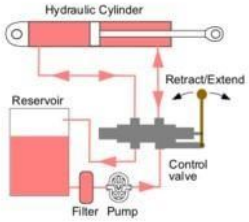
The University of Texas at Tyler

Department of Technology

TECH 2311: Electrical and Fluid Systems



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COURSE SYLLABUS
for
TECH 2311 Electrical and Fluid Systems

COURSE LISTING:
An introduction to the fundamentals of electrical and fluid power systems. The students are provided with lecture and laboratory experiences.

COURSE DESCRIPTION: The purpose of this course is to provide students with the fundamental concepts related to the application of fluid and electrical systems. Through lectures, laboratory activities, and out-of-class assignments, students will gain an understanding of the vocabulary and applications of fluid and electrical systems in our modern world. In addition, this course is for students needing a background in electrical and electronic components, circuits, and applications. There is less emphasis on mathematical formulas (although algebra is used). The course focuses on the most important concepts and equations in each area. The course begins with background chapters, and moves to material on basic electronics areas, with a variety of applications.

REQUIRED TEXTBOOKS:

COURSE OBJECTIVES

Demonstrate a comprehensive knowledge of electrical and fluid power concepts.

A. Understand Ohm's law and its application.
B. Explain hydraulic concepts.
C. Create electrical and hydraulic circuits.
D. Summarize hydraulic and fluid concepts.

STUDENT LEARNING OUTCOMES
At the end of this course, students will be able to:

A. Successfully identify the basic components and operation of pneumatic and hydraulic systems on laboratory assignments
B. Identify and describe basic mechanical systems on exams and quizzes.
C. Successfully construct basic fluid and mechanical circuits during laboratory exercises.
D. Describe the systems approach to problem analysis and design on exam and quizzes.

E. Describe the elements of basic control systems and logic on laboratory assignments.
F. Identify and define the terms used in electricity and electronics as illustrated in laboratory assignments.
G. Perform specific mathematics circuit analysis by earning passing scores on quizzes and assignments.
H. Identify and describe the common electrical and electronic components by earning passing scores on quizzes and exams.

CORE COMPETENCIES

A. Computer-Based Skills – the student will complete written assignments using the word processor.
B. Communication Skills – the student will exhibit a mastery of both written and oral skills in completion and presentation of the assigned projects.
C. Interpersonal Skills – the student will interact in class discussion to clarify thinking regarding electrical and fluid systems.
D. Problem Solving (Critical Thinking) – the student will use conceptual thinking to analyze and finish laboratory activities.
E. Personal Accountability for Achievement – the student will complete projects at the time designated by the instructor and will enter into class discussion.
F. Competence in Technology Principles
   a. Competence in major field and grounding in other major technology major core areas – the student will be able to identify components of electrical and fluid power systems through schematics/diagrams.
   b. Exposure to and appreciation for industrial experiences such as industrial tours, work-study options and cooperative education, senior seminars – Students will use electrical and fluid power laboratory equipment and complete tests routinely performed in industry.

EXPECTATIONS and POLICIES:

1. You have the prerequisite knowledge, skills, and dispositions to participate in this course.
2. You will participate in all discussions, activities, and assignments.
3. You will complete and submit all assignments on time. (Late assignments will not be accepted, for any reason. Technology related issues are not acceptable excuses, submit early!)
4. You will communicate promptly with the instructor concerning any issues related to the course.
5. You will adhere to The University of Texas at Tyler academic honest policies.
6. You will not ask for “sympathy points.” (i.e. give me an “extra” assignment to increase my grade.)
7. The instructor reserves the right to modify this syllabus and will communicate this to the students in a timely manner of the modifications.
8. You are required to be present for in person lab days. If a student is more than 5 minutes late without an excuse, it counts as an absence. Three absences is an automatic reduction of a letter grade in the class.
9. Absolutely NO Cell Phones
10. Students are required to log on and use Canvas Learning Management Software at least twice a day to access their electronic gradebook, related course materials and other information that the instructor may post.
11. No retakes of quizzes or exams for "technical difficulties or internet interruptions".

COURSE REQUIREMENTS:

Assignments

1. complete assigned outside work (written & computer)
2. complete midterm exam
3. complete final exam
4. complete topic summaries
5. complete in-class lab experiments

GRADING:

Course Activities and Grading Weights

Grading and Evaluation:	**Total Points:**	**Grading Scale**
Homework assignments	350	815-715---A
Exams	275	714-615---B
Labs	650	614-515---C
Topic Summaries	25	514-415---D
Total	**1300**	414-0------F

Syllabus are subject to change, the one in Canvas will always be the most up to date.

Topic Summaries:

Directions: Write article summaries from topics pertaining to electrical and/or fluid power systems. **These articles should be taken from recent periodicals (2020-present)**, **not handbooks or textbooks**. Each summary shall be one (1) page in length. Each summary must come from a separate periodical of a different titled publication. The articles you choose to review must have relevance to principles of mechanical and fluid systems and reflect current trends. **SEE EXAMPLE ON LAST PAGE. All Topic summaries will be checked for plagiarism**

UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www.uttyler.edu/wellness/rightsresponsibilities.php

Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at http://www.uttyler.edu/about/campus-carry/index.php

UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

Grade Replacement/Forgiveness and Census Date Policies

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. (For Fall, the Census Date is Sept. 12.) Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttyler.edu/registrar. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date (Sept. 12th) is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including non-visible a disability diagnosis such as a chronic disease, learning disorder, head injury or ADHD, or you have a history of modifications or accommodations in a previous educational environment you are encouraged to contact the Student Accessibility and Resources office and schedule an interview with an Accessibility Case Manager. If you are unsure if the above criteria applies to you, but have questions or concerns please

contact the SAR office. For more information or to set up an appointment please visit the SAR webpage (http://www.uttyler.edu/disabilityservices/) or the SAR office located in the University Center, Room 3150 or call 903.566.7079. You may also send an email to saroffice@uttyler.edu.

Student Absence due to Religious Observance
Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester. Revised 09/16

Student Absence for University-Sponsored Events and Activities
If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement
It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation
Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

Student Standards of Academic Conduct
Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but 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, any act designed to give unfair advantage to a student or the attempt to commit such acts. i. "Cheating" includes, but is not limited to: • copying from another student's test paper;

- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;

- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially. ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit. iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by TurnItIn, available on Canvas.

UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu

The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.

Note: The instructor reserves the right to modify the syllabus. All modifications will be communicated to the students in a timely manner.

TOPIC SUMMARY EXAMPLE

TECH XXXX
Course Title-Section
Name

Vehicular Systems

McCosh, Dan. (1986). No-springs, no-shocks. *Popular science*. 444 (6), 60-63.

The author believes active suspension will replace springs and shocks with a computer and highspeed hydraulics. The primary benefit of the system is to isolate one suspension characteristic from another. Essentially, MacPherson struts are replaced with hydraulic struts which can react within 3/1000 second, and can cycle up to 1500 times/minute. A computer responds to tiny changes in body and wheel movement by controlling double-acting struts. As well as sensing bumps, the system reads the forces acting on the car body preventing it from banking to the outside of a curve. The idea of active suspension is credited to Britain's great interest in its application. American auto manufacturers have characterized the system as expensive, noisy, and consuming power, however, it may appear on some "expensive" U.S. automobiles.

Reaction

This article had good appeal for automobile enthusiasts who want to keep abreast of the latest technology. The reporting of this innovative suspension system was very consistent and well documented through interviews. Several pictures of the system components were shown as well as a pictorial schematic of the complete suspension system. Upon reading this article, anyone would have a good working knowledge of the computer controlled suspension.

Note: Margins are to be set at the following dimensions:

Left	= 1.25”
Right	= 1.00”
Top	= 1.00”
Bottom	= 1.00”