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Introduction

Chapter Overview

In the past few decades, there has been an evolution in the practice of engineering. Increasingly powerful computational tools have eliminated the tedium of manual calculations, allowing recent graduates to step directly into tasks traditionally reserved for experienced engineers. Cross-cultural sensitivity is becoming increasingly important as the profession of engineering becomes more globalized, and there is an increasing recognition for the societal and environmental impacts of engineering activities. Despite these changes, the purpose of engineering remains unchanged: to apply knowledge and expertise, often of a technical nature, for the benefit of people, society, and the planet.

At its core, engineering is a social profession. Whereas engineering education in universities is often focused on the technical aspect of engineering, a successful practicing engineer must also build competencies in the areas of people, communication, and projects. This is what you will learn from this book.

In reading this book, you will imagine that you are a recent graduate of an engineering program hired by the Brunel Group, a fictitious engineering consulting firm, and you are attending a mentoring program led by experienced engineers. The chapters are organized into three perspectives: people, communication, and projects. Each chapter corresponds to one meeting of the mentor program focused on one topic. In this way, not only will you build the competencies you need to be successful in this profession, you will also get a glimpse of the career before embarking on this path.

Learning Objectives

In this chapter, you will:

- be introduced to the Brunel Group, a fictitious engineering firm;
- familiarize yourself with a list of engineering graduate attributes and start thinking about how best to acquire them;
- discover the importance of developing not only technical skills, but personal, communication, and management skills in order to excel as a professional engineer; and
- recognize that learning continues long after you graduate.

Graduate Attributes

Engineers Canada

- A knowledge base for engineering
- Problem analysis
- Investigation
- Design
- Use of engineering tools
- Individual and team work
- Communication skills
- Professionalism
- Ethics and equity
- Impact of engineering on society and on the environment
- Lifelong learning
- Economics and project management

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- An ability to apply knowledge of mathematics, science, and engineering
- An ability to identify, formulate, and solve engineering problems
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic
- constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- An ability to function on multidisciplinary teams
- An ability to communicate effectively
- An understanding of professional and ethical
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

- A knowledge of contemporary issues
- A recognition of the need for lifelong learning and an ability to engage in those projects