# Title: Engineering Analysis Tools and Techniques (309A/B)

**Intended Grade levels**: 11-12

**Prerequisites**: Two years of high school algebra or MAT133 (community college level) or departmental approval.

**Length of course**: One year

**High School Credit**: ½ credit per semester

**University Credit**: 3 credit hours awarded by ASU. This requires early registration.

**Description:**
Learning the culture of engineering and the use of computer tools and computer modeling as applied to engineering analysis and design. This course will help students evaluate engineering as a career as well as prepare students to innovate in the invention process and in design. Equivalent to ECE 102 – approved by MCCC and is approved for credit transfer to ASU/ U of A and NAU.

**Book:** A Users Guide to Engineering, Esource, Prentice Hall, 2006. The instructor will supply electronic copies of the sections to be read.

**Course Objectives**: See ASU Syllabus

**Course Activities**: The course will meet five times a week during 6th period. The course will start M/W/F in the Lecture Hall and T/TH in Einstein 107. 107 will be the project room.
The locations and activities will change from time to time and will be announced in advance.

**Guest speakers**: A minimum of 1-2 guest speakers will appear a month on various topics in Engineering. The students are responsible for either taking notes or recording the speaker and will be given a gradable quiz on the speaker and the contents will be in the exam materials.

**Projects**: projects will be the heart of this course. You will be given tools to accomplish your projects and equations will be given in class to help do your planning. You will have four general projects a semester. A semester project will also be assigned by the end of August. Semester fall will involve rockets. Semester spring will involve robotics.

**Project Rules and Deliverables**

There are a number of submissions during the four weeks from your group. All projects will be in groups. Groups will rotate members each month (project). Your grade will be based on the deliverables, meeting dead lines, and the final presented project. You will also be graded by your group members as to your contribution and your ability to cooperate as a team member.

Tests will consist of written exams and on occasion oral exams. The oral exams are to prepare you for the final exam. See ASU syllabus.

**Course Outcomes and Development levels**: See ASU Syllabus

**Required materials**:

- A bound concept book for project ideas and work. (provided)
- A three ring binder for notes
- A notebook to turn in your project calculations and work. This should be a bound book that has small grid squares.

## Grading:

| | |
|---|---|
| **Tests** | **20%** |
| **4 projects** | **32% (8% each)** |
| **Semester project** | **28%** |
| **final written** | **10%** |
| **Oral Final** | **10%** |
| **Total** | **100%** |

**Grading Criteria** : See ASU Syllabus

**Due dates and Deadlines**: See ASU Syllabus

**Student Conduct**: See ASU Syllabus

**Syllabus Disclaimer**: See ASU Syllabus

## Projects - 4 week

| Date | Topic | Assignment (goal) |
|---|---|---|
| | | |
| August - September | Reverse engineering project | To draw a design of parts and function for your equipment |
| | | |
| September - October | Propulsion – potato mortar | Design a mortar that will propel a potato using air pressure (10-50 psig) and be able to hit or come near a target set a certain distance from the initial gun position. |
| | | |
| October – November | 2 stage Rocket propulsion that uses 80 Psig water to allow a maximum separation and flotation time of a second stage that has a parachute. | Points for separation and time of first stage in air. Points for maximum time that parachuted second stage stays in air. |
| | | |
| November | Rocket Competition at ASU | Multi school competition. |
| | | |
| November - December | Mindstorm robotics<br>Crash course in vex robotics | Goal to make the mindstorm to maneuver a simple course. |
| | Requires groups of 5-6 | |
| | | |

| | | |
|---|---|---|
| January - February | Vex robotics | Studenst will have robot program a predetermined course and perform certain actions. |
| Students who are successful will be asked to compete in Botball. | | |
| | | |
| February - March | Cad / solid works software | Design a 3 d model of a simple robotic design |
| | | |
| | | |
| March April | Build a robot for ASU competition. | TBA |
| | | |
| April – May | Roller coaster design | Goal to design a coaster design that will do a triple loop with a maximum speed. |
| | | |
| | **Semester Projects** | |
| **Options** | | Goal is to have a project to present to the ASU Engineering science fair |
| | | There will be quarterly ckecks and the due date is in March 11' |
| 1. Invent a solar product. | SRP project | |
| 2. produce a safety device for Alzheimer patients | MIT Project | |
| 3. Alternative Fuel for cars | SRP project | |
| 4. Bio Fuels for cars | | |
| 5.weather effects on photo efficiency | | |
| 6. Nanotechnology | | |
| 7. Turbine engine testing | | |
| | | |
| 8. Make a suggestion!!!! | | |
| | | |
| | | |

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Topics for lecture

Introduction to engineering
What is engineering
Engineering careers
Engineering disciplines
Basics of Engineering
Notebooks
Problem solving
Engineering analysis
Analysis Solutions
Design Methods
Problem solving
Modeling
Feasibility studies
Technical communications
Written and oral communication
Ethics

**FOUNTAIN HILLS UNIFIED SCHOOL DISTRICT #98**

# 2010-2011

**July**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 |

**August**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | [9] | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | ~~27~~ | 28 |
| 29 | 30 | 31 | | | | |

**September**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
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| 5 | (6) | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | ~~29~~ | 30 | | |

**October**

| S | M | T | W | T | F | S |
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| 3 | 4 | 5 | 6 | 7 | ~~8~~ | 9 |
| 10 | 11 | 12 | 13 | ~~14~~ | (15) | 16 |
| 17 | (18 | 19 | 20 | 21 | 22) | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | | | | | | |

**November**

| S | M | T | W | T | F | S |
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| 7 | 8 | 9 | 10 | (11) | 12 | 13 |
| 14 | 15 | 16 | 17 | 18 | ~~19~~ | 20 |
| 21 | 22 | 23 | ~~24~~ | (25 | 26) | 27 |
| 28 | 29 | 30 | | | | |

**December**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
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| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | ~~17~~ | 18 |
| 19 | (20 | 21 | 22 | 23 | 24) | 25 |
| 26 | (27 | 28 | 29 | 30 | 31) | |

**January**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
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| 2 | [3] | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | ~~14~~ | 15 |
| 16 | (17) | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

**February**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
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| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | ~~18~~ | 19 |
| 20 | (21) | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | | | | | |

**March**

| S | M | T | W | T | F | S |
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| 6 | 7 | 8 | 9 | ~~10~~ | (11) | 12 |
| 13 | (14 | 15 | 16 | 17 | 18) | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

**April**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | | | 1 | 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | (22) | 23 |
| 24 | 25 | 26 | ~~27~~ | 28 | 29 | 30 |

**May**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | [26 | 27] | 28 |
| 29 | 30 | 31 | | | | |

**June**

| S | M | T | W | T | F | S |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 26 | 27 | 28 | 29 | 30 | | |

## Schedule of Events

- July 29—New Teachers Arrive
- August 2-3—Returning Teachers Arrive (Optional)
- August 4—Mandatory Returning Teachers
- August 9—Students Return/Early Release
- August 27—Staff Development/Early Release
- September 6—Labor Day/No School
- September 29—Staff Development/Early Release
- October 8—End of First Quarter (44 Days)
- October 14—Parent/Teacher Conf./Early Release for K-8
- October 15—Parent/Teacher Conf./No School
- October 18-22– Fall Break/No School
- November 11—Veterans' Day/No School
- November 19– Staff Development/Early Release
- November 24—Early Release
- November 25 & 26—Thanksgiving/No School
- December 17—Early Release/ End of 2nd Quarter (41 Days)
- December 20-31—Winter Holiday
- January 3—Students Return
- January 14—Staff Development/Early Release
- January 17—MLK Holiday/No School
- February 18—Staff Development/Early Release
- February 21—Presidents' Day/No School
- March 4—End of 3rd Quarter (43 Days)
- March 10—Parent/Teacher Conf./Early Release for K-8
- March 11—Parent/Teacher Conf./No School
- March 14-18—Spring Break
- April 22—District Recess/No School
- April 27—Staff Development/Early Release
- May 26—Last Student Day/ Early Release/End of 4th Quarter (52 Days)
- May 27—Last Teacher Day

**180 Student Days**

☐ Starting/End Dates

○ No School

— Early Release

Underlined Dates—End of Quarter

**Early Release Times;**
McDowell Mountain—12:30 p.m.
Four Peaks—12:40 p.m.
FH Middle School—11:45 a.m.
FH High School—11:30 a.m.


**District Office**
16000 E. Palisades Blvd.
Fountain Hills, AZ 85268
Phone: 480-664-5000 Fax: 480-664-5099


McDowell Mountain—480-664-5200 Grades PreK-2 Start Time—8:45 a.m.-3:20 p.m.
AM KG—8:45 a.m.-11:35 a.m. PM KG—12:30 p.m.-3:20 p.m.
Four Peaks—480-664-5100 Grades 3-5 Start Time—8:55 a.m.-3:30 p.m.
Fountain Hills Middle School—480-664-5400 Grades 6-8 Start Time—7:45 a.m.-2:20 p.m.
Fountain Hills High School—480-664-5500 Grades 9-12 Start Time—7:30 a.m.-2:08 p.m.

**EGR 101, Engineering Studio I**
**3 credits, Fall 2008**
**Engineering Studio**

**3 sections of this course meet as follows:**
**SLN 80043:TTh 8:40-10:20**
**SLN 83462: 3:30-5:10**
**SLN 86020: 2:00-4:00 at DV**

**Course Coordinator:** Mark Henderson: mark.henderson@asu.edu; (480)727-1062
Dept. of Engineering, 7231 E Sonoran Arroyo Mall, Mesa, AZ 85212

**Total Instructional Team:** Prof. Mark Henderson, Santan 230E: mark.henderson@asu.edu
Prof. Pavlos Mikellides, Santan 235J: pavlos.mikellides@asu.edu
Prof. Chell Roberts, Santan 230C: chell.roberts@asu.edu
Mr. Sean Dengler, Peralta 109C: sean.dengler@asu.edu
Mr. Dan Zavaleta, DVHS: dzavaleta.dvh@tuhsd.k12.az.us
Office Hours as Posted and by Appointment

**Catalog Description:**
Introduction to engineering as a profession; problem solving; engineering professionalism; team dynamics; engineering communication. Project oriented instruction. Variable lecture and studio time. Fall semesters.

**Course Objectives**
1. Students are aware and excited about engineering as a career and are informed about the different engineering disciplines.
2. Students use proven academic success techniques.
3. Students understand and act consistently with the overlap between engineering professionalism, academic integrity and the basic conduct expected of students in the engineering program.
4. Students are able to use organized problem solving methods.
5. Students can work effectively in teams.
6. Students understand critical thinking as it is practiced in engineering design and modeling.
7. Students communicate information using graphs, charts, equations, tables and data in both written and oral reports.

**Texts and Readings:**
Jensen, J.N., *A User's Guide to Engineering, Esource*, Prentice Hall, 2006.
*Knovel Digital Library: http://www.knovel.com/knovel2/library/default.jsp*
Additional readings may be assigned

**Required materials:**
- Students will be required to purchase an engineering notebook from the department for this course ($20.00)
- Three-Ring Binder (1 inch)
- Blackboard site contains most documents including handouts, presentations, syllabus, course calendar, assignments, projects, assessment, rubrics and grade book.
- You are required to check your email at least once per day for communication about the course, assignments and changes.

**Prerequisites:** None
**Class Mode:** Studio

**Course Activities**

1. Course meets twice weekly for a 110-minute class scheduled in an engineering studio. Students work together to practice modeling and problem solving strategies and are regularly expected to deliver brief presentations on the results of these sessions.
2. Students work together in small teams during the course of the semester to carry out projects involving the production of a real artifact ("thing"). Students will write and present formal technical reports concerning these projects. There will be two projects:
    a. Air rocket
    b. Autonomous Sumo robot
3. Students use an engineering notebook for documentation of their project work and a separate notebook for class notes.
4. Course activities will include written and oral examination of course content.

**Course Outcomes and Developmental Levels**

Problem Solving – Level 1: Students can articulate the problem solving process by making explicit the steps taken to approach a problem
Professionalism – Level 1: Students exhibit professionally appropriate behavior patterns, appreciate engineering as a learned profession and possess daily success skills.
Engineering Practice – Level 1: Students are able to describe the essential elements of good engineering practice

**Grading**

Level of Effort: In terms of time commitment, this is a three credit hour course and you are expected to put in 6 hours of work per week on this course in addition to time in the classroom or more if that is what is needed to succeed.

Individual assignments as tests will receive a numerical grade. 90 to 100 is viewed as an "A". 80 to 89 is viewed as a "B", etc.

In order to earn a B or an A you must demonstrate a high standard of academic achievement in the assessed course activities. A high level of academic achievement includes exhibiting professional engineering behavior, being prepared for every class, turning in assignments on time, meeting the assignment and project specifications and requirements, and demonstrating a high degree of quality on class activities. You must miss no more than 4 class meetings. Making up missed course assessment activities (e.g. tests) is at the discretion of the instructional team.

In order to obtain a C or better in this course you must miss no more than 5 class meetings and demonstrate that you have achieved the three developmental levels listed above. Throughout the course you will receive feedback on your progress in meeting this requirement.

In order to obtain a D or better in this course you must

(a) Participate in your team on both projects. If you "blow off" your team, you will receive an "E" in this course:
(b) Miss no more than 6 class meetings.

Weight of assessed course activities in determining grades

| | |
|---|---|
| Non-project based assignments | 20% |

| | |
|---|---|
| Rocket Project including oral exam | 35% |
| Robot Project including oral exam | 35% |
| Class Participation as determined by instructional team | 10% |

Grading Criteria

| Achievement Standard | Grade Earned |
|---|---|
| Turn in all assignments and projects, miss no more than 4 class meetings, attain developmental levels, and score 90 or higher on numerical grades | A |
| Turn in all assignments and projects, miss no more than 4 class meetings, attain developmental levels, and score 80 or higher on numerical grades | B |
| Participate in your team on both projects, miss no more than 5 class meetings, and attain developmental levels. | C |
| Participate in your team on both projects and miss no more than 6 class meetings. | D |

Due Dates and Deadlines: Assignments in this course come in two forms: Non-project based assignments done as an individual and project assignments usually done as a team. We will rigidly enforce due dates for the Non-project based assignments. They will be due at the ***beginning of class*** on the posted due date. Late work will not be accepted on such assignments.

On project work, we expect at least 24 hours notice (via e-mail to mark.henderson@asu.edu) if it will be late. We will determine why it is late and *significant* penalties will be assigned to those team members who were responsible for the missed deadline. A grace period may be allowed, but the maximum will be 48 hours. Project work will not be accepted once the grace period has expired.

Students are expected to participate in the educational process and not be a disruptive element with regard to the learning of others. Sandals are not allowed in the studio. Wear closed-toed shoes. Cell phones, iPods and other audio or video devices are to be turned off during class and all headphones including Bluetooth earpieces, etc. must be stowed out of sight. No texting is allowed during class. If your cell phone rings by mistake, turn it off immediately. **Don't answer the call.** If you must take a call, then don't come to class. Laptops are to be shut at all times during verbal instruction unless specifically instructed otherwise. All laptop activity during times other than instruction is limited to course-related work. No email, computer games or superfluous web surfing are allowed in class. No food or drinks are to be visible when you are in the studio. Bottled water is an exception. Safety, self discipline and respect for others are necessary elements in the educational processes employed in this course. All students should be familiar with the Student Code of Conduct, which can be found at http://www.asu.edu/studentlife/judicial/.

Students are expected to execute all course assignments and activities in accordance with the University's Student Academic Integrity Policy (See General Catalog page 85 in the 2004-2005 General Catalog). Detailed information on the Academic Integrity Standard and the Student Code of Conduct can be found at <http://www.asu.edu/studentlife/judicial/integrity.html> and <http://www.asu.edu/aad/manuals/sta/sta104-01.html> . The main messages are "Don't Plagiarize" and turn in your own work.

Any students who need special needs or accommodations in this course are encouraged to communicate with me as soon as possible to make appropriate arrangements for these accommodations. The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. One element of this legislation requires that all qualified students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation please contact the Disability Resource Center at ASU Polytechnic located in Student Affairs Quad # 4 or call 480-727-1039 / TTY: 480-727-1009. Eligibility and documentation policies online: http://www.asu.edu/studentaffairs/ed/drc/

**Student conduct statement**

Students are required to adhere to the behavior standards listed in Arizona Board of Regents Policy Manual Chapter V – Campus and Student Affairs: Code of Conduct (http://www.abor.asu.edu/1_the_regents/policymanual/chap5/chapter_v.htm#C.%20CODE%20OF%20CONDUCT), ACD 125: Computer, Internet, and Electronic Communications (http://www.asu.edu/aad/manuals/acd/acd125.html), and the ASU Student Academic Integrity Policy (http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm).

Students are entitled to receive instruction free from interference by other members of the class. If a student is disruptive, an instructor may ask the student to stop the disruptive behavior and warn the student that such disruptive behavior can result in withdrawal from the course. An instructor may withdraw a student from a course when the student's behavior disrupts the educational process under USI 201-10 http://www.asu.edu/aad/manuals/usi/usi201-10.html.

**Syllabus disclaimer**

The instructor views the course syllabus as an educational contract between the instructor and students. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes face-to-face, via email or in the course site Announcements. Please remember to check your ASU email and the course site Announcements often.

Other student resources include:
Writing Center: http://www.asu.edu/duas/wcenter
Learning Resources Center: http://www.asu.edu/lrc
Counseling/Consultation: http://www.asu.edu/counseling_center

# EGR 101 Engineering Studio I

***Fall 2008***

| Class | Date | Topic | Assignment |
|---|---|---|---|
| | | | |
| 1 | 26-Aug | Intro faculty and students | Read Chap 1 and 2 |
| | | Intro to Engineering Program | Read pp. 78-84 |
| | | Classroom Operation (Sean) | Hopi Wind Assignment |
| | | Intro to EGR101 | |
| | | PBL: Hopi Wind (What Engineers Do) | |
| | | Team Formation Survey | |
| 2 | 28-Aug | Discuss Chaps 1, 2 (Discovering Engineering) | Buy Engineering Paper |
| | | Hopi Wind Wrap Up | Homework Set 1 |
| | | Problem Solving Format and Dimensions | Hopi Wind Plan |
| | | Assign Teams | |
| 3 | 2-Sep | Rocket PBL: goal is farthest dist. | Read Chap. 5 |
| | | build individual rockets | Problem 5.1,2,6 |
| | | test | |
| | | using experience, build team rocket | |
| | | compete | |
| | | | |
| 4 | 4-Sep | Deconstruct Rocket results | Rocket Project |
| | | What went right? | Rocket Plan - Due Sept. |
| | | What went wrong? | |
| | | What would you do next time? | |
| | | Report out | |
| | | Problem Solving in Engineering Chap 5 | |
| | | MS Project Overview | |
| | | Problem Definition - What do you need? | |
| | | Develop a Rocket Solving Plan | |
| | | | |
| 5 | 9-Sep | Rocket Modeling | Rocket Modeling Assignment |
| | | | Read Chap 8.1-2, 5 |
| | | | |

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|---|---|---|---|
| 6 | 11-Sep | Determining Rocket Parameters | Rocket Parameter Assignment Due 9/18 |
| | | Planning for Rocket Parameter Study | |
| | | Team Time | |
| 7 | 16-Sep | Precision and Accuracy (Chap 8.1-2) | |
| | | Begin Experimental Design, Variable selection | Experimental Design |
| 8 | 18-Sep | Rocket Modeling: Comparing Theory and Testing Data on Vo | |
| | | Project Time: Discussion of testing plan with mentor | |
| 9 | 23-Sep | Data Collection | |
| | | Time to prepare for build and test | |
| 10 | 25-Sep | Testing Time | Read Chap. 6 |
| 11 | 30-Sep | Chap 6: Engineering Analysis | Problems 8.1, 5, 6 |
| | | Testing Time | Problem 6.1,6,8,11 |
| 12 | 2-Oct | Finish Chap 6 | Read Chapter 14: Oral Presentations |
| | | Oral and Written Report Requirements | Read Written Report Guidelines on Blackboard |
| | | Testing Time | |
| 13 | 7-Oct | Rocket Competition Day | |
| 14 | 9-Oct | Rocket Project Presentations | |
| 15 | 14-Oct | Wire Robot Boards | |
| 16 | 16-Oct | Hand in Rocket Written Reports | |
| | | Assign New Teams | Read Chap. 9 |

| | | | |
|---|---|---|---|
| | | Hand out New Robot Project | |
| 17 | 21-Oct | | |
| | | Team Time for Robot Planning | |
| | | Wire Circuit Board | |
| | | Get Motors to work | |
| 18 | 23-Oct | Midterm exam | Read pp. 127-143 and 311-316 |
| | | | Problems 6.12 and 6.14 |
| 19 | 28-Oct | Engineering Problem Solving | |
| | | | |
| 20 | 30-Oct | Conservation of momentum and collisions | |
| | | | |
| | | | |
| 21 | 4-Nov | Torque, wheels, gearing, steering | |
| | | Team Time | |
| | | Hand Back Reports and Deconstruct Rocket Reports | |
| 22 | 6-Nov | Team Time | |
| | | | |
| | | | |
| 23 | 11-Nov | Holiday - No Class | |
| | | | Read Communication Guide |
| | | | |
| 24 | 13-Nov | Team Time | |
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| 25 | 18-Nov | First portfolio assignment - outcome on engineering practice | |
| | | met each team for formative assessment | |
| | | | |
| 26 | 20-Nov | Team Time | |
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| 27 | 25-Nov | Team Time | |
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| 28 | 2-Dec | Robot Tournament | |
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|---|---|---|---|
| 29 | 4-Dec | Robot Oral Presentation | |
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| | | | |
| 30 | 9-Dec | Course Wrap Up | |
| | | Course Evaluations | |
| | | Self Assessments | |
| | | | |