PREFACE

Metallurgy Fundamentals provides instruction and information on the basic principles of metallurgy. A knowledge of these principles is invaluable to any person who plans to deal with metals as a future career. *Metallurgy Fundamentals* emphasizes the practical aspects of metallurgy. It explores the behavior of metals subjected to metallurgical processes. It explains why certain material properties are desired and how these properties are attained.

Metallurgy Fundamentals describes common industrial processes, so that you can confidently discuss the processing of metals with others in the field. These processes are explained in clear, simple terms for easier understanding. *Metallurgy Fundamentals* speaks to the reader in down-to-earth language, rather than highly theoretical terms. In many cases, diagrams are used instead of lengthy descriptions and practical examples are given instead of abstract theories.

The section on nonferrous metallurgy discusses the processes used to create nonferrous metals, as well as the modern uses of nonferrous alloys. The coverage includes a chapter devoted to titanium, content concerning low- and high-density nonferrous metals, a chapter discussing superalloys and refractory metals, and a chapter devoted to noble and rare earth metals.

Metallurgy Fundamentals is written for those who want to learn the "basics," for those who want to explore the behavior of metals, and for those who want a broad knowledge of the entire field of metallurgy.

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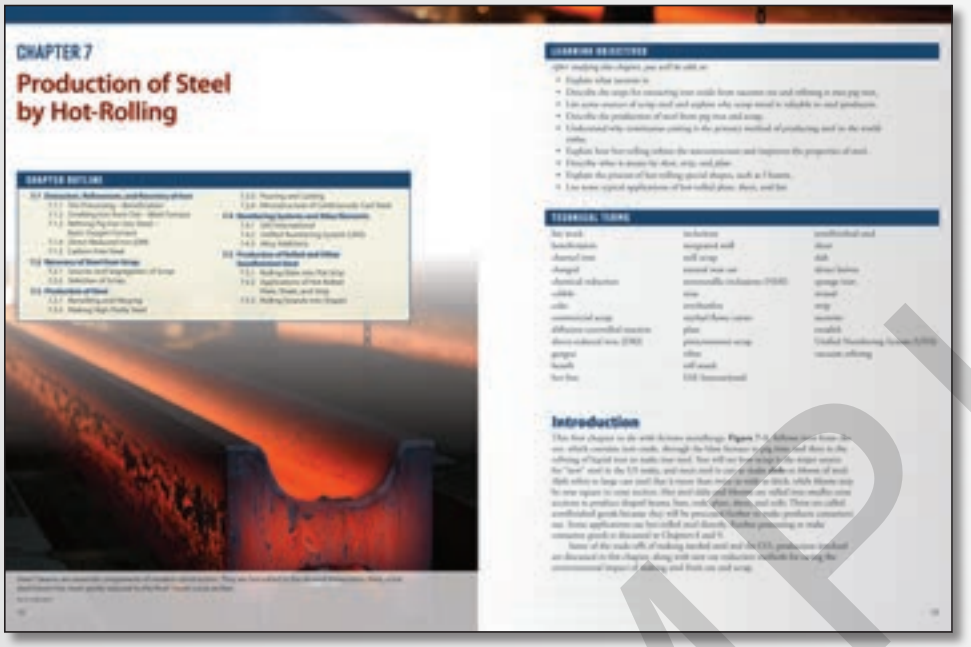
NEW TO THIS EDITION

This edition of *Metallurgy Fundamentals* features new and updated content, as well as a new arrangement of Chapters 4–6 to better suit classroom and lab learning. The new arrangement covers mechanical properties and testing first, followed by the underlying microscopic, physical, and chemical properties. An available new lab manual and online instructional videos further enhance this new edition.

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Features of the Textbook

The instructional design of this textbook includes student-focused learning tools to help you succeed. This visual guide highlights these features.



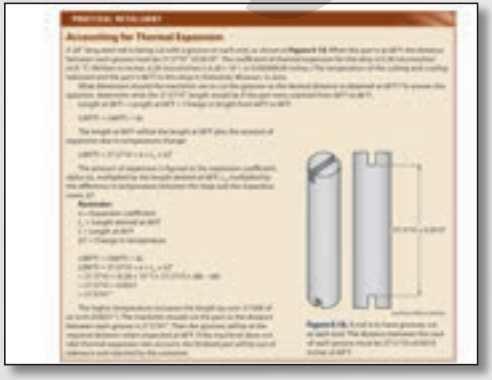
Chapter Opening Materials

Each chapter opener contains a chapter outline, a list of learning objectives, and a list of technical terms. The **Chapter Outline** summarizes the topics that will be covered in the chapter. **Learning Objectives** clearly identify the knowledge and skills to be gained when the chapter is completed. **Technical Terms** are the key words to be learned in the chapter. An **Introduction** provides an overview and preview of the chapter content.



Additional Features

Additional features are used throughout the body of each chapter to further learning and knowledge. **Safety Note** features alert you to potentially dangerous materials and practices. **Practical Metallurgy** features demonstrate how metallurgical knowledge applies to everyday jobs and situations. **Did You Know?** features provide high-interest facts related to main topics. **Sustainable Metallurgy** features discuss advances in metal work and manufacturing that increase efficiency and lessen the impact on the environment.







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Illustrations

Illustrations have been designed to clearly and simply communicate the specific topic. Illustrations have been updated for this edition. Photographic images have been updated to show the latest equipment and practices.



End-of-Chapter Content

End-of-chapter material provides an opportunity for review and application of concepts. A concise **Summary** provides an additional review tool and reinforces key learning objectives, which helps you focus on important concepts presented in the text. **Know and Understand** questions enable you to demonstrate knowledge, identification, and comprehension of chapter material. **Apply and Analyze** questions extend learning and develop your abilities to use learned material in new situations and to break down material into its component parts. **Critical Thinking** questions develop higher-order thinking and problem-solving, personal, and workplace skills.



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TOOLS FOR STUDENT AND INSTRUCTOR SUCCESS

Student Tools

Student Text



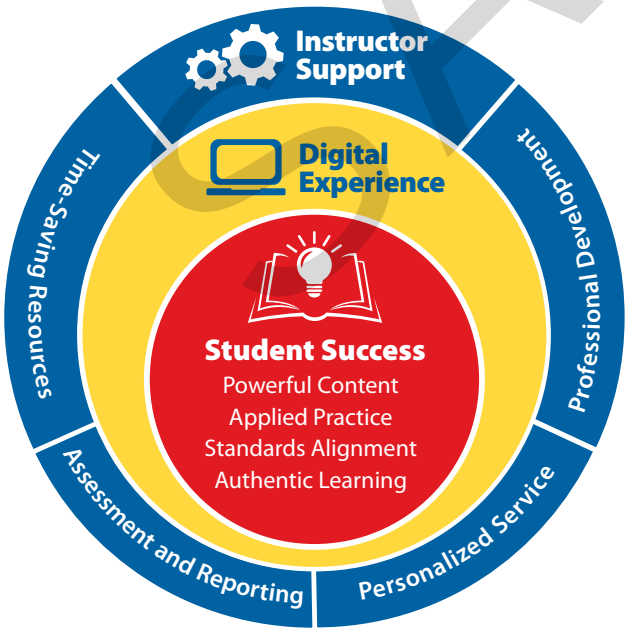
Metallurgy Fundamentals is a comprehensive text that focuses on the information, techniques, processes, and procedures used by professionals in metalworking industries.

Lab Manual

- Hands-on practice includes activities and questions.
- Projects offer students opportunities to test and work with metals themselves in a controlled environment.

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See www.g-w.com/metallurgy-fundamentals-2025 for a list of all available resources.

Professional Development

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