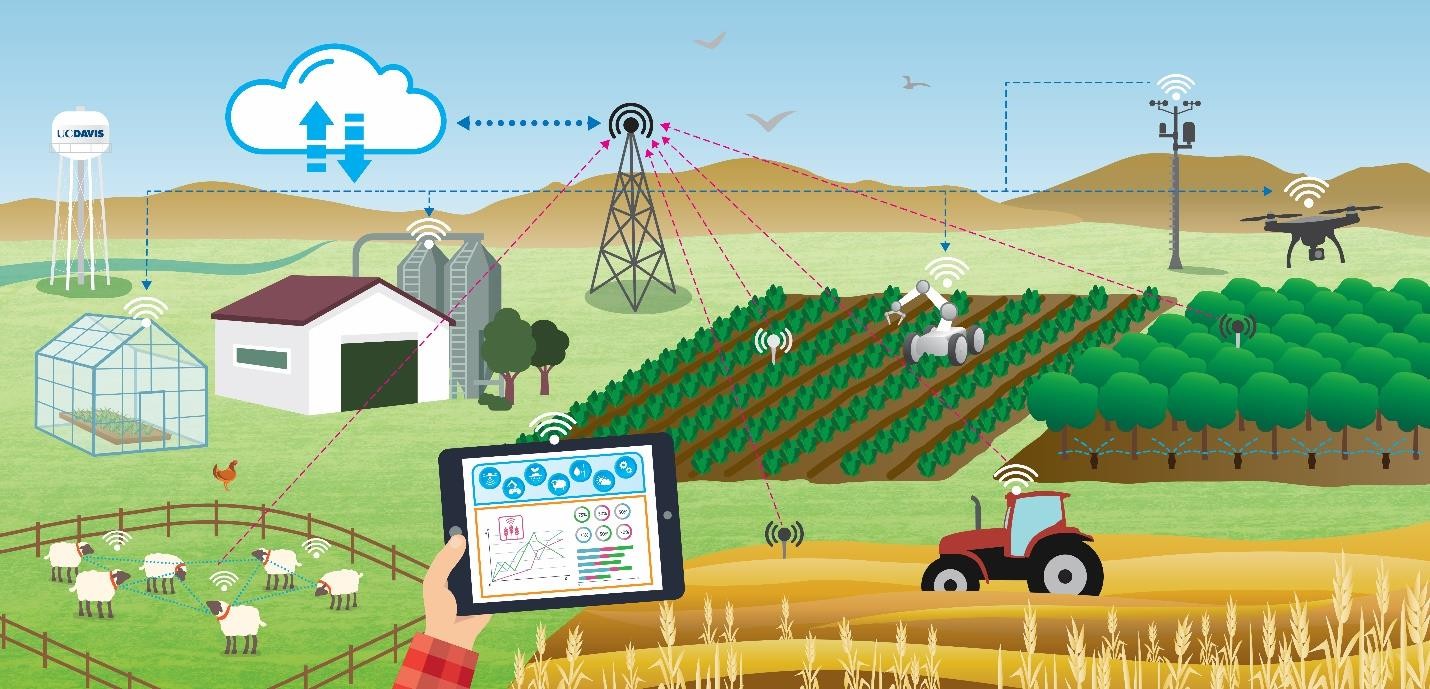
TAE 30, CRN: 60564

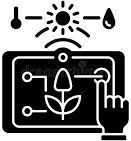
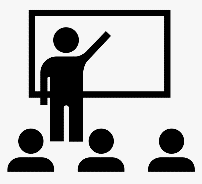
Communication and Computing Technologies for a Mobile Society (4 units) Spring 2024



# Course Description

TAE 30 is a lower-division course for the newly launched major, Agricultural and Environmental Technology (AET), hosted by the Department of Biological and Agricultural Engineering. Some of the main topics include: internet of things (IoT) and embedded devices; history and evolution of IoT, communication, and computing technologies; sensors and actuators; microcontrollers; data communication technology; introduction to data analysis and data visualization; designing web applications; and hands‐on IoT-based projects.

# Class/Lab Schedule



**Lecture:Olsen 101**

Tuesday 9:00 AM – 10:20 AM

Thursday 9:00 AM – 10:20 AM

**Laboratory: Sciences Lab Building 2060**

Wednesday 9:00 AM – 11:50 PM

|  |  |
| --- | --- |
| **Instructor** | **Office Hour** |
| Dr. Ali Moghimi (he/him)  Department of Biological and Agricultural Engineering 3040 Bainer Hall  Email: [amoghimi@ucdavis.edu](mailto:amoghimi@ucdavis.edu) | Tuesday: 10:30 AM – 11:30 AM  Thursday 10:30 AM – 11:30 AM (bonus) Or by appointment  Office hours can be in-person or online over Zoom: [https://ucdavis.zoom.us/j/9155122284?pwd](https://ucdavis.zoom.us/j/9155122284?pwd=Y2xHQkxDeklQVFhxdUl6ZUVJNEdDdz09)  [=Y2xHQkxDeklQVFhxdUl6ZUVJNEdDdz09](https://ucdavis.zoom.us/j/9155122284?pwd=Y2xHQkxDeklQVFhxdUl6ZUVJNEdDdz09) |
| **Teaching Assistant** | **Office Hour** |
| Mohammadreza Narimani (he/him)  [mnarimani@ucdavis.edu](mailto:mnarimani@ucdavis.edu) | Tuesday: TBD  Location: TBD |

# Textbook (not required)

* Reading materials and resources are posted on Canvas.

# Prerequisite

* No prior knowledge or programming experience is required.

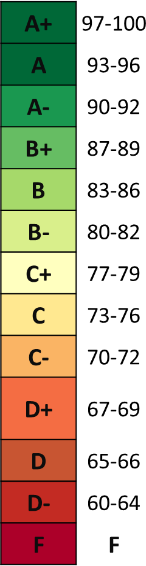
# Learning Objectives

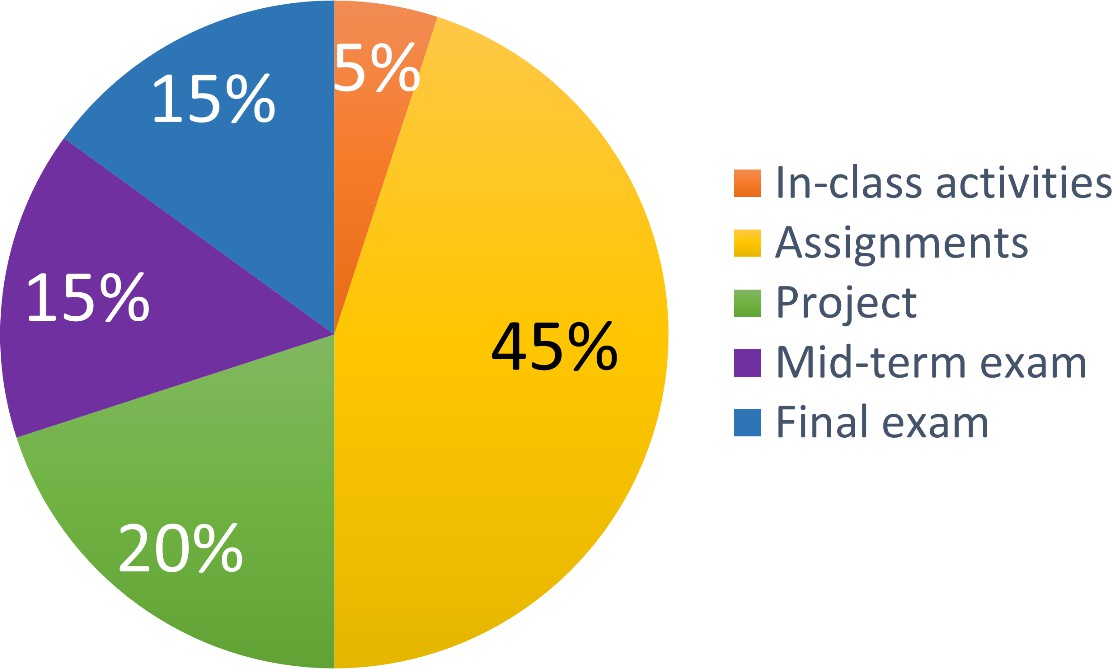
Upon successful completion of this course, you will be able to:

* Explain the basics of IoT and embedded systems.
* Develop an informed understanding of the history and evolution of IoT, communication, and computing technologies.
* Develop the skills to program a microcontroller to make automated informed decisions based on input data from the sensors.
* Develop fundamental skills in analyzing quantitative data, interpreting numerical data, and thinking critically about the data (e.g., level of uncertainty in a dataset).
* Define various applications of IoT technology in agriculture and the environment.

# Grades and Workload

## Course point break-down

* In-class activities and participation (5%)
* Lab reports and Discussion (45%)
* Mid-term exam (15%)
* Final exam (15%)
* Project (20%) – project description is posted on Canvas.



# Classroom Conduct

* You are expected to attend the lectures and discussions and participate in the discussions/activities to obtain the 5% in-class activities grade.
* All materials are posted on Canvas.
* If you have any questions during the lectures/discussion, please feel free to interrupt and ask your questions.
* We will work together to maintain a positive learning spirit during this course in this challenging time.
* We all must follow university public health requirements and pursue personal protection practices for the health and safety of individuals and the public and for practical in-person instructions at <https://campusready.ucdavis.edu/instructors>
* I highly appreciate your commitment to preventing the further spread of COVID-19 and, at the same time, fulfilling the core mission of UC Davis. Please remember we are all together, and we should work together in this matter for the health and well-being of ourselves, our beloved ones, and our community.

***Classroom Agreement***

As scholars, we all are committed to establishing a safe environment that is interactive and collaborative such that everyone reflects on their learning experience and feels supported in their journey. A welcoming and safe environment motivates students and encourages them to present their views/thoughts, reflect

on their learning styles, seek assistance, and provide constructive feedback to their peers while respecting their opinions.

In our classroom,

* We will work together to maintain a positive learning spirit.
* We celebrate diverse perspectives and ideas.
* We promote an environment for learning.
* We treat each other with respect.
* We speak our truth and don't speak over each other.
* We actively listen to each other.
* We respect all questions that are asked.
* We build community with each other.
* We have fun while learning.
* We take care of ourselves.

# Lab Sessions and Software

You are expected to attend the lab sessions, which will be at Sciences Lab Building 2060 (computer lab). You will have access to the required software (BlocklyProp) installed already on the desktop computers in the labs. You are welcome to bring your laptop but you should install the required software, which is open source.

# Exams

There is one midterm and one final exam. The midterm exam will be on **May 7** during the regular class time (9 – 10:20 AM), and the final exam will be on **Wednesday, June 10 at 6:00 PM**.

*Makeup exam for legitimate absences*

Suppose you are going to miss an exam for legitimate reasons, such as a medical emergency and a medical condition related to pregnancy or COVID-19. In that case, you must (i) give the earliest possible advance notice to me, and (ii) provide information to explain the legitimate reasons for your absence. I will then determine whether to grant an excused absence and how to make arrangements for makeup work, considering all related factors such as the information you provided. For more information, please check Academic Policies and Guidelines for Changes in Campus Operating Status: <https://academicsenate.ucdavis.edu/academic-policies-operating-status>

# Absences and Late Policy

You are allowed to have ONLY ONE LATE SUBMISSION of any assignments within two days after the due date without losing any points. Except for this one-time grace period, you will lose 20% of points per day you submit the assignment late. In other words, you need to submit your assignment within four days after the due date to be considered for grading. Only under legitimate circumstances (such as a medical

emergency and a medical condition related to pregnancy or COVID-19), late submissions will be graded without penalties.

# Grading re-evaluation, re-grading requests

Any requests for grading re-evaluation/re-grading requests need to come in within **7 days** of when the grades are posted on Canvas. Such requests will not be handled beyond 7 days.

# Campus Resources Guide

UC Davis provides a vast range of resources designed to support students, including (i) academic and career support for undergraduates, (ii) emotional and identity support and wellness, (iii) support for international students and/or multilingual learners, and (iv) teaching-related support and professional development. All resources and contact information can be found at: <https://ucdavis.app.box.com/s/3hfpl94pubh73xwjudx4rux1zatkx9bi>

**Piazza –** a free online gathering place to ask questions regarding the class

We will be using Piazza for our class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. You are welcome to send emails through Canvas as well. If you have any problems or feedback for the developers, email [team@piazza.com.](mailto:team@piazza.com)

Find our class signup link at: <https://piazza.com/demo_login?nid=luhk95ewfqf6ln&auth=649f43E>

or **open it on Canvas.**

How can I use Piazza for class collaboration and discussion? <https://kb.ucdavis.edu/?id=0811>

# Diversity, Equity, and Inclusion Statements

As a UC Davis faculty, I am firmly committed to diversity, equity, and the culture of inclusion to promote academic excellence. In this course, we need to work together to establish a safe and welcoming environment where everyone is encouraged to present their views/thoughts, reflect on their learning style, seek assistance, and provide constructive feedback to their peers while respecting their opinions. I welcome your comments/suggestions to foster such a supportive and welcoming environment in this course.

# Accommodations and Accessibility

*UC Davis is committed to educational equity in the academic setting, and in serving a diverse student body. I encourage all students who are interested in learning more about the Student Disability Center (SDC) to contact them directly at* [*https://sdc.ucdavis.edu,*](https://sdc.ucdavis.edu/) *email at* [*sdc@ucdavis.edu,*](mailto:sdc@ucdavis.edu) *or call 530-752- 3184. If you are a student who requires academic accommodations, please submit your SDC Letter of Accommodation to me as soon as possible, ideally within the first two weeks of this course.*

*[from:* [*https://sdc.ucdavis.edu/faculty-and-staff*](https://sdc.ucdavis.edu/faculty-and-staff) *]*

# Mental Health and Wellness

As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, depression, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. UC Davis offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, consider utilizing the confidential mental health services available on campus. I encourage you to reach out to the Counseling Center for support: <https://shcs.ucdavis.edu/services/counseling-services> or call 530-752-0871. An on campus counselor or after-hours clinician is available 24/7.

*[from:* <https://www.ucop.edu/student-mental-health-resources/_files/pdf/PSMH-guide.pdf>*]*

# Campus Resources for Students - a comprehensive list (highly recommended)

Here is a comprehensive resource that provides information on general academic resources, health and wellness, careers/internships, community resources, etc.

<https://ebeler.faculty.ucdavis.edu/resources/faq-student-resources/>

# Connecting with instructor/TA during Office Hours

We are here to support your learning. We encourage you to meet with us when you feel that you need support or assistance.

Never attended office hours? Don’t know where or how to start the conversation? Here are some tips

for getting the most out of office hours:

* Office hours are great for getting guidance on specific questions, problem-solving tips, etc.
  + Bring one question from the lecture, reading, or homework to office hours. During office

hours ask: “Am I getting/doing this correctly”?

* Office hours are great for helping to clarify course concepts.
  + Find one line or a single concept from the course material that catches your attention— maybe it’s a super interesting concept and/or maybe it’s something that’s still a bit confusing. During office hours say: “I found XX really interesting in class today. Can you explain a bit more about this concept to help me put it into context?”
* Office hours can also be about getting to know the professor.
  + During office hours say: “I found the lecture on XX really interesting. How did you get interested in this topic”?
* Professors can connect you to lots of other resources, e.g., academic advisors, tutors, and/or success coaching.
  + During office hours say: “I am doing the problems and homework but sometimes I forget how to do XX. Can you recommend some study strategies or refer me to tutors or other campus resources that could help review material [or study more effectively; or provide some general test taking strategies; etc.] for this class”?
* Professors can give advice on related classes or research in specific areas.
  + During office hours say: “I’m interested in learning more about topic XX. Are there other classes you could recommend that could help me expand my knowledge in this area”?
* Professors can provide guidance on internships and career paths.
  + During office hours say: “I’m really interested in XX field that we discussed in class. Do you have ideas or tips on internships or research opportunities that could give me experience in this area”?
* Bring a friend from the class along—sometimes having a couple of people to share the questions and conversations can make it easier to ask questions and get the conversation started!

*[Adapted from:*

<https://ctl.byu.edu/tip/welcoming-and-supporting-students-during-office-hours>

<https://teaching.berkeley.edu/news/dont-be-alone-during-office-hours-0>]

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# How to Practice Self-Care

I support the UC Davis goals for student self-care:

*You deserve respect and are encouraged to* [*practice self-care*](https://drive.google.com/file/d/1nYzSW9qAn6hGd3S_ZK76pI2F8JydP9_3/view) *so that you can remain focused and engaged; that might mean getting a drink of water, leaving to use the restroom, taking a moment to stretch, or doing something else you need to do to take care of yourself. Please be respectful of others by minimizing distractions when practicing self-care – especially in lab, field or studio settings where safety is imperative. College life can be overwhelming at times, but know that you are not alone if you’re feeling stressed. For many of us, systems of oppression such as racism, sexism, heterosexism or cissexism may cause additional stress. Please remember to practice self-care and reach out for support if and when you need it. You can visit* [*Virtual UC Davis*](https://studentaffairs.ucdavis.edu/virtual-ucdavis) *to find resources related to health and well-being, academics, basic needs (food and housing), and more.*

# UC Davis Policies

## [UC Davis Policy on Student Conduct and Discipline](https://ossja.ucdavis.edu/student-conduct-and-discipline-policy)

<https://ossja.ucdavis.edu/student-conduct-and-discipline-policy>

## Interim UC Davis Student Conduct Policy regarding COVID-19

<https://ossja.ucdavis.edu/student-conduct-policy-covid-19>

## UC Davis Code of Academic Conduct: Honesty, Fairness & Integrity

<https://ossja.ucdavis.edu/code-academic-conduct>

## UC and UC Davis Policies on Sexual Harassment and Violence

<https://sexualviolence.ucdavis.edu/put-end-sexual-violence-uc-davis>

## [UC Davis Nondiscrimination Policies](https://hdapp.ucdavis.edu/index.html)

<https://hdapp.ucdavis.edu/index.html>

## Off-Campus Jurisdiction

<https://ossja.ucdavis.edu/social-conduct-standards>

## [Housing Policies](http://www.housing.ucdavis.edu/publications/guides/residencehalls/)

<https://housing.ucdavis.edu/publications/guides/residencehalls/>

# UC Davis Policies on COVID-19

## Information for Classroom Instruction

* + Instructor responsibilities [https://campusready.ucdavis.edu/instructors#:~:text=Instructor%20Responsibilities](https://campusready.ucdavis.edu/instructors#%3A~%3Atext%3DInstructor%20Responsibilities)
  + Student responsibilities [https://campusready.ucdavis.edu/instructors#:~:text=Student%20Responsibilities](https://campusready.ucdavis.edu/instructors#%3A~%3Atext%3DStudent%20Responsibilities)
  + Frequently asked questions [https://campusready.ucdavis.edu/instructors#:~:text=Frequently%20Asked%20Questions](https://campusready.ucdavis.edu/instructors#%3A~%3Atext%3DFrequently%20Asked%20Questions)

## Public Health Policies & Requirements

<https://campusready.ucdavis.edu/public-health-policies-requirements>

## UC COVID-19 Class Registration Cancellation

<https://registrar.ucdavis.edu/registration/register-for-classes/covid-compliance>

“UC Davis students who fail to comply with the [UC COVID-19 Vaccination Policy](https://policy.ucop.edu/doc/5000695/SARS-CoV-2_Covid-19) will have their class registration cancelled for the fall quarter on September 20th, 2021.”

## Transitioning to In-Person Teaching

<https://keepteaching.ucdavis.edu/transitioning-teaching>