

Course Title	MECH 2342 Electro-Mechanical System (Sec-1), CRN: 11176 (Fall-2023): Credit: 3
Instructor	Eric MacDonald (emac@utep.edu) Email: first 8 characters on subject line: MECH2342 Online Office hours: (Zoom) Upon request and appointment
TA	Amauri Marin amarin9@miners.utep.edu By appointment through email.
Class Schedule	College of Business 312, MW: 1:30-2:50 pm Engineering A146, by appointment Possibility of a lecture conducted on Zoom during travel
Course Prerequisite	MATH 1312 (Calculus-II) or MATH 2313 or MATH 2326 (not concurrently)
Course Description	The Electro-Mechanical System requires basic knowledge on electrical circuits and circuit analysis, electronic device, the digital network, electromechanics, etc. appropriate for Electrical, Mechanical, Industrial, Civil, Chemical, Computer, Spacecraft engineering, Aerospace Engineering and Space science education, etc.
Course Objective	This course provides an ability to identify, formulate and solve engineering problems, related to electromechanical system by applying principles of engineering (electrical and mechanical), science and mathematics. This course also takes steps to improve the ability of students to apply engineering design; help students function effectively on a team; develop and conduct appropriate experimentation, analyze and interpret data; acquire and apply new knowledge as needed using appropriate learning strategies.
Course Topics	<ul style="list-style-type: none"> • Introduction (Power, Energy, Current, Voltage, Circuits) • Resistance, Capacitance and Inductance (RLC circuits) with Hands-on learning, Transient signal analysis and numerical problems • Diode and Bipolar Junction Transistors (BJT) with Hands-on learning. • Signal Amplification and Operational Amplifiers (OpAmp). • Magnetism, Magnetic Circuits and Transformers with numerical problems. • DC and AC Machines with numerical problems and hands-on learning. • Projects: Sensors, Logic gates, Signal capturing from sensors (Temperature and Distance) and displaying on computer.
Reference	<ol style="list-style-type: none"> 1. Electrical Engineering: Principle and Applications by A. R. Hambley. (4th, 5th or 6th Edition, published by PEARSON, <u>no need to buy</u>) 2. Additional Reference materials (notes, projects, web links, etc.) may be handed out in class, also available in Blackboard.
Software in class	iClicker (Free for UTEP student), Arduino (Online, Free), NI Multisim (Provided by UTEP).
Student's assessment	<ol style="list-style-type: none"> 1. Class quizzes: 25% (Class quiz in almost every class) 2. Exam-1: 25% 3. Exam-2: 25% 4. Final Exam: 25% (Optional and can replace the lowest of Exams 1 and 2) 5. Projects: (25)% (Arduino Kit, project video link and word report) (Lowest exam grade will be dropped)
Students grading	A= $\geq 90\%$; B= $< 90\%$ and $\geq 80\%$; C= $< 80\%$ and $\geq 70\%$; D= $< 70\%$ and $\geq 60\%$; F= $< 60\%$ (UTEP Standard)
Tools in Class/Lab	<ol style="list-style-type: none"> 1. Scientific calculator, Laptop, e-book, Cell phones (silent mode, no text/call) can be used as problem solving tools in class. 2. Arduino Kit (link at the next page)

Necessary ITEMS

- **Each student is required to register in iClicker (Attendance and Quiz)**

Institution:

Course Discipline:

Course Name:

Start Date: End Date:

Course ID: Term:

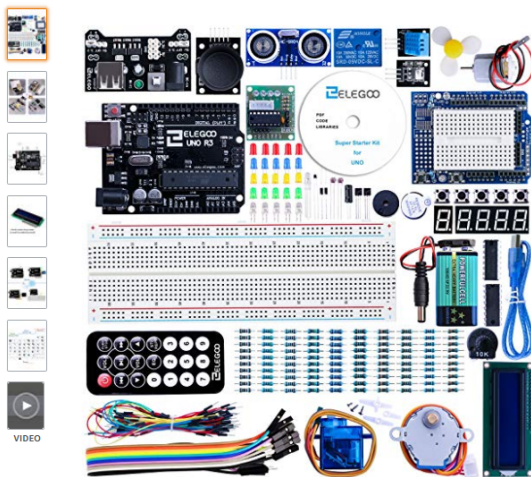
Meeting Times: Monday 3:00 PM Tuesday Wednesday 3:00 PM

Please note, Course Title, ID, CRN 11176 and Meeting time (MW: 1:30) in the picture left.

Link: <https://app.reef-education.com/#!/courses/add>

- **Each student has to manage/arrange one set of Arduino Kit**

https://www.amazon.com/ELEGOO-Project-Starter-Tutorial-Arduino/dp/B01D8KOZF4/ref=sr_1_3?ie=UTF8&qid=1547597906&sr=8-3&keywords=arduino+uno (Web access: 1/16/19.)



Roll over image to zoom in

Elegoo EL-KIT-003 UNO Project Super Starter Kit with Tutorial for Arduino

by ELEGOO

★★★★★ 817 customer reviews | 145 answered questions

#1 Best Seller in Single Board Computers

Price: **\$35.00** & **FREE Shipping**. Details

- Free PDF tutorial (more than 22 lessons) and clear listing in a nice package
- The most economical way to starting Arduino programming for those beginners who are interested
- Lcd1602 module with pin header (not need to be soldered by yourself)
- This is the upgraded starter kits with power supply module, 9V battery with dc
- High quality kite with uno R3, 100 percent compatible with Arduino uno R3

Specifications for this item

Brand Name	ELEGOO
EAN	0746591610623
Item Weight	1.2 pounds
Model Number	EL-KIT-003
Number of Items	1
Part Number	EL-KIT-003
UNSPSC Code	32000000
UPC	746591610623

Date		Class Topic <i>(subject to change)</i>	NOTES & ACTIONS ITEMS
Week 1 8/28	Mon	Introduction, Syllabus. High Impact Practices.	Online Class policy, syllabus details Projects, Guideline, etc.
	Wed	Basic concept of Voltage Current, and Power	iClicker setup, Order Arduino kit, Blackboard profile
Week 2 9/4	Mon	Labor Day	
	Wed	Basic concept of Voltage Current, and Power	
Week 3 9/11	Mon	Voltage Current, Resistor, Ohms Law, Numerical problems, Hands On	
	Wed	Voltage Current, Resistor, Ohms Law, Numerical problems, Hands On Project 1 working session Home automation using LDR	Bring Arduino Kits!
Week 4 9/18	Mon	Capacitor and Capacitance, Numerical	
	Wed	Capacitor and Capacitance, Numerical	Project-1 Due 11:59pm
Week 5 9/25	Mon	Capacitor and Capacitance, Numerical	
	Wed	Inductor and Inductance, Numerical Problems	
Week 6 10/2	Mon	Inductor and Inductance, Numerical Problems	
	Wed	--	Exam 1 On Black Board During class anywhere
Week 7 10/9	Mon	RC and RL circuits	
	Wed	Project 2 working session Transistor-Transistor Logic gate	Bring Arduino Kits!
Week 8 10/16	Mon	Transient	
	Wed	Transient	
Week 9 10/23	Mon	Diodes	
	Wed	Transistors (BJT / MOS)	
Week 10 10/30	Mon	Magnetism	Project 2 Due 11:59pm
	Wed	Project 3 working session Temperature Reading from thermistor	

Week 11 11/6	Mon	DC and AC Machines	
	Wed	DC and AC Machines	
Week 12 11/13	Mon	DC and AC Machines	
	Wed	Project 4 session Distance measure with Arduino codes	
Week 13 11/20	Mon	Thanksgiving	
	Wed	Thanksgiving	
Week 14 11/27	Mon	Project 4 session Distance measure with Arduino codes	Project-3 11:59pm
	Wed	Catch up day / Extra Topic /Review	
Week 15 12/4	Mon		Exam-2 On Black Board During Class but anywhere
	Wed	Optional Final Exam review	Project-4 11:59pm
Week 16 12/11	Wednesday, December 13th	4:00 pm – 6:45 pm	Final Exam On Black Board

NETIQUETTE

As we know, sometimes communication online can be challenging. It's possible to miscommunicate what we mean or to misunderstand what our classmates mean given the lack of body language and immediate feedback. Therefore, please keep these netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.

- Always consider audience. This is a college-level course; therefore, all communication should reflect polite consideration of other's ideas.
- Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
- When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space.

Class Attendance

The student is expected to attend all classes and laboratory sessions and attendance is mandatory for all freshman-level courses (1XXX). It is the responsibility of the student to inform each instructor of extended absences. When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor can drop the student from the class with a grade of W before the course drop deadline and with a grade of F after the course drop deadline.

Excused Absences for University-Recognized Activities

Students who will be absent while representing the University in officially recognized University activities (sports, band, professional conferences, etc.) must notify the Dean of Students not less than ten (10) days prior to the absence. The Dean of Students will provide the student with a letter of excuse for the professors. It is the student's responsibility to give the letter to the professors prior to the official recognized activity. Students following these procedures will be permitted to make up both assignments and examinations in consultation with faculty.

Military Leave

Section 51.9111, *Texas Education Code*, and [19 Texas Administrative Code 4.9](#) provides that students be excused from scheduled classes or other required activities if the student is called to and participates in active military service for a reasonably brief period and that the student shall be allowed to complete an assignment or exam within a reasonable time after the absence. The excused absence is permitted only if the student will not miss more than 25% of the total number of class meetings or the contact-hour equivalent (not including the final examination period) for the specific course or courses in which the student is enrolled at the beginning of the period of active military service.

Students called to active military service must provide a copy of their military orders to the instructor of each course. Further information is available under [Complete Withdrawal Due to Active Military Service](#).

Absence From Examinations

A student absent from a test during the semester is graded zero (0) unless another policy is set by the instructor.

Dead Day

This specific day will be scheduled one day after the last day of classes during the fall and spring semesters. The following policy will be observed:

1. No classes will be held on this day, except classes which meet once a week on that day.
2. Make-up exams should be left to the discretion of each individual instructor.
3. All student work (e.g., research papers, lab reports, term paper, etc.) should be due prior to this day.
4. If a comprehensive final is given, no new material, quizzes, or exams should be given two calendar days prior to Dead Day, and attention should be given to review of semester material. Implementation of this recommendation is to be left to the discretion of the individual instructor.

Absence for Religious Holy Days

Religious holy day means a day observed by a religion whose places of worship are exempt from property taxation under Section 11.20, *Tax Code*. Section 51.911 of the *Texas Education Code* and [19 Texas Administrative Code 4.4](#) related to absences by students for observance of religious holy days states that the institution shall excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection cannot be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence. The student must provide written notice to the instructor of each course that he or she will be absent for a religious holy day **not less than 10 days prior to the absence**. If a student and an instructor disagree about the nature of the absence being for the observance of a religious holy day as defined therein, or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor can request a ruling from the Provost or the Provost's designee. The student and the instructor shall abide by the decision of the Provost or designee.

Academic Integrity

The University of Texas at El Paso prides itself on its standards of academic excellence. In all matters of intellectual pursuit, UTEP faculty and students must strive to achieve excellence based on the quality of work produced by the individual. In the classroom and in all other academic activities, students are expected to uphold the highest standards of academic integrity. Any form of academic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. It is imperative, therefore, that the members of this academic community understand the regulations pertaining to academic integrity and that all faculty insist on adherence to these standards.

Any student who commits an act of academic dishonesty is subject to discipline. Academic dishonesty includes, and is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the [Handbook of Operating Procedures \(HOP\)](#) can result in sanctions ranging from disciplinary probation, to a failing grade on the work in question, to a failing grade in the course, to suspension or dismissal, among others.

More detail: <http://catalog.utep.edu/policies-regulations/attendance-grading/>

EXCUSED ABSENCES AND/OR COURSE DROP POLICY

According to UTEP Curriculum and Classroom Policies, "When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of "W" before the course drop deadline and with a grade of "F" after the course drop deadline." See academic regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I will drop you from the course. I will provide 24 hours advance notice via email.

OR

I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please let me know and then contact the [Registrar's Office](#) to initiate the drop process. If you do not, you are at risk of receiving an "F" for the course.

MAKE-UP WORK

Make-up work will be given *only* in the case of a *documented* emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation, and may be graded with penalty points. If you miss an assignment and the reason is not considered excusable, you will receive a zero. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

ALTERNATIVE MEANS OF SUBMITTING WORK IN CASE OF TECHNICAL ISSUES

I strongly suggest that you submit your work with plenty of time to spare in the event that you have a technical issue with the course website, network, and/or your computer. I also suggest you save all your work (answers to discussion points, quizzes, exams, and essays) in a separate Word document as a back-up. This way, you will have evidence that you completed the work and will not lose credit. If you are experiencing difficulties submitting your work through the course website, please contact the UTEP Help Desk. You can email me your back-up document as a last resort.

INCOMPLETE GRADE POLICY

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

ACCOMMODATIONS POLICY

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services](#) (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the [CASS portal](#).

SCHOLASTIC INTEGRITY

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as one's own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

CLASS RECORDINGS

The use of recordings will enable you to have access to class lectures, group discussions, and so on in the event you miss a synchronous or in-person class meeting due to illness or other extenuating circumstance. Our use of such technology is governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP's acceptable-use policy. A recording of class sessions will be kept and stored by UTEP, in accordance with FERPA and UTEP policies. Your instructor will not share the recordings of your class activities outside of course participants, which include your fellow students, teaching assistants, or graduate assistants, and any guest faculty or community-based learning partners with whom we may engage during a class session. **You may not share recordings outside of this course.** Doing so may result in disciplinary action.

TEST PROCTORING SOFTWARE

Two course assessments (the midterm and final exams) will make use of Respondus Lock Down Browser and Respondus Monitor inside of Blackboard to promote academic integrity. You are encouraged to learn more about how to use these programs prior to the first test.

Please review the following guidelines:

- The assessments will only be available at the times identified on the course calendar.
- You may take the test at any time during the 24-hour window.
- A reliable Internet connection is essential to completing the exam. If you must go to a location to take the exam (such as the library), be sure to follow their health and safety requirements.
- You have 2 attempts to take the test. Once the window closes, your answers will be saved, and no changes can be made. The higher score will be recorded.
- Respondus Lockdown Browser will require that all internet tabs are closed prior to the start of the test.
- Respondus Monitor requires a webcam and microphone.
- You will be required to show the webcam your student ID prior to the start of the test.
- Your face should be completely visible during the test. Blocking the camera will disable the test.
- No notes or textbook materials are permitted during the test. Respondus Monitor requires you to take a video of your surrounding area (desk, chair, walls, etc.)
- You should not have conversations with other people and/or leave and return to the area during the test.

PLAGIARISM DETECTING SOFTWARE

Some of your course work and assessments may be submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used to review assignment submissions for originality and will help you learn how to properly attribute sources rather than paraphrase.

COPYRIGHT STATEMENT FOR COURSE MATERIALS

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.

COVID-19 PRECAUTIONS

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID 19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of themselves is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org

Course Resources: Where you can go for assistance

UTEP provides a variety of student services and support:

Technology Resources

- [Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

Academic Resources

- [UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- [University Writing Center \(UWC\)](#): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- [Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.
- [History Tutoring Center \(HTC\)](#): Receive assistance with writing history papers, get help from a tutor and explore other history resources.
- [RefWorks](#): A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.

Individual Resources

- [Military Student Success Center](#): Assists personnel in any branch of service to reach their educational goals.
- [Center for Accommodations and Support Services](#): Assists students with ADA-related accommodations for coursework, housing, and internships.
- [Counseling and Psychological Services](#): Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.