DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2020

EG1600 (A3): Introduction to Engineering Profession, Design and Communication – 2 (1-0-3) UT
60 Hours 15 Weeks

INSTRUCTOR: Tanvir Sadiq, Ph.D., P.Eng.
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OFFICE HOURS: TBA or by Appointment

CALENDAR DESCRIPTION: 'Introduction to the engineering disciplines; fundamental design process; team work; communications; career fields; professional responsibilities of the engineer including elements of ethics, equity, concepts of sustainable development and environmental stewardship, public and worker safety and health considerations including the context of the Alberta Occupational Health and Safety Act
Note: Restricted to qualified students in the University Transfer Engineering Program.'

PREREQUISITE(S)/COREQUISITE:

EN1990 or Consent of Instructor

REQUIRED TEXT/RESOURCE MATERIALS:

There is no required text. Notes and some resource material will be provided.

DELIVERY MODE(S): Lectures, Labs, Online

COURSE OBJECTIVES:

This course is structured around two components:

A. Professional Skills and

B. Engineering Design and Communication.

1. The objective of the Professional skills component is to familiarize first-year students with the purposes of engineering, boundary conditions, codes of ethics and sustainability, regulatory requirements, and key principles of communication, creativity, teamwork and project management.
2. The objective of the Engineering Design component includes such elements of the general design process and design stages with special emphasis on planning, customer needs, concept generation and selection, analysis for decision-making, design states, engineering tools, and design examples from various disciplines.
3. The objective of the Communication component is to introduce students to various technical drawing and sketching tools and technical writing.

LEARNING OUTCOMES:

1.Professional skills:

- **Describe** the concept of engineering profession and required *professional skills and attitudes*;
- **Demonstrat**e ethical and professional behavior and basic awareness of engineering codes of ethics, sustainability and impact of engineering solutions on environment;
- **Explain** the safety requirements necessary to work with teaching equipment in the makerspace and machine shop.

2.Engineering design and communication skills:

- **Describe** the engineering design fundamentals and the concept of transdisciplinarity and **appreciate** the roles of different disciplines in the multi-disciplinary engineering projects;
- **Describe** the design products and general design activities in different engineering disciplines;
- **Identify** and **distinguish** different components and systems of various products and **explain** differences between those components;
- **Describe** the general design process and **apply** it to an open-ended problem in a term project:
- **Appreciate** the forms of graphical communication used in different engineering disciplines: piping and instrumental diagrams, process flow diagrams, blue prints, electrical schematics, floor plans, etc.;
- **Demonstrate** communication skills by creating reports utilizing appropriate media.
- **Describe** the key principles of effective team functioning and **demonstrate** professionalism, teamwork and time management skills while working in teams on a term project. (Execute the planning and facilitation of effective meetings, practice conflict negotiation and resolution);
- **Recognize** the value of taking risks and learning from failure.

EVALUATIONS: This is a Pass/Fail Course. Students need minimum 65% marks to pass.

Professional skills – 30 marks	12+1 videos & 4 chapters	24 (2 each) marks (pass/fail)
	12 Quizzes + exercise(s)	
	3 Forum Participations (min 100 words)	6 (2 each) marks
Engineering Design & Communication – 70 marks	Self-Assessment	5 marks
	2 Team assessments	10 (5 each) marks
	Video report: ▪ Creativity – 5 ▪ Relevance – 5 ▪ Clarity – 5 ▪ Efficiency – 5 ▪ Requirements fulfilled – 5 ▪ Makerspace utilized – 5	30 marks *Based on Group Marks*
	Technical report	15 marks
	Design sketch/drawing	10 marks
Total:		**100 marks**

Note: video report, technical report, online videos and quizzes are mandatory.

TRANSFERABILITY:

UA, Augustana, GMU

STUDENT RESPONSIBILITIES:

Much of the course content will be structured around the term project, which requires students to apply the knowledge from online material and in-class lectures. The project will focus a lot on the first 2 stages of the design process that students will learn in class – Planning (Problem Definition) & Concept Development. It also requires basic analysis, creative and innovative approach, and utilization an appropriate forum such as makerspace/engineering garage, where they can experiment and prototype.

Students are expected to work in groups of 2-4 people and recognize the importance of teamwork. They will apply the knowledge from online material and in-class lectures to define, plan and develop their projects. Project will also require basic analysis, creative and innovative approach, and utilization an appropriate forum where students can experiment and prototype.

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at https://www.gprc.ab.ca/about/administration/policies
**Note: all Academic and Administrative policies are available on the same page.