# Preface

Programmed machine tools now represent nearly 100 percent of manufacturing and, of greater impact to you, of new jobs. *Entry-level people usually start in the shop as CNC operators.* Flexible and friendly, the machines and programming systems are so quick and easy to learn that they are now practical even for one-of-a-kind work such as mold making and die work, as well as production. *Schools integrate and teach CNC as an entry-level subject—starting from the first lesson on the first day.*

This book was specifically written to serve this type of modern student. To do so, subjects have been grouped into four large career partitions:

## Part 1 Introduction to Manufacturing

Manufacturing is a world of its own. Chapters 1 through 8 are designed to open the door. They provide the background needed to fit into the shop, to understand the rules, to read and interpret the drawings, to be comfortable with extreme accuracy, and especially to be safe.

## Part 2 Introduction to Machining

Chapters 9 through 16 teach how to cut metal the right way. These lessons assume that you'll eventually perform them on CNC equipment, but will probably practice first on manually operated machines because they are a simple, safe place to learn setups and operations.

## Part 3 Introduction to CNC

Now we get to the text core: how to apply Parts 1 and 2 to setting up, programming, and running CNC machine tools. In Chapters 17 through 24, we will learn how to professionally manage a CNC world. Because they move at lightning speed with lots of power behind them, safety must be integrated into everything we study.

## Part 4 Advanced and Advancing Technology

Chapters 25 through 29 set the tone for your career after graduation. The best is yet to come, so let's get started!

So, many thanks to those who are using my book to start your manufacturing careers. It's an honor to be your instructor. Here's what I can pass on about our trade.

## The Third Edition has been revised to include a number of new features:

- **New Chapters on Mastercam and SolidWorks**
- **Access to Mastercam Version X6 and SolidWorks** A free version of Mastercam Version X6 is available on the Student DVD that is packaged with this textbook. New for this edition: instructors can grant an access code to download the latest version of Solidworks student version. After a brief introduction in the text, students go to the Online Learning Center at **http://www.mhhe.com/fitzpatrick3e** for a step-by-step lesson in designing solids for CNC programs.

    Connecting that lesson, they can then install a version of Mastercam X to create the same solid in MC-X then write CNC code based upon it. The Solid-Works code will be housed on the password-protected Instructor's Side of the Online Learning Center for *Machining* (**www.mhhe.com/fitzpatrick3e).**
- **An index to help you map this book to any national machining standard** Recognizing the growing trend toward standardized instruction, this textbook is now skill mapped and indexed to help fit it to any national machining standard. The full index can be found on the Online Learning Center at **www.mhhe.com/fitzpatrick3e,** and the three-digit codes will help you cross-reference the index with the material in the book. A **glossary of terms** can also be found on the Online Learning Center.
- **Made Right Here Chapter-Opening Profiles** Where might your student's careers be going? Many fine companies discuss their unique products and own brand of success. Offered to encourage career choices in manufacturing, they highlight that the trade is alive and well right here!
- **Two new interactive chapter features** There have been many advances in mobile technology since the

last edition, and this new textbook incorporates many of them. Students can now use their mobile devices to view interesting websites, videos, and articles when they scan the special codes at the back of the book. Think of these **Xcursions** as a virtual field trip of

material that will enhance their understanding of the text. In addition, students can quiz themselves on the vocabulary of each chapter using their mobile devices. Just scan the special code at the end of the chapter to access the **Terms Toolbox Challenge.**