

## ES 151 – Modern Engineering Analysis I Fall 2014 Syllabus

### Instructor

Dr. LeAnn Faidley

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SC 265

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### Meeting Times

Class: Tuesday 7:45-11:15 am in SC 214

Office Hours: by appointment at <http://wartburgsci.simplybook.me/>

### Course Description

This course teaches engineering analytic methods using various computational engineering tools to solve mathematical equations, gather, manipulate, and analyze data, and plot and present results. A half semester long design project introduces students to the design process and tools.

### Learning Outcomes

Upon completion of this class the student will be able to:

- Use a variety of computational engineering tools to help solve a variety of types of problems.
- Work as part of team to accomplish a variety of tasks including short term and long term assignments.
- Practice the skills necessary to learn new software tools with and without guidance.
- Describe various engineering disciplines.
- Understand how engineering can be used to help people in their everyday lives.
- Create a productive structure for an engineering design process.

### Resources

My.Wartburg:

- Lecture Notes – will be posted before class each week
- Activities – download for completion, submit completed work
- Grades – for assignments, attendance, exam, etc
- Project information
- Help Board – can be used to ask questions, find answers (from your peers and Dr. LeAnn), share resources, and give Dr. LeAnn feedback on the class
- Class Schedule, Syllabus, Announcements
- Other resources

### Learning and Assessment Exercises

#### Activities

Each class period will have several associated activities. Some of these may be group work and some will be individual. Some will be completed in class and others will be homework. These activities will primarily be associated with the two class projects.

#### Discipline Project

Each team will apply the computational tools discussed in this class to a 7 week project focused on an engineering discipline and several topics associated with that discipline.

## Online Tools Peer Lessons

Each group will develop a short lesson to teach their peers about an online tool that might be helpful as an Engineer. Your group will develop lecture slides, a demo, and a class activity for their peers to complete and will serve as resources as their peers learn to use the new application.

## Design Project

The final 6 weeks of this class will be dedicated to a small scale engineering design project. You will use an abbreviated six-sigma design process to develop, build, and test a modified preschool game for disabled children.

## Expectations

### Attendance and Participation:

You are expected to be present and participate in all meetings and activities of this class. These activities are designed to help you learn and your participation is crucial both to your own education and to that of your classmates. If you must miss class (illness, other school responsibility) you are expected to contact Dr. LeAnn **beforehand** to arrange to make up any lessons.

### Respect and Professionalism:

Act in a professional manner and show respect for yourself, your classmates, and your instructor by:

- Refraining from behavior that is disruptive, distracting, or otherwise hinders the learning of others.
- Interacting with others in a manner you would expect to see in a professional environment.
- Listening to other's opinions and responding in civil debate and with constructive criticism when you disagree.
- Taking responsibility for your own learning and that of your peers.
- Being timely in your attendance, assignments, and participation.

### Wartburg Honor Code: <http://www.wartburg.edu/academics/honorcode.html>

As a matter of personal commitment, students, faculty, and staff of Wartburg College are expected to demonstrate three simple principles:

- 1) All work submitted be your own.
- 2) When using the work or ideas of others, including fellow students, give full credit through accurate citations.
- 3) Maintain academic honesty both on examinations and class assignments.
- 4) If you are uncertain about the ground rules on a particular assignment, ask for clarification.

All are responsible for abiding by these guidelines and opposing academic dishonesty by reporting any act that goes against these guidelines.

## Grading

The standard grading scale is:

Peer Lesson	15 %	A	93 – 100%	D+	67 – 69.9%
Attendance & Participation	5 %	A-	90 – 92.9%	D	63 – 66.9%
Discipline Project	40 %	B+	87 – 89.9%	D-	60 – 62.9%
Design Project	40 %	B	83 – 86.9%	F	< 60%
		B-	80 – 82.9%		
		C+	77 – 79.9%		
		C	73 – 76.9%		
		C-	70 – 72.9%		

## Late Policy

Activities will be accepted up to 2 days late but the grade will be reduced 10% per day. Please contact Dr. LeAnn with an explanation if you know that your work will be late.

## Students with Special Needs

Wartburg College provides reasonable accommodations to qualified students with disabilities in order to provide them with equal access to class and course materials. If you have a documented disability please discuss reasonable accommodations with Kelly Beck at the Pathways Center and Dr. LeAnn as soon as possible.

## ES 151 Course Schedule

Date	Subject
9/9	Class Overview. Google Forms. Teams. Google Documents. Engineering Disciplines. Project Theme Selection.
9/16	Working with Non-Numerical Data in Excel. Database tools. Sorting. Filtering. Conditionals.
9/23	Measurements. Working with Numerical Data in Excel. Equations. Graphs.
9/30	** Engineering Aptitude Test. Team work time.
10/7	** Team Presentations: Other useful online tools. Wolfram Alpha. Etc.
10/14	Working with Word. References. Citations. Figures. Memo writing. Report writing.
10/21	Basics of Programing – Macros, Scratch
10/28	Design Project: Team Norming, Chartering, VoC, CTQ, QFD
11/4	Design Project: FA, Brainstorming, Prototyping, Decision Matrix
11/11	Design Project: DFMEA, Detailed Drawings, Fab Plan, BoM
11/18	Design Project: Fabrication
11/25	Design Project: Fabrication
12/2	Design Project: Testing
12/9	Design Project: Revising, Reporting
12/11 8-10	FINAL: Design Project Presentations

\*\* Dates may shift