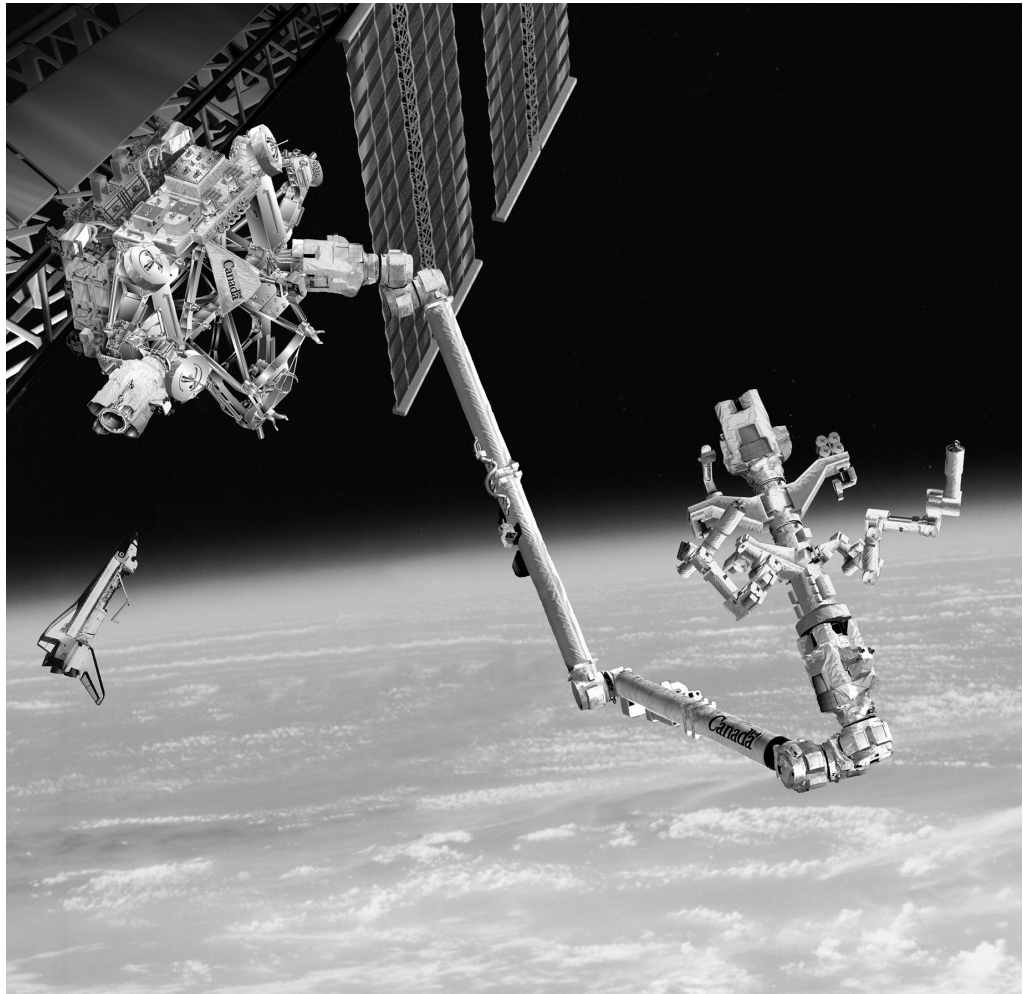


# Part I

## The Engineering Profession



**Figure I.1** Design of the Canadarm and Canadarm2 required expertise in several engineering disciplines: materials, structures, robotics, electronics, control systems, computers, and software. The Canadarm is listed among the five most significant Canadian engineering achievements of the 20th century. This is an artist's rendering of the mobile servicing system, which includes the Canadarm2 and other elements. (Courtesy of MD Robotics)

By choosing engineering, you have taken the first step toward a challenging and rewarding profession. In future years you will share the great sense of personal achievement that is typical of engineering, as your ideas move from the design office or computer lab to the production line or construction site. This book is intended to acquaint future engineers with many basic engineering concepts. However, in passing along this basic information, we hope that the excitement and creativity of engineering also show through.

Part I introduces the reader to the engineering profession.

- Chapter 1** **An introduction to engineering:** Most people know that engineers wear iron rings, but how is engineering defined, exactly? This chapter gives you a working definition of engineering and explains the difference between engineers and other technical specialists, such as research scientists, technicians, and technologists.
- Chapter 2** **The licensed professional engineer:** An engineering education is not just a set of related university courses; it is the entry point to a legally recognized profession with strict requirements for admission, a code of ethics, and professional regulations. This chapter tells you how the engineering profession is organized and how you get into it.
- Chapter 3** **Engineering ethics:** The public expects all professional people to be honest, reliable, and ethical. How does the public expectation apply to engineering? This chapter describes the code of ethics, how it applies to typical engineering practice, the proper use of the engineer's seal, and the significance of the iron ring.
- Chapter 4** **Engineering societies:** Engineering societies help you by publishing technical papers, organizing conferences and engineering contests, and by presenting short courses. Such assistance is very useful to engineering undergraduates, but it is even more important after you graduate. This chapter explains the role of engineering societies and describes several societies that may be of interest to you.
- Chapter 5** **Advice on studying and exams:** You are investing a lot of time and money in your engineering education. Would you like to protect this investment? If you can master the fundamental advice in this chapter, you should be able to guarantee academic success and still have enough free time to enjoy the many other interesting aspects of university life.