

[Type text]



## Engineering Technologies Department

### Introduction to Engineering EGR\*K111

**3 credits: MW 1:30-2:45  
D107**

Professor Mike Gentry Office C-154 Phone 860-215-9428 [mgentry@trcc.comnet.edu](mailto:mgentry@trcc.comnet.edu)  
Cell Phone 860 608 3223 Home email [gentrme@comcast.net](mailto:gentrme@comcast.net)

Office hours  
M1-2PM, 4-5PM  
W 1-2 PM  
TH 4-5 PM

Class Textbook: Engineering Fundamentals and Problem Solving A. Eide et al

Prerequisite: Intermediate Algebra (MAT\*137)

Course Description: Students will be introduced to the fields of engineering through design and graphics and comprehensive engineering projects. Topics include sketching, charts, graphs, forces, energy, electrical circuits, mechanisms, materials testing, manufacturing technologies and fundamentals of engineering economics. Areas of engr discussed will include Civil, Electrical, Mechanical, Thermodynamics, Engr. Economics, Renewable Energy.

Course Goals:

- o Understand different types of engineering fields and their functions
- o Understand the research process through case studies and technical journals
- o Demonstrate data acquisition and documentation skills
- o Understand and implement the design process
- o Demonstrate basic problem solving techniques for engineering systems
- o Understand team-based project work for engineering problems
- o Demonstrate an awareness of pathways to engineering majors/ careers

Students will become familiar with

Myers Briggs Type Indicator

Team work skills

Group decision/ consensus decision making.

Project planning and scheduling

Project write up

This may include the use of blackboard in group mode to maintain a project notebook.

**Course Outcomes:**

[Type text]

- Students will demonstrate the ability to work together in teams to determine an engineering problem and solve that problem.
- Students will illustrate an ability to think critically and identify, evaluate research and solve complex technical problems.
- Students will illustrate the ability to develop and apply team skills
- Students will develop and illustrate the ability to use and apply project management skills.

### **Course Criteria:**

The above outcomes will be assessed using these performance criteria:

- Engineering problem solving skills.-
  - ✓ Develop a complete yet concise description of the problem/ project.
  - ✓ Pursue solutions in a methodical, logical manner with results correctly explained with sufficient detail and properly documented
- Critical thinking-
  - ✓ Show the ability to evaluate the credibility of sources of information
  - ✓ Demonstrate the ability to refine generalizations, establish rational & pertinent assumptions, and avoid oversimplifications
  - ✓ Exhibit the ability to generate, analyze / evaluate, and assess multiple engineering problem solution options
  - ✓ Produce documentation that reflects organization and application of engineering principles in specifying solution to an engineering problem
- Team skills
  - ✓ Demonstrate an awareness of team dynamics.
  - ✓ Develop a plan appropriate to the project
  - ✓ Conduct the project
- Project management skills
  - ✓ Development a project schedule with contingencies, critical Path
  - ✓ Document all work as individuals and a group in a blackboard group. This needs to be real time and will be monitored and evaluated weekly.
  - ✓ Develop a plan appropriate to the project
  - ✓ Conduct the project
  - ✓ Document the project in a professional report.

Presentations will be required to help develop students' written and oral presentation and communication skills. Students will be required to keep a journal to document all work performed on their projects, which will be periodically reviewed by faculty. The course will culminate with a final presentation.

**Attendance** The class meets 2 times per week. You are expected to attend each session. If you must be absent, you are expected to contact the instructor and any teammates you may be working with. The lab may be open extended hours, subject to supervisor availability, so you will have time to work on your project. Although the course runs for 3 contact hours per week, you should expect that more time than this is needed to complete the course.. Active learners succeed. It is essential in an exploratory course such as this one to participate and evaluate the material.. Additionally, attendance is required for participation to engage your classmates and enable a dynamic interaction in class.. Finally, students will practice the skills needed to

[Type text]

work effectively in teams and as an individual. All members of teams will be expected to contribute to the team project and will be peer evaluated.

### **Students with Disabilities**

Special Needs: Any student in the class who may have special needs should feel free to contact me. I am interested in any situation which may impact your ability to be successful in this course. If you are a student with a disability and you believe you will need accommodations for this class, it is your responsibility to please contact one of the college's Disability Service Providers as soon as possible. Chris Scarborough (860/215-5751) generally works with students who have learning disabilities or attention deficit disorder. Kathleen Gray (860/210-9248) generally works with students who have physical, visual, hearing, medical, mobility, and psychiatric disabilities. Matt Liscum (860/215-9265) also works with students who have disabilities. If you will need accommodations for this class, you must contact the Disabilities Counseling Services. To avoid any delay in the receipt of accommodations, you should contact the counselor as soon as possible. The instructor cannot provide accommodations until an accommodation letter from the Disabilities Counselor is received. Please see me if you have any questions.

### **On line Portfolio (Digication)**

All students are required to maintain an online learning portfolio in Digication that uses the college template. Through this electronic tool students will have the opportunity to monitor their own growth in college-wide learning. The student will keep his/her learning portfolio and may continue to use the Digication account after graduation. A Three Rivers General Education Assessment Team will select and review random works to improve the college experience for all. Student work reviewed for assessment purposes will not include names and all student work will remain private and anonymous for college improvement purposes. Students will have the ability to integrate learning from the classroom, college, and life in general, which will provide additional learning opportunities. If desired, students will have the option to create multiple portfolios.

Homework: There will be regular homework assignments for this course. The assignments will be checked, collected, and/or reviewed during class.

Additionally, much of the homework will be reading assignments which will match the sequencing of lectures and topics for the semester. Additionally, there will be short quizzes administered in class or as a take-home; it is up to the student to keep pace with the material. Homework submitted late is subject to a late penalty. Quizzes missed are not allowed a make-up.

Design Project: There will be a team-based design project.

Presentation: There will be a final presentation in each an engineering project.

Grading: Your final grade in this course will be determined as follows:

Homework & Quizzes 20%

Case Studies 25%

Each Design Project 25%

Participation 5%

Total 100%

[Type text]

Course Schedule:

<b>Wk</b>	<b>Topic</b>	<b>Date</b>	<b>Reading</b>
1	Course Overview, The Engineering Profession	8/28	Ch 1.1-1.6
	The Engineering Profession/Professionalism and Ethics	8/31	Ch 1,2 and App d
2	No Class Labor Day		
	Professionalism and Ethics	9/7	Ethics Handout Case
3	Personality Types	9/12	Handout
	<b>Root Cause Analysis</b>	9/14	
4	Dimensions, Units & Conversions	9/19	Ch 7
	Quiz One Dimensions, Units, Conversion Lecture Measurements and Estimations	9/21	Ch 6
5	Measurements and Estimations	9/26	
	Quiz One Graphing/Analyzing Data	9/28	
6	Graphing/Analyzing Data <b>(Meet in PC Lab)</b>	10/3	
	Geometry Trigonometry Review	10/5	App K, L
7	Engineering Solutions	10/10	Ch 3,4,9
	No class Columbus Day	10/12	
8	Engineering Solutions	10/17	
	Material Balance	10/19	Ch 14
9	Material Balance/ Quiz 2	10/24	
	Statistics <b>(Meet in PC Lab)</b>	10/26	Ch 10,11
10	Statistics	<b>10/31</b>	
	<b>Teamwork</b>	<b>11/2</b>	Blackboard Handout
11	Teamwork	11/7	Blackboard Handout
	Introduction of Design Projects / Project Team Selection	11/9	
12	Mechanics	11/14	Ch 12
	Mechanics	11/16	
13	Mechanics	11/21	Chap 13
	Mechanics		
14	Energy/Quiz 3	11/28	CH 15,16
	Energy	<b>11/30</b>	
15	Thanksgiving Recess	12/5	
	Electrical Theory	12/7	CH 17
16	Electrical Theory	12/12	
	<b>PROJECT ORAL PRESENTATIONS</b>	<b>12/14</b>	
	<b>PROJECT ORAL PRESENTATIONS</b>	<b>12/19</b>	

[Type text]

Course Schedule:

<b>Wk</b>	<b>Topic</b>	<b>Date</b>	<b>Reading</b>
1	Course Overview, The Engineering Profession	8/28	Ch 1.1-1.6
	The Engineering Profession/Professionalism and Ethics	8/31	Ch 1,2 and App d
2	No Class Labor Day		
	Professionalism and Ethics	9/7	Ethics Handout Case
3	Personality Types	9/12	Handout
	Dimensions, Units & Conversions	9/14	Ch 7
4	Quiz One Dimensions, Units, Conversion	9/19	Ch 6
	Lecture Measurements and Estimations		
	Measurements and Estimations	9/21	
5	Quiz One Graphing/Analyzing Data	9/26	
	Graphing/Analyzing Data <b>(Meet in PC Lab)</b>	9/28	
6	Geometry Trigonometry Review	10/3	App K, L
	Engineering Solutions	10/5	Ch 3,4,9
7	No class Columbus Day	10/10	
	Engineering Solutions	10/12	
8	Material Balance	10/17	Ch 14
	Material Balance/ Quiz 2	10/19	
9	Statistics <b>(Meet in PC Lab)</b>	10/24	Ch 10,11
	Statistics	10/26	
10	<b>Teamwork</b>	<b>10/31</b>	Blackboard Handout
	Teamwork	<b>11/2</b>	Blackboard Handout
11	Introduction of Design Projects / Project Team Selection	11/7	
	Mechanics	11/9	Ch 12
12	Mechanics	11/14	
	Mechanics	11/16	Chap 13
13	Mechanics	11/21	
	Energy/Quiz 3		CH 15,16
14	Energy	11/28	
	Thanksgiving Recess	<b>11/30</b>	
15	Electrical Theory	12/5	CH 17
	Electrical Theory	12/7	
16	<b>PROJECT ORAL PRESENTATIONS</b>	12/12	
	<b>PROJECT ORAL PRESENTATIONS</b>	<b>12/14</b>	