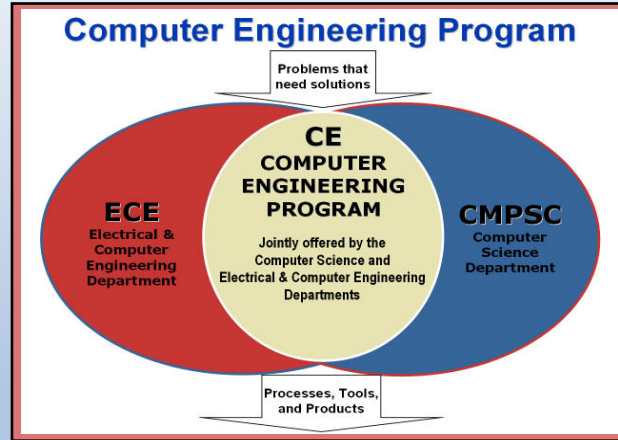
CS Capstone Presentation Schedule

9:15	BitLab - Tishler	10:30	SALT - Tishler
9:30	Log - Will Heath	10:45	OSMO - Appella
9:45	Stackable - Inessa	11:00	Resilient Tower - Longfellow
10:00	Binary Bites - Norwood	11:15	Transition - GAO
10:15	ProWaves - Al-Ghobari	11:30	Alloy - Alroy

'21 Virtual Event - CS Sr. 189 Projects

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Overview



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UCSB



Curriculum

- Solid Foundation in the Basic Sciences and Fundamentals
- Specialized Senior Elective Sequences:
 - Computer Networks
 - Computer Systems Design
 - Design & Test Automation
 - Distributed Systems
 - Machine Learning
 - Multimedia
 - Programming Languages
 - Real-Time Computing & Control
 - Robotics
 - Signals & Systems
 - System Software Architecture
 - Very Large Scale Integration (VLSI)
(a sequence contains 2-3 classes)
- Senior “Capstone” Project



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Degree Options

Four-Year B.S. Degree

Freshman – 51 units ~ Sophomore - 53 units ~ Junior – 44 units ~ Senior – 43 units

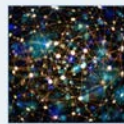
Five-Year Combined B.S./M.S. Degrees

- An **additional year** of specialization in **either** CMPSC or ECE Master's Degree Programs
- Obtain **both** a B.S. and a M.S. degree in about five years
- Take graduate level courses in the last half of the Senior year
- Apply at the end of the Junior year



Senior Elective Sequences

During their junior year students select two sequence topics to satisfy CE Program Electives (CMPEN) taken during their senior year. For a sequence to be valid, a student must take at least two courses in the sequence topic.



Computer Networks

- > Network architectures and protocols, wired and wireless networks, physical transmission media
- > Multiplexing, switching, framing, error detection and correction, routing, flow control, congestion control, network security
- > Network programming in C/C++ and Java

Sequence Coursework:

- > Computer Networks - CMPSC 176A & CMPSC 176B



Computer Systems Design

- > Technology from which modern embedded computer systems are built
- > Major software and hardware components, system design issues as well as mechanisms and policies for interfacing between these components

Sequence Coursework:

- > Hardware/Software Interface: ECE 153A or CMPSC 153A
- > Sensor and Peripheral Interface Design: ECE 153B

ECE & CS 189 Senior Capstone Projects

During the senior year, CE students are required to take the Senior Computer Systems Project courses also known as the Senior "Capstone" Project. This course helps satisfy CE Major Degree Requirements in the Senior Elective Study Plan.

The Capstone Project gives CE students the opportunity to put their education into practice. Students, working in small teams, design and engineer innovative hardware and software systems using techniques from robotics, distributed systems, circuit design, networking, and real-time systems to tackle problems and create a final "tangible" project.

Every year at the end of the final quarter the projects are presented at full-day, industry-supported events where student groups publicly present their projects and participate in a project demonstration and poster event.



Capstone Sr. Project Presentation Events

CS 189 Course & Projects

ECE 189 Course & Projects

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2020-21 Capstone Design Projects

ECE 189A/B/C

- [Anchorless](#) (Coast Lab): aims to remove the buoy's reliance on an anchor by designing a system that autonomously repositions the buoy within a designated zone
- [BlueFinder](#) (CACI/LGS Labs): identifies and locates local Bluetooth devices using XTRX software-defined radios and direction finding algorithms
- [CAT](#) (Alcon TrueVision): an object detection system that prevents a robotic arm from collisions in the operating theater
- [Project Argus](#) (NASA): a standardized and autonomous tracking solution for maintenance and assembly procedures
- [Pterra](#) (Aerovironment): a RADAR based system that enables collision avoidance and autonomous movement of drones at an extremely low cost
- [Seashield](#) (Navsea): a drone system that fights rust and corrosion with automated flight planning and application of a corrosion inhibiting liquid
- [Parkingbase](#) (Qualcomm, Laritech): a real-time parking tracker using a custom low-cost, long-lasting, wireless parking lot sensor
- [TRAC](#) (Aptitude, Laritech): a handheld device that uses a blood test for rapid detection of coagulopathy, a deadly condition that affects approximately a quarter of trauma patients

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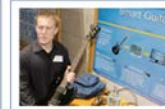




2020-21 Capstone Design Projects

CMPSC 189A/B

- **O(MG) (Appfolio):** Survey distribution and processing for managers to judge their team's cohesion
- **STORKEAI (Invoca):** Improve social experience for individuals with Autism Spectrum Disorder
- **POWWOW++ (AGMonitor):** Mobile app to help farms with water efficiency and fertigation issues
- **SALT (Teladoc Health):** Identify malpractice in the doctor's office
- **ALPRO (Alcon/TrueVision):** NGENUITY 3D Visualization Automation
- **LOG (Well Health):** Bridge the communication gap between patients and doctors
- **TRANSFORM (QAD):** Build a virtual assistant on top of the QAD ERP platform
- **BINARY BROS (Novacoast):** Discover phishing domains to protect users from accessing them
- **RUNTIME TERROR (LogMeIn):** Unique communication tool for the Special Olympics
- **#STUB (Teladoc Health):** Integrate health devices in telehealth settings



2020-2021 Project Awards

Best Computer Science 189 Projects:

- **1st Place** – ALPRO (Alcon/TrueVision): Robot controller for eye surgery
- **2nd Place** – SALT (Teladoc Health): Automated support for telemedicine consultations
- **3rd Place** – BINARY BROS (Novacoast): Phishing attack prevention



2020-2021 Project Awards

Best ECE 189 Projects:

- **1st Place** – Pterra (Aerovironment): a RADAR based system that enables collision avoidance and autonomous movement of drones
- **2nd Place** – Parkingbase (Qualcomm, Laritech): a real-time parking tracker using a custom low-cost, wireless parking lot sensor
- **3rd Place** – TRAC (Aptitude, Laritech): a handheld device that uses a blood test for rapid detection of coagulopathy
- **Faculty Choice** – Project Argus (NASA): an autonomous tracking solution for maintenance and assembly procedures

