

**THE PENNSYLVANIA STATE UNIVERSITY
MONT ALTO CAMPUS
Fall 2009**

EDSGN 100 - Engineering Design and Graphics

Instructor: Dr. Khaled Amleh, Assistant Professor of Electrical Engineering

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Office location: 314 Sci/Tech. Building

Office Hours: WF 1:00 - 2:00 and MWF 4:00 - 5:00

Course title: EDSGN 100 "Engineering Design and Graphics"

Section: 002

Credits: 3

Class Meeting: MWF 2:00 - 3:50 in 313 Sci./Tech. Building

Text and Material:

- There is no textbook for this course. All necessary materials will be posted on Angel (<https://cms.psu.edu>). You will need your user ID and password to access the material.
- For the CAD-section, we will use SolidWorks, an industrial-strength solid-modeling computer program which is installed on all computers in the computer lab in the Bookstore Building and 313 Science/Technology Bldg.

Course Overview:

Welcome to the first-year engineering course, Introduction to Engineering Design! This is a design-driven curriculum with emphasis placed on skills such as: team work, communication skills (graphical, oral, and written), and computer-aided analysis tools. The curriculum will introduce you to the engineering approach to problem solving with strong references to basic science and math skills, as well as testing and evaluating design ideas by building working prototypes. The design projects are the total of 30 hours of in-class work (one third of the course).

Course Objectives:

- use the design process well in all the course projects, be able to extend the design process to general problem solving, and recognize the value of creativity in the engineering design process
- develop basic skills in 3-D solid modeling CAD (Computer-Aided Design)
- acquire 3D visualization skills to draw and communicate design ideas and concepts.
- operate well within a team, solve inter-team problems and develop communication skills.
- produce a website summarizing your EDSGN 100 project work.

Skills Acquired by Students in EDSGN 100:

- *Computing*: Solid Modeling/CAD (SolidWorks), PowerPoint (multimedia presentations), Matlab.
- *Internet Skills*: Creating a website, archiving design reports on the web servers.
- *Graphics*: multi-view, isometric, and oblique drawing; scales, dimensioning, section, working drawings, sketching and solid modeling.
- *Lab skills*: experimental methods, data acquisition and analysis, prototype building and testing.
- *Design Methods*: customer needs assessments, concept generation, design selection matrices, safety, cost effectiveness, presentations, teamwork, ethics.

Class Policies

The following are ground rules to help us maintain a steady progress through the semester:

- **Attendance**
 - Attendance will not be taken on regular basis, however, students are expected to attend all classes.
 - Lab attendance is mandatory. If you miss a lab, you will receive a zero for that lab experiment.
- **Assignments and Reports**
 - Assignments are mix of writing, projects, and oral presentations.
 - Throughout this course, you need to follow the Design Process and Report guidelines.
 - Assignments will be posted on Angel (<https://cms.psu.edu>) on weekly basis.
 - Assignments are due at the start of the class before the lecture begins. Late assignments will not be accepted.
 - Lab experiments will be completed during one lab session and the lab report will be due the following week at the beginning of the lab period.
 - Make up exams/homework are only permitted for extreme cases and must be supported by written documentation, such as a doctor's note.
 - It is the student's responsibility to get any missing notes or assignments. If you miss a class, make sure to contact me or some one else in class to get important information that you might have missed.
 - Assignment papers must be clean, easy to follow and stapled. Do not fold or rip from a spiral notebook.
 - Students are encouraged to work in groups to study. However, you have to submit your own original work.

- **General Conduct**

- Upon completion of your laboratory assignment, you will be expected to clean up your lab bench, put cables and other materials away, and turn off the instruments.
- The computers provided in the laboratory are for use with the assignment and/or to access copies of the laboratory assignments. These computers are not to be used to "surf the net" or for any other purposes.
- Food and drink are not allowed in the laboratory. Spills can lead to serious electrical shock and damage to equipment.
- All phones and any other electronic devices must be turned off during the class session.
- Courteous and mature behavior is expected. Inappropriate behavior towards other students or inappropriate comments will not be tolerated.

- **Contacts**

- I will keep in touch with you over the course of the semester through e-mail. Please check your e-mail, frequently.
- When sending me an email, make sure to use your PSU email account. I do not respond to emails from unidentified sources.
- Feel free to send me any comment or thought about the course. I will be glad to hear from you.

- **Academic Integrity**

Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and you are expected to act in accordance with this principle. Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others. The list of academic integrity violations includes cheating, copying on a test, plagiarism, acts of aiding or abetting, submitting previous work, tampering with work, ghosting, altering exams and computer theft of programs/ materials. An explicit list of examples of academic integrity violations is found at:

http://www.engr.psu.edu/Forms/AcademicIntegrity/precedent_students.pdf

This class will be expected to follow the academic integrity guidelines. Violations will be addressed using the steps outlined at

<http://www.engr.psu.edu/Forms/AcademicIntegrity/policies.pdf>

- **Disability Statement**

Students with disabilities who need accommodations in this course, should contact the instructor within the first week of classes. You may refer to the nondiscrimination policy in the Student Guide to University Policies and Rules.

Grading System

- There are no exams in this course. Your grade will depend on Homework assignments/lab reports and the final design project. Grades will be distributed as follows:

- All Homeworks 60%
- Design Project 40%

- Final letter grade will be assigned as follows:

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|----------|----|
| 94 – 100 | A |
| 90 – 93 | A- |
| 87 – 89 | B+ |
| 83 – 86 | B |
| 80 – 82 | B- |
| 75 – 79 | C+ |
| 70 – 74 | C |
| 60 – 69 | D |
| below 60 | F |

Schedule

The table below shows the topics covered on weekly basis.

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|---------|---|
| Week 1 | Introduction to Using Technology at PSU. Introduction to Library Search |
| Week 2 | Web Page Design |
| Week 3 | Web Page Design (continue) Introduction to Matlab |
| Week 4 | Introduction to Matlab (continue) Data analysis |
| Week 5 | Introduction to Electric Circuits |
| Week 6 | Lab 1: Elementary Measurements. Mechanical Behavior of Engineering Material |
| Week 7 | Lab 2: Strain Gage Applications Lab 3: Building a Wheatstone Bridge Circuit |
| Week 8 | Lab 4: Designing and Building a Prototype Design Documentation, Presentation, and Evaluation Introducing Final Design Project |
| Week 9 | Engineering Graphics Freehand sketching |
| Week 10 | Computer-Aided Design and Drafting (CAD) Modeling Parts in SolidWorks |
| Week 11 | Modeling Parts in SolidWorks (continue) Creating a working Drawings |
| Week 12 | Creating a working Drawings (continue) |
| Week 13 | Final Design Project |
| Week 14 | Final Design Project and Presentation |