UNIVERSITY OF CENTRAL FLORIDA

OSE 2050 - Introduction to Photonics Engineering Design

Section: 0001

Optics and Photonics

Course Information

Term: Spring 2026
Class Meeting Days: T
Class Meeting Time: 06:00PM - 07:50PM
Class Meeting Location: CROL A210
Modality: P
Credit Hours: 1.00

Instructor Information

Name: Joshua Kaufman
Office Location: A312
Office Hours
Monday 10 am - 12 pm
Email: kaufman@creol.ucf.edu

Course Description

OSE 2050 OPTIC-OPTICS 1(0,2)Introduction to Photonics Engineering Design: PR: Rule Not Selected Hands-on experiments on real-life optics & photonics, to develop

abilities in design, control, and communication with photonic devices used in computers and/or smartphones. Spr.

In this course, you will learn about basic photonic devices as well as get a beginner's understanding of programming in the Arduino IDE. By the end of this course, you should feel comfortable designing basic circuits and devices using photonic elements and an Arduino. In short, you will start learning how to think like an engineer.

Student Learning Outcomes

After successful completion of this course, students will be able to: do basic programming in the Arduino IDE, build basic circuits using a breadboard, resistors, LEDs, photoresistors, photodiodes, laser diodes, push buttons, 7-segment displays, and an LCD touch screen.

-

Required Course Materials and Resources

https://www.arduino.cc/

Course Assessment and Grading Procedure

Attendance	50%
Quizzes	20%
Final Project	30%
Total	100%

Final Project: Students will choose one from selected topics where they design their modules and demonstrate them.

Financial Aid and Attendance: All faculty members are required to document students' academic activity at the beginning of each course. This

will be documented by a quick Webcourses quiz. Failure to do so will result in a delay in the disbursement of your financial aid.

Grading Scale (%)	Rubric Description
100 ≥ A > 90	Excellent, has a strong understanding of all concepts and is able to apply the concepts in novel situations. Has full mastery of the content of the course.
90 ≥ B > 80	Good, has a strong understanding of most or all of the concepts and is able to apply them to stated and defined situations.
80 ≥ C > 70	Average, has a basic understanding of the major concepts of the course and is able to apply to basic situations.
70 ≥ D > 60	Below average, has a basic understanding of only the simple concepts and is able to apply to only a limited number of the most basic situations.
60 ≥ F ≥ 0	Demonstrates no understanding of the course content. Absent the class three times.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
1/16/26	Student Engagement	Quiz	0

Grading Scale

Grading Scale

Grading Scale (%)					Rubric Description
100	≥	A	>	90	Excellent, has a strong understanding of all concepts and is able to apply the concepts in novel situations. Has full mastery of the content of the course.
90	≥	B	>	80	Good, has a strong understanding of most or all of the concepts and is able to apply them to stated and defined situations.
80	≥	C	>	70	Average, has a basic understanding of the major concepts of the course and is able to apply to basic situations.
70	≥	D	>	60	Below average, has a basic understanding of only the simple concepts and is able to apply to only a limited number of the most basic situations.
60	≥	F	≥	0	Demonstrates no understanding of the course content. Absent the class three times.

Policies for Course Grade

Makeup Work Policy - Attendance is required and comprises the largest portion of the course grade (50%). It is very difficult to make up work that is missed, but a student will be offered the opportunity to submit pictures and videos of circuits they construct. If a very good excuse for missing class is given (medical excuse or other major emergency), partial or whole credit for the absence may be given on a case by case basis.

Missed/Late Assignments - There are occasionally in-class quizzes. If you miss a class that contained a quiz, you will be given the opportunity

to submit the quiz during that week. However, you will still lose credit for attendance on that day without a proper excuse.

Attendance - Attendance is required. If you miss class, you will get a 0 on attendance for that day. If a proper excuse is given, an exception may be made on a case by case basis.

Disability Access & Accommodations

The University of Central Florida is committed to providing equal access to all students with disabilities (ADHD, learning disabilities, Autism, chronic medical conditions, physical disabilities, etc.). To receive consideration for reasonable disability-related course accommodations, disabled students must contact Student Accessibility Services (SAS) and complete the steps required for SAS to review accommodation requests. More information can be found on the UCF Student Accessibility Services website under the Start Here tab or by contacting SAS directly (Ferrell Commons 185; sas@ucf.edu; Phone - 407-823-2371).

Approved accommodations are shared with course instructors via the SAS Course Accessibility Letter. Implementing certain accommodations may require discussion about specific considerations of the course design, course learning objectives, and the individual academic and course challenges experienced by the student. While students with disabilities or chronic health needs are also encouraged to discuss any course concerns with professors in addition to contacting SAS, professors are not required to facilitate disability-related adjustments to the course unless the professor has received a Course Accessibility Letter from SAS that outlines approved accommodations.

Academic Integrity

Students should familiarize themselves with UCF's Code of Conduct at Student Conduct and Integrity Office. According to Section 1, "Academic Misconduct," students are prohibited from engaging in:

1. Academic misconduct is defined as any submitted work or behavior that obstructs the instructor of record's ability to accurately assess the student's understanding or completion of course materials or degree requirements (e.g., assignment, quiz, and/or exam). Examples of academic misconduct include but are not limited to: plagiarism, unauthorized assistance to complete an academic exercise; unauthorized communication with others during an examination, course assessment, or project; falsifying or misrepresenting academic work; providing misleading information to create a personal advantage to complete course/degree requirements; or multiple submission(s) of academic work without permission of the instructor of record.
2. Any student who knowingly helps another violate academic behavior standards is also in violation of the standards.
3. Commercial Use of Academic Material. Selling of course material to another person and/or uploading course material to a third-party vendor without authorization or without the express permission of the University and the instructor of record. Course materials include but are not limited to class notes, the instructor of record's slide deck, tests, quizzes, labs, instruction sheets, homework, study guides, and handouts.
4. Soliciting assistance with academic coursework and/or degree requirements. The solicitation of assistance with an assignment, lab, quiz, test, paper, etc., without authorization of the instructor of record or designee is prohibited. This includes but is not limited to asking for answers to a quiz, trading answers, or offering to pay another to complete an assignment. It is considered Academic Misconduct to solicit assistance with academic coursework and/or degree requirements, even if the solicitation did not yield actual assistance (for example, if there was no response to the solicitation).

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, *The Golden Rule*. UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In

addition, an Academic Misconduct report could be filed with the Office of Student Conduct and Academic Integrity, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designated on one's transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Title IX

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at Let's Be Clear and UCF Cares.

For more information on access and community engagement, Title IX, accessibility, or UCF's complaint processes contact:

- Title IX – ONAC – Office of Nondiscrimination & Accommodations Compliance & askanadvocate@ucf.edu
- Disability Accommodation – Student Accessibility Services – Student Accessibility Services & sas@ucf.edu
- Access and Community Engagement (including the Ginsberg Center for Inclusion and Community Engagement, Military and Veteran Student Success, and HSI Initiatives)
- UCF Compliance and Ethics Office – Compliance, Ethics, and Risk Office & complianceandethics@ucf.edu

- The Ombuds Office is a safe place to discuss concerns.

Reporting an Incident or Issue

If you believe you have experienced discrimination by any faculty or staff member, contact the Office of Nondiscrimination & Accommodations Compliance via the ONAC website or at 407-823-1336. You can also choose to report using the UCF Integrity Line either anonymously or as yourself at 1-855-877-6049 or by using the online form. UCF cares about you and takes every report seriously. For more information see the Reporting an Incident or Issue Webpage.

Deployed Active-Duty Military Students

Students who are deployed active-duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make arrangements.

Campus Safety

At UCF's Public Safety and Police, safety is the top priority. Emergencies on campus are rare, but if one should arise, it's important to be familiar with some basic safety and security concepts.

- In an emergency, always dial 911.
- Every UCF Classroom has an Emergency Procedure Guide posted on a wall near the door, which will show you how to respond to a variety of situations. This guide can also be found online here.
- In the event of an active threat, remember **AVOID, DENY, DEFEND**. Choose the best course of action and act immediately. Watch the video here to learn more.
    - **AVOID**. Pay attention to your surroundings and have an exit plan. Get as much distance and as many barriers between you and the threat as quickly as possible.

    - **DENY**. When avoiding is difficult or impossible, deny the threat access to you and your space. Lockdown by creating barriers, turning the lights off and remaining quiet and out of sight. Make sure your phone is silenced, but do not turn it off.
    - **DEFEND**. When you are unable to put distance between yourself and the threat, be prepared to protect yourself. Commit to your actions, be aggressive and do not fight fairly. Do whatever it takes to survive.
- For emergencies on campus, UCF will utilize the UCF Alert system. All UCF students, faculty, and staff are automatically enrolled to receive these email and text alerts, however, it's a good idea to frequently ensure your contact information is up to date.

Financial Aid Accountability

All instructors are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete this activity by the end of the first week of classes or as soon as possible after adding the course. Failure to do so may result in a delay in the disbursement of your financial aid.

Class Schedule

Week	Topic
1	**Introduction and Module1** Basics of Arduino Basics of Programming: Sketch LED control & dimming
2	**Module1: Hello LED** LED digital dimming LED switch (pushbutton)

Week	Topic
3	**Module1: Hello LED** LED switch (counting) LED wand **Module2: Smart Home** Photoresistor
4	**Module2: Smart Home** Photodiode Integration of LED and light sensing Seven segment display
5	**Module2: Smart Home** Libraries Auto-dimming People counter
6	**Module3: Touch screen display** Basic functions Controlling LED with touch screen
7	**Module3: Touch screen display** LED dimming with touch screen Light sensing and display with touch screen Graphing & statistics
8	**Module4: Smart Auto** LIDAR Measuring distance with light
9	**Module4: Smart Auto** Proximity sensor and warning Exporting data using MATLAB (serial communication)

Week	Topic
10	**Module4: Smart Auto** 1D LIDAR imaging Servo
11	**Module5: Color** Color Sensor
12	**Module5: Final Project Prep**
13	**Final Project:** Showcase Group 1
14	**Final Project:** Showcase Group 2
15	
16	