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# TENNESSEE TECH UNIVERSITY

## MECHANICAL ENGINEERING

### ME3001-001 MECHANICAL ENGINEERING ANALYSIS

FALL 2017, 3 CREDIT HOURS

Lecture: Monday, Wednesday, Friday, 2:30-3:25PM, PRSC 215

Final Exam: Thursday, December 14, 1:00-3:00PM

#### INSTRUCTOR INFORMATION

**Name:** Tristan Hill

**Office:** CLEM 122b

**Telephone Number:** 931-372-3774

**Email:** [thill@tntech.edu](mailto:thill@tntech.edu)

#### OFFICE HOURS

Tuesday, Thursday 9:00-11:00 AM (or by appointment)

#### COURSE INFORMATION

##### PREREQUISITES

ENGR 1120, MATH 2010 and MATH 2120

##### TEXTS AND REFERENCES

**Recommended Text:** Zill and Cullen, Differential Equations with Boundary-Value Problems, 7th Edition

**Recommended Text:** Otto and Denier, An Introduction to Programming and Numerical Methods in MATLAB

**Course Website:** [ilearn](#)

**Useful Websites:** [wolfram alpha](#), [wolfram mathworld](#), [math for college](#)

#### COURSE DESCRIPTION

The goal of this course is to develop and implement analytical and numerical techniques for typical mechanical engineering problems and applications in various topics using the MATLAB programming language.

## COURSE OBJECTIVES/STUDENT LEARNING OUTCOMES

Practical methods for solving engineering applications in the areas of dynamics, mechanics, heat transfer, and fluids will be investigated with modern numerical computing tools such as the MATLAB programming language. Analytical and numerical methods for computation and engineering problem solving will include:

- Root Finding and Solutions to Non-Linear Equations
- Systems of Linear Equations
- The Eigenvalue Problem
- Theoretical Solutions to Ordinary Differential Equations
- Numerical Solutions to Ordinary Differential Equations
- Laplace Transforms
- The Fourier Series
- Theoretical Solutions to Partial Differential Equations
- Numerical Solutions to Partial Differential Equations

## GRADING AND EVALUATION PROCEDURES

Field	Weight
Homework	20%
Quizzes	15%
Exam I	20%
Exam II	20%
Final Exam	25%

Letter Grade	Grade Range
A	90-100
B	80-89
C	70-79
D	60-69
F	59 and below

## COURSE POLICIES

### STUDENT ACADEMIC MISCONDUCT POLICY

Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct at [Policy Central](#). Students are encouraged to obtain limited help and/or ideas from one another. However, sharing files or code in any way is strictly forbidden. Similarly there is a zero tolerance policy for cheating on quizzes or exams. While completing the exams, students may only use the allowed materials detailed above. If a student is observed using a restricted device or material, or is found to have copied any part of the exam answers from another student, the student (or students) will be reported to the Student Affairs office for Academic Misconduct. Violation of this policy will result in an 'F' for the course.

## ATTENDANCE POLICY

You are expected to attend lecture. You are responsible for all assignments and material covered and all issues discussed during class meetings whether you are present or not. Makeups will not be given unless exceptional circumstances are present and you have official documentation. Assignment due dates are posted on ilearn but they are subject to change. Work may be turned in late for up to one week. Every day the work is late 5% will be deducted, but after one week late the work will not be accepted.

## CLASS PARTICIPATION

Please ask questions and participate in class discussions. Do not worry about asking stupid questions, you are not here to look cool. Also feel free to come to my office and ask questions during my posted office hours or any other time. If I am free I will be happy to help. Do not use your cellphone in class. Although tempting, this is rude and you will miss material. Please silence your phones. You are encouraged to bring your computer to lecture but try not to get distracted. Please silence your and computers.

## ONLINE GRADEBOOK

You will be able to see your assignment grades as soon as they are available on the course website, ilearn. Please check the gradebook periodically. If you believe your grade is incorrect or missing please send me an email describing the issue. If needed your grade will be changed. You must request no later than 2 weeks after the grade has been posted. After 2 weeks the grade will be considered final. This is particularly important towards the end of the semester as it can affect final grades.

## HOMEWORK ASSIGNMENTS

There will be individual homework assignments given throughout the semester. A formal printed report may be required with these homework assignment. The homework may be done in groups of three if you choose. Each group will turn in a single homework assignment with all names attached, and each member will receive the same grade for the assignment. Any software or code that is used must be submitted digitally and documented properly.

## QUIZZES

Quizzes will be given in class regularly. Some may not be announced. Your quizzes count for 15% of your course grade and will approximately minutes to complete. As a general rule there will be a quiz every week except for exam weeks.

## EXAMS

You will have 2 regular exams and a final exam. The regular exams count 20% of your grade each and the final exam counts for 25%. The regular exams will be scheduled at least one week in advance, and the final exam schedule is posted on this syllabus. You are allowed to use a calculator, and a one page (two-sided) handwritten note sheet on the exams.

## DISABILITY ACCOMMODATION

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at [Policy Central](#).