

Course Title	Mechatronics MECH 4346 (001), CRN: 12684 (Fall-2019): Credit: 3
Instructor	Dr. Arifur R. Khan (arkhan@utep.edu) Office: Eng. Bld. A-317
Time and location	MW 4:30-5:50pm, Phy. Sci. Build-208: (August 26, to Dec. 05, 2019) Office hour: MW: 12 to 2 pm, Eng. Bld. A-317 (Else by Appointment)
Course Prerequisite	MECH 3345 with a C or better.
Course Description	Mechatronics requires knowledge of Sensors, Actuators, Circuits, Microcontrollers and Programming to build and run a machine for a specific purpose. This type of understanding and experiences are appropriate for the students of Electrical, Mechanical, Control, Industrial, Computer, System, Spacecraft, and Aerospace Engineering, etc.
Course Objective	This course educates students to be confident in mechanical systems with sensors and actuators powered by electrical and electronic systems controlled by computers (microprocessor) run by programming codes. At the end of this course, the typical student will understand how a machine works under different conditions for different purpose and will be able to design, implement and build hands on prototypes. 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 of Mechatronics • Electrical/Electronic Components for Mechatronics System • Sensors • Electric Actuators • Programmable Logic/Motion Controllers (Arduino/LabVIEW Based) • Hands on Projects (will be assigned in the class for each group) • Arduino/MATLAB/LabVIEW Programming (Project related)
Reference	<ol style="list-style-type: none"> 1. Mechatronics with Experiments by Sabri Cetinkunt (Second Edition), published by Willy (EBook is available in the UTEP Library) 2. Mechatronics with Measurement System, David G. Alciatore and Michael B. Hstand, Mac Graw Hill (pdf version available online) 3. Additional Reference materials (notes, projects, web links, etc.) may be handed out in class, also available in Blackboard.
Software in class	TOP HAT (Attendance, quiz, etc.), MATLAB, Arduino, LabVIEW
Student's assessment	<ol style="list-style-type: none"> 1. Class Performance: 20% [Random Attendance (30%), Class quiz (70%)] 2. Midterm-1: 25% 3. Midterm-2: 25% Final exam will replace the worst midterm. 4. Final Exam: 25% 5. Project: 30% (5 students group) [Report (words):25%, Hands On:50%, Group final presentation (ppt.):25%] 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, can be used as problem solving tools in class. 2. Project accessories (Arduino, components, etc.)

Necessary ITEMS for the Fall 2019 semester

TOP HAT registration

MECH 4346_CRN_12684

Fall_19_Mechatronics-1

Join Code: 856560

Professor: ARIFUR KHAN

<https://tophat.com/>

Course Name	(Required)
Fall_19_Mechatronics-1	
Subject	(Required)
Mechatronics	🔍
Course Code	(Required)
MECH 4346_CRN_12684	
Course Description	
Mechatronics	
Course Password	

Depending on the project assigned, student (in group) should buy components, electronics, and necessary items to build their project.

Date		Class Topic (<i>subject to change</i>)	Home practice
Week 1	08/26	Introduction, Syllabus, Talk About High Impact Practices, In Class activity, Grouping, Projects, etc.	
	08/28	Introduction to Mechatronics and Group formation.	
Week 2	09/02	LABOR DAY HOLIDAY NO CLASSES	
	09/04	Group and Project finalization	Home practice for random Class quiz.
Week 3	09/09	Electrical/Electronic Components for Mechatronics System	Home practice for random Class quiz.
	09/11	Electrical/Electronic Components for Mechatronics System	Home practice for random Class quiz.
Week 4	09/16	Electrical/Electronic Components for Mechatronics System	Home practice for random Class quiz.
	09/18	Electrical/Electronic Components for Mechatronics System	Home practice for random Class quiz.
Week 5	09/23	Sensors	Home practice for random Class quiz.
	09/24	Sensors	Home practice for random Class quiz.
Week 6	09/30	Sensors	Home practice for random Class quiz.
	10/02	Midterm-1 Exam	Home practice for random Class quiz.
Week 7	10/07	Midterm Project Presentation	Home practice for random Class quiz.
	10/09	Electric Actuator	Home practice for random Class quiz.
Week 8	10/14	Electric Actuator	Home practice for random Class quiz.
	10/16	Electric Actuator	Home practice for random Class quiz.
Week 9	10/21	Programmable Logic Controller (Arduino/ LabVIEW based)	Home practice for random Class quiz.
	10/23	Programmable Logic Controller (Arduino/ LabVIEW based)	Home practice for random Class quiz.
Week 10	10/28	Programmable Logic Controller (Arduino/ LabVIEW based)	Home practice for Class quiz.
	10/30	Midterm-2 Exam	

Week 11	11/04	Final Project Presentation (4 groups)	Home practice for Class quiz.
	11/06	Final Project Presentation (4 groups)	Home practice for Class quiz.
Week 12	11/11	Final Project Presentation (4 groups)	Home practice for Class quiz.
	11/13	Final Project Presentation (4 groups)	Home practice for Class quiz.
Week 13	11/18	Final Project Presentation (4 groups)	Home practice for Class quiz.
	11/20	Final Project Presentation (4 groups)	Home practice for Class quiz.
Week 14	11/25	Final Project Presentation (4 groups)	Home practice for Class quiz.
	11/27	Final Project Presentation (4 groups)	Book Homework-Due Next Class
Week 15	12/02	Review class for Final exam	
	12/04	Review class for Final exam	
Week of Finals Dec 9-13			
Week 16	12/9	Final Exam (Optional) at 4:00pm to 6:45pm Regular Classroom	Optional, Final exam will replace the worst midterm.

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 is required to leave 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.