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| **Course Syllabus** | |
| **Course Title** | **Engineering Skills** |
| **Course Number** | **640253** |
| **Credit Hours** | **3** |
| **Class Time** | 12.45 🡪 14.15 Monday & Wednesday; Room 6606 |
| **Instructor** | **Dr. Firas Obeidat** |
| **email** | [fobeidat@philadelphia.edu.jo](mailto:fobeidat@philadelphia.edu.jo) |
| **Prerequisites** | English II (130102) |
| **Text Book** | **Foundations of Engineering** by Holtzapple and Reece. 2nd edition 2003 |

**Course Description:**

This provides an introduction to engineering problem solving skills, engineering design, technical report writing, oral communication, engineering ethics, and project management.

**Course Objectives:**

* Teach the students how to define and problem and find appropriate solutions
* Introduce the students to engineering design
* Develop technical writing and presentation skills for the students
* Raise the students awareness about engineering ethics
* Help the student to manage simple projects

**Student Learning Outcomes**

At the end of the course, students should be able to

**Knowledge and Understanding**

* Define engineering
* Understand the engineering system design process
* Be familiar with engineering ethics

**Intellectual Skills**

* Compare different solutions
* Design engineering solutions

**Professional and Practical Skills**

* Investigate simple engineering problems
* Criticize simple engineering systems

**Communication Skills**

* Write reports
* Discuss problems
* Deliver oral presentation
* Manage simple project
* Work in groups

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| **Course Academic Calendar** | | |
| **Week** | **Subject** | **Notes** |
| **Oct 16** | **Introduction to Engineering**  Definition and History, Engineering Disciplines, Successful Engineering Skills |  |
| **Oct 23** | **Problem Solving**  Types of Problems, Problem Solving Skills, Problem Solving Procedure |  |
| **Oct 30** | Estimation, Creativity |  |
| **Nov 6** | **Introduction to Design**  Design Method Steps, Problem Definition, Solution Search | Define Problem |
| **Nov 13** | Analysis, Implementation, Evaluation, Examples |  |
| **Exam I (Nov 16 - 24)** | | |
| **Nov 20** | **Communication I: Technical Reading** |  |
| **Nov 27** | **Communication II: Technical Writing.**  Engineering Documents, Main Sections in Technical Reports |  |
| **Dec 4** | Common Mistakes, Building Better Sentences, Constructing Powerful Paragraphs | Final Design |
| **Dec 11** | Format, Punctuation, Grammar, and Action Verbs |  |
| **Dec 18** | **Communication III: Oral Presentation**  Preparation and Structure, Visuals, Voice Quality, Body Language | Report Due |
| **Exam II (Dec 21 – Jan 2)** | | |
| **Dec 25** | **Engineering Ethics and Responsibility**  Interaction rules, moral theories, guidelines, responsibility |  |
| **Jan 1** | **Project Management**  Skills, CPM, Gantt Chart, Team Building, Leadership |  |
| **Jan 8** | **Student Projects Discussions** |  |
| **Jan 15** | **Student Projects Discussion** |  |
| **Jan 22** | Case Study: Moon Landing |  |
| **FINAL EXAMS (Jan 28 – Feb 5)** | | |

**Assessment Instruments**

Evaluation of students’ performance (final grade) will be based on the following three categories:

* **Exams**. Two in-class exams will be given. Each will cover about five-weeks of lectures
* **Quizzes**. Two quizzes will be given to the students. They will cover one or two lectures and will be used as bonus to the exam’s grades
* **Project**. A project assignment will be handed to the students. The assignment will ask the students to solve a specific engineering problem. Students will be asked to write a technical report and present their work to the class. A group of three students are expected to work on the project.
* **Final Exam**: The final exam will cover all the class material.

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| **Allocation of Marks** | |
| Exam I | 20% |
| Exam II | 20% |
| Project | 20% |
| Final Exam | 40% |

**References**

* Engineering by Design by Gerard, Voland. Prentice Hall 2004
* Introduction to Engineering Communication by Hillary Hart. Pearson Education 2005