

Course Title	MECH 2342 Electro-Mechanical System (002), CRN: 16285 (Fall-2019): Credit: 3
Instructor	Dr. Arifur R. Khan (arkhan@utep.edu); Office: Eng. Bld. A-317
Class location	TR: 4:50-5:50pm, UGLC 220 (Aug 26, 2019 - Dec 05, 2019) Office hours: Monday: 12 to 2 pm, Wednesday: 12 to 2 pm. Eng. Bld. A-317
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 educates students in analog circuit analysis to build and measure system with various sensors and to develop multiple concepts learned in several levels of Science, Technology, Engineering, and Mathematics (STEM). This course will also improve the ability to identify, analyze and solve engineering problems using basic science and engineering knowledge, human intuition and instinct.
Course Topics	<ul style="list-style-type: none"> • Introduction (Power, Energy, Current, Voltage, Circuits) • Resistance, Capacitance and Inductance (RLC circuits) with Hands-on learning. • Transients and Sinusoidal Signal Analysis with numerical problems and simulation. • Diode, Bipolar and Field-Effect Transistors with Hands-on activities. • Operational Amplifiers (OpAmp) with Hands-on activities. • Magnetic Circuits and Transformers with numerical problems and simulations. • DC and AC Machines with numerical problems. • Logic Circuits and Sensors with Hands-on activities. • Computer Based Instrumentations (LabVIEW) with sensors.
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	Top Hat (Attendance and class quiz), Arduino, NI Multisim, LabVIEW,
Student's assessment	<ol style="list-style-type: none"> 1. Class performance: 35% [Random Attendance (30%), Class quiz (70%),] 2. Midterm Exam-1: 20% 3. Midterm Exam-2: 20% Final exam will replace the worst midterm. 4. Final Exam: 20% 5. Project: 25% (In a group of 4 students with Arduino Kit) 6. Final exam is optional. It will replace the worst midterm. 7. Grace point: 1% if it improves the current grade to the next better level.
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, Pad, e-book, Cell phones (silent mode, no text/call) can be used as problem solving tools in class, not in the exam. 2. Arduino Kit (link at the next page) Each group must possess one set.

Necessary ITEMS for the Fall 2019 semester

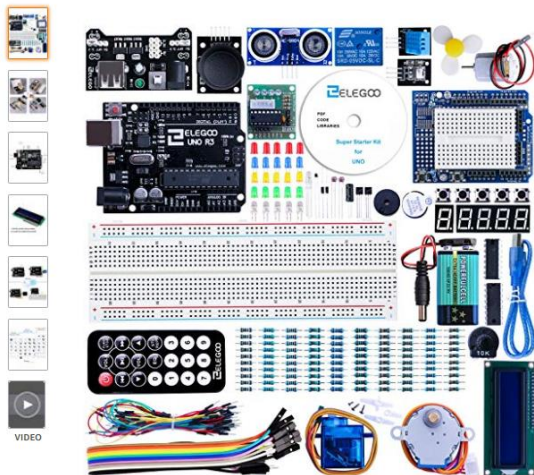
- **Each student is recommended to register in TOP HAT**

MECH 2342 CRN 16285
Fall_19_EMS-2
Join Code: 995160
Professor: ARIFUR KHAN

Course Name	(Required)
Fall_19_EMS-2	
Subject	(Required)
Electro-Mechanical System	🔍
Course Code	(Required)
MECH 2342 CRN 16285	
Course Description	
Electro-Mechanical System	
Course Password	

- **Each group of 4 (four students) has to buy 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	
Week 1	08/27	Introduction. Syllabus. High Impact Practices. Grouping, Projects, Arduino	Help students on grouping
	08/29	Voltage Current, Resistor, Ohms Law, Numerical problems, Hands On	Home practice for random class quiz
Week 2	09/03	Voltage Current, Resistor, Ohms Law, Numerical problems, Hands On	Home practice for random class quiz
	09/05	Class Project-1 , Voltage/Current divider and calculation	Home practice for random class quiz
Week 3	09/10	Capacitor and Capacitance, Numerical Problems with examples	Home practice for random class quiz
	09/12	Capacitor and Capacitance, Numerical Problems with examples	Home practice for random class quiz
Week 4	09/17	Inductor and Inductance, Numerical Problems	Home practice for random class quiz
	09/19	Inductor and Inductance, Numerical Problems	Home practice for random class quiz
Week 5	09/24	Project-2 , Home automation using LDR	Home practice for random class quiz
	09/26	Midterm-1 Exam	Home practice for random class quiz
Week 6	10/01	Transients and Sinusoidal Signal Analysis with numerical problems and simulation.	Home practice for random class quiz
	10/03	Transients and Sinusoidal Signal Analysis with numerical problems and simulation.	Home practice for random class quiz
Week 7	10/08	Diode, Numerical Problems, Hands on Graphical Presentation of I-V curve	Home practice for random class quiz
	10/10	Diode, Numerical Problems, Hands on Graphical Presentation of I-V curve	Home practice for random class quiz
Week 8	10/15	Transistor, Numerical Problems, Hands on, Graphical Presentation.	Home practice for random class quiz
	10/17	Transistor, Numerical Problems, Hands on, Graphical Presentation.	Home practice for random class quiz
Week 9	10/22	Project-3 , Transistor-Transistor Logic (TTL) gate/circuit	Home practice for random class quiz
	10/24	Operational Amplifier with hands on	Home practice for random class quiz
Week 10	10/29	Magnetic Circuits and Transformers with numerical problems and simulations.	Home practice for random class quiz
	10/31	Magnetic Circuits and Transformers with numerical problems and	Home practice for random class quiz

		simulations.	
Week 11	11/05	Midterm-2 Exam	Home practice for random class quiz
	11/07	Projects-4 , Sensing temperature with Arduino codes	Home practice for random class quiz
Week 12	11/12	DC and AC Machines with numerical problems.	Home practice for random class quiz
	11/14	DC and AC Machines with numerical problems.	Home practice for random class quiz
Week 13	11/19	DC and AC Machines with numerical problems.	Home practice for random class quiz
	11/21	Computer Based Instrumentations (LabVIEW) with sensors.	Home practice for random class quiz
Week 14	11/26	Computer Based Instrumentations (LabVIEW) with sensors.	Home practice for random class quiz
	11/28	Projects-5 , Distance sensor with logical decision using Arduino codes.	
Week 15	12/03	Class Review	Optional (No Attendance, No Quiz)
	12/05	Class Review	Optional (No Attendance, No Quiz)
Week 16	12/10	Final Exam (4:00 to 6:45)	Comprehensive (Optional)

IMPORTANT FALL 2019 DATES

Date	Events
Aug. 26	Fall classes begin
Aug 26-30th	Late Registration Period (Fees are incurred)
Sept 2nd	Labor Day Holiday- University Closed
Sept 11th	Fall Census Day, Note: This is the last day to register for classes.
Oct 24	Midterm grades are due
Oct 28	Spring 2020 Registration begins
Nov 1st	Fall Drop/Withdrawal Deadline
Nov 28-29th	Thanksgiving Holiday - University Closed
Dec 5th	Fall - last day of classes
Dec 9-13th	Fall Final Exams
Dec 19th	Final Grades available

Addendum to Syllabi – Beginning Fall 2018, Mechanical Engineering

Academic Honesty

During exams and quizzes, you are not allowed to use any form of wi-fi enabled electronic device, including cell phones or other electronic communication devices or methods (wrist watches, earbuds, etc.). No wrist watch or other electronic device may be worn.

No electronic version of the book, loose paper print-outs of the book or extra sheets of paper of any kind are allowed unless explicitly mentioned in writing by the instructor. As a part of the zero-tolerance policy, if you have a cellphone or other electronic device capable of communication on your person; or if any proctor sees or hears any electronic device during the exam or if you share your work with someone else, you will be reported to the proper authorities and you may receive a zero on the exam and an F in the class. Other actions including suspension may also be pursued. If anyone leaves the exam room during an exam He/she must be accompanied by a proctor. This includes restroom breaks.

University approved recording devices may also be located at various locations in the room and may be out of sight of the students. These recordings will be managed according to the UTEP approved regulations for such media.

If you are suspected of scholastic dishonesty you may not be directly confronted about your conduct by the instructor or proctor. You will however, be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) and your exam will not be admissible. Your grade in the class may not be available until OSCCR makes a final ruling, this may adversely impact your ability to enroll in other classes.

If you arrive more than 15 minutes late to an exam, you will not be allowed to take the examination.

There will be no makeup exams administered. If you have a university approved excuse, your instructor will have a process for determining how to handle the missing grade outlined in the syllabus. However, no makeup exams will be given.

If you miss more than one exam, the instructor may choose to administratively drop you from the class. This may adversely impact a visa and financial aid.

Any food or drink brought into the examination room is subject to careful inspection by a proctor.

Departmental policy allows for the use of assigned seats. All students must present their UTEP issued ID prior to and during every exam and may be required to sign in. Not having a UTEP issued ID when asked will result in forfeiture of the exam.

Scholastic dishonesty on homework, lab assignments and all other class assignments will be held to the same standards and requirements of academic honesty as quizzes and exams.

Class Attendance Policy

Attendance is mandatory. Anyone with 5 or more absences may be dropped from the class. Attendance will be taken through TOP HAT. Any student will be given full attendance benefit if $(N-5)$ attendance is recorded, where N is total number of attendance taken. A drop for not attending will count toward the State Allowed Six Drop Limit. If you are failing the class at the time of the drop you may also be given a

WF designation. Be advised that a drop could adversely impact visa status, financial aid and other programs.

As per UTEP rules, you may be asked to show a UTEP ID at any time during class. Anyone who is present and not registered in the class will be subject to disciplinary action unless the instructor gives prior approval.

Excused Absence for Exams

The UTEP catalog allows Exam Absence to be excused ONLY for University-Recognized Activities and very specific other situations. Medical absence is NOT allowed in the UTEP catalog. For consistency with the catalog, students will NOT be excused from exams due to illness.

Harassment Policy

The department has a zero-tolerance policy for harassment. Engagement in any behavior considered harassment will be reported to the proper authorities. In addition to generally understood forms of harassment, the department also treats the following behavior as harassment:

- Repeated emails and/or calls regarding subjects that have already been addressed. Once a decision has been made or a question answered, a student who continues to ask the same question will be given a warning by the recipient of the email/call. If the student continues, the behavior will be reported. Questions that seek understanding of course material are not harassment; but repeated questions about a grade or an administrative decision are.
- Grades are NOT negotiable, ever. If you believe a grading mistake has been made, you must follow the process described in the UTEP catalog. Any request for a grade elevation that is NOT based on a mistake is considered harassment and will be reported immediately.
- Remaining in an office after the occupant requests you leave is considered harassment and potentially threatening. You will be reported immediately without warning and depending on the severity, may be reported to law enforcement.
- Similar behavior towards department staff, and student advisors will also be treated as harassment, including persistent phone calls, emails, and badgering. Department staff and student advisors are there to help students, and should be treated with due respect.