



GE106

Introduction to Engineering Design

College of Engineering

King Saud University

Lecture 1.

Course Introduction

FALL 2022



This course



Information

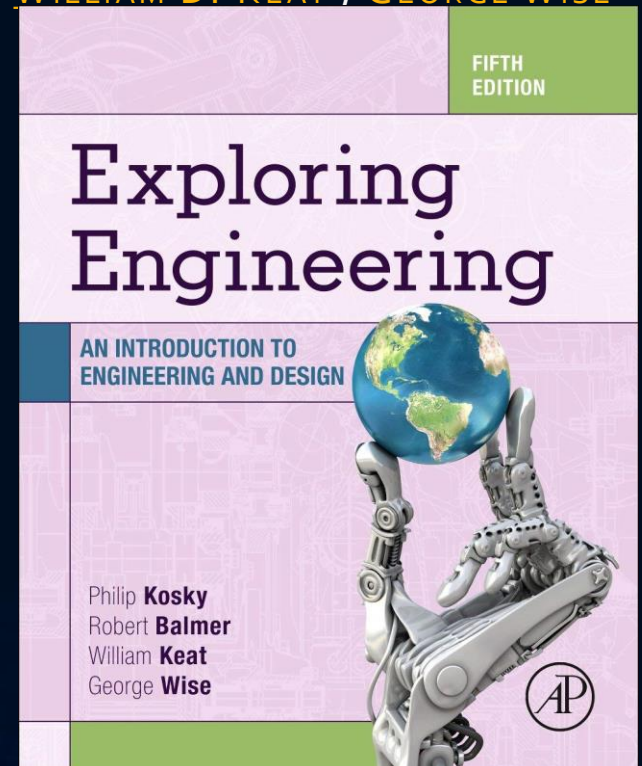
- Credits: 3(2,1,2)
- Prerequisites: GE-104
- Number of Sections: ~12
- Given By: ~10 Professors
- Your Instructor: Dr. Ahmed M. El-Sherbeeny
- Meetings
 - Lecture : Sunday 8:00-10:20 am
 - Tutorial : Tuesdays 9:15-10:20 am
 - Studio : Sunday 8:00-10:20 am

SUGGESTED BOOK

EXPLORING ENGINEERING:
AN INTRODUCTION TO ENGINEERING
AND DESIGN (FIFTH EDITION)

BY:

PHILIP KOSKY , ROBERT T. BALMER ,
WILLIAM D. KEAT , GEORGE WISE



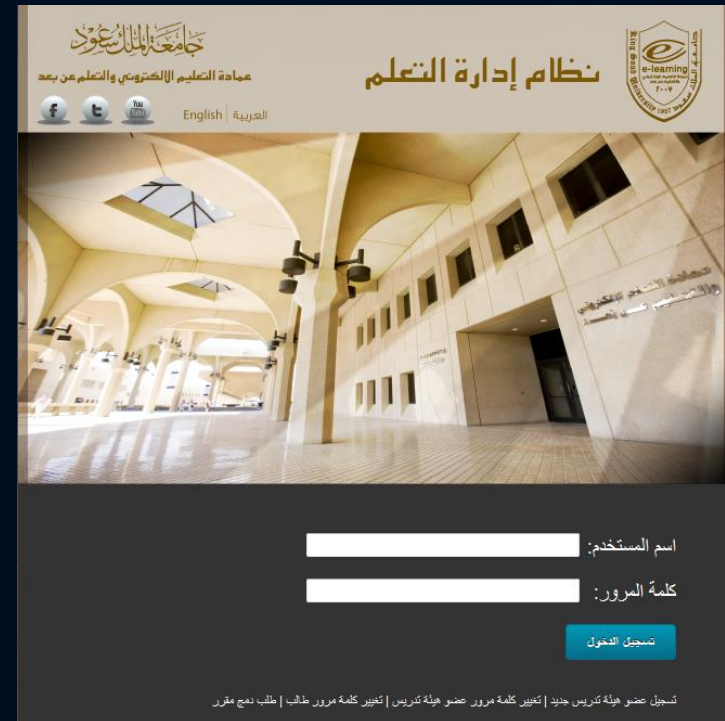
Lecturing Styles Used

- **Lecture** : “Normal” Classes
- **Studios**: Design project
classroom activities
practicing various skills
intensive discussions
group dynamics
- **Tutorials**: Help with homework
assignments and exams
Solving problems



Sources of Assistance

- Your Instructor
 - Office number: **2A128/1**
 - Office hours: posted
 - Email: **aelsherbeeny@ksu.edu.sa**
- Your teaching assistant
- Lectures slides
- Studios slides
- Course materials on website (<http://faculty.ksu.edu.sa/en/aelshebeeny>)
- Your textbook
- Prince Salman Library
- Internet

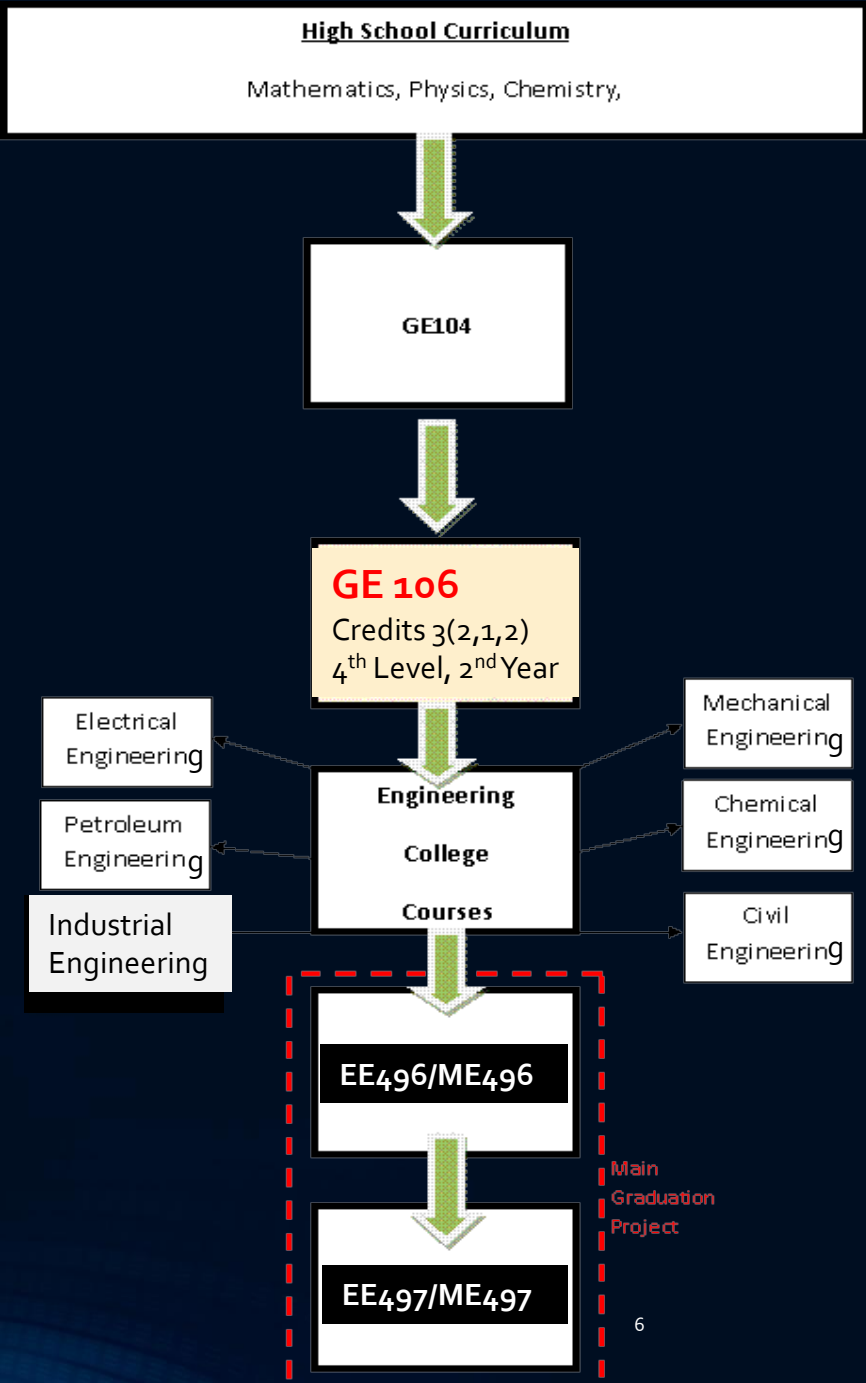


Relation to Other Courses

Engineering Specializations requiring GE106:

- Mechanical Engineering
- Electrical Engineering
- Petroleum and Gas Engineering
- Civil Engineering
- Chemical Engineering
- Industrial Engineering

GE106 provides the basics for the final year project and gives the necessary skills for an engineering student



Course Objectives

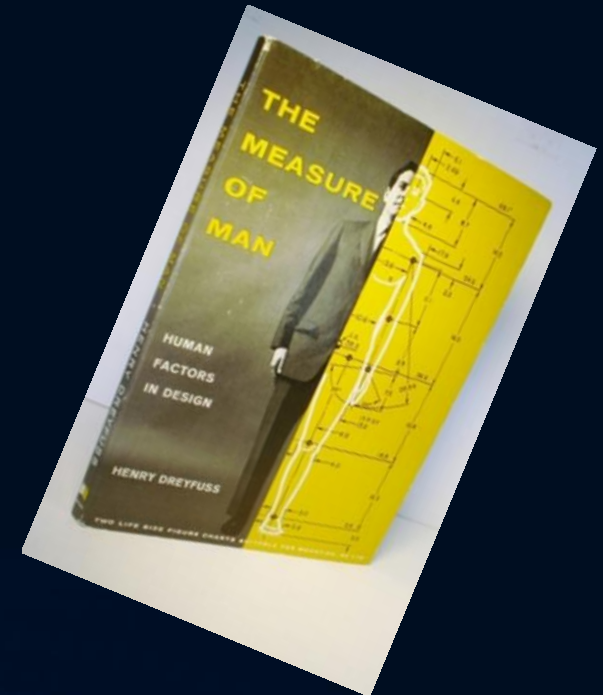
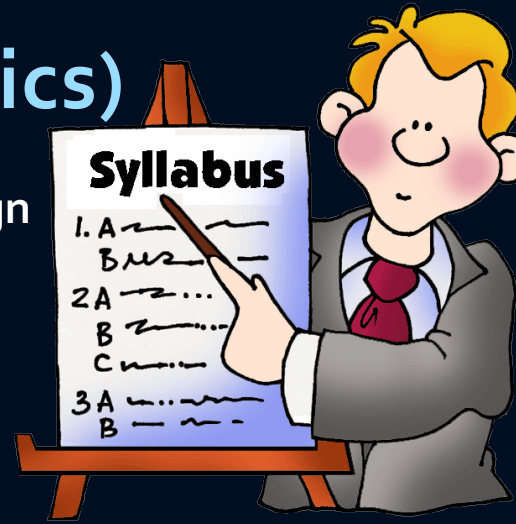
- **Formally Expose** students to the engineering field
- Grasp the values of professionalism, ethics, safety, intellectual property, environment, and human factors



- Introduce the design process, problem-solving skills, and practices dealing with open-ended problems
- Enforce the skills in teamwork, group dynamics, critical thinking, planning, scheduling, and written/oral communications through the design project

Course Outline (Topics)

- An Overview of Engineering Design
- The Engineering Profession
- Engineering Need Analysis
- Problem Formulation
- Creativity in Design : Thinking Outside the box
- Concept Generation and Evaluation
- Human Factors Engineering
- Intellectual Property – Legal Factors
- Engineering Ethics



Learning Outcomes (1. Knowledge)

- Ability to use the engineering design process to carry out a project
- Ability to prepare a need-assessment, define and formulate the problem, consider the problem constraints, and specify a deliverable for a project
- Ability to solve open-ended design problems, cope with decision making and satisfy competing objectives
- Ability to synthesize gathered information to solve open-ended problems
- Ability to conceptualize alternative concepts, evaluate and select preferred alternative, and implement the preferred design using engineering tools
- Understand the importance of professional and ethical responsibility
- Understand ethics, environmental and legal issues



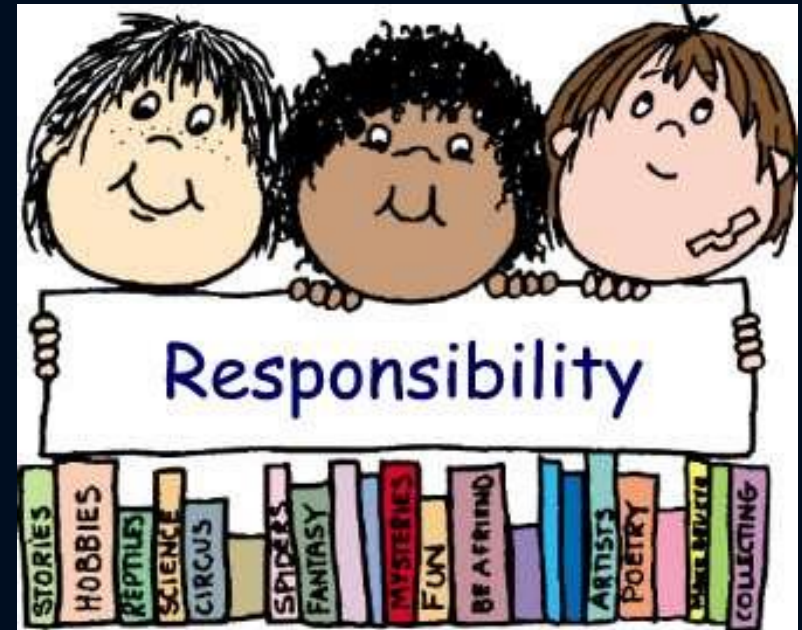
Learning Outcomes (2. Cognitive Skills)

- Ability to apply design heuristic of recognition of the problem, problem definition, design criteria, and design constraints
- Ability to apply creative techniques to generate alternative solutions (concepts)
- Ability to apply procedures to evaluate the solutions and select the "best" solution, decide on a course of action and implement the selected solution
- Ability to synthesize and critically judge the relevant gathered information to solve open-ended problems
- Ability to exercise professional and ethical responsibility in carrying out the design project
- Ability to consider human factors and legal factors in the design problems



Learning Outcomes (3. Interpersonal Skills)

- Ability to take the responsibility to solve given assignments on your own and submit the solution on time.
- Ability to engage and work effectively in teams with full group interaction during the work on the design project, exercise full responsibility in holding team meetings, distributing tasks, leadership and team dynamics



- Ability to manage the time between self study, solving assignments, carrying out the design project activities, and submitting project reports
- Ability to find out the proper action when confronted with engineering ethical problems

Grading

- **Classwork:** 15%
- **Tutorial :** 10%
- **Design Project:** 35%
 - *Presentation 15%*
 - *Report 10%*
 - *Poster 5%*
 - *Logbook 5%*
- **Final Exam:** 40%
- **Total** 100%



Work Hard and
Enjoy the Course

Required From Students

- Attendance **ON TIME!!!**
- Assignments submitted on time
- **Contributing to all open classroom discussions**
- Quizzes
- Design Project
 - Studios
 - Teamwork
 - Meeting Logs Retention (*logbook*)
 - Project Report
 - Joint Presentation
- Final Exam

Produce Results Not Excuses!