



J.M. Galvin

Ground Engineering - Principles and Practices for Underground Coal Mining

- Provides a comprehensive coverage of ground engineering principles within a risk management framework
- Features a large variety of examples that show good and poor mining situations in order to demonstrate the application of the established principles in practice
- Ideal for students and practitioners

This book teaches readers ground engineering principles and related mining and risk management practices associated with underground coal mining. It establishes the basic elements of risk management and the fundamental principles of ground behaviour and then applies these to the essential building blocks of any underground coal mining system, comprising excavations, pillars, and interactions between workings.

Readers will also learn about types of ground support and reinforcement systems and their operating mechanisms. These elements provide the platform whereby the principles can be applied to mining practice and risk management, directed primarily to bord and pillar mining, pillar extraction, longwall mining, sub-surface and surface subsidence, and operational hazards.

The text concludes by presenting the framework of risk-based ground control management systems for achieving safe workplaces and efficient mining operations. In addition, a comprehensive reference list provides additional sources of information on the subject. Throughout, a large variety of examples show good and poor mining situations in order to demonstrate the application, or absence, of the established principles in practice.

Written by an expert in underground coal mining and risk management, this book will help students and practitioners gain a deep understanding of the basic principles behind designing and conducting mining operations that are safe, efficient, and economically viable.

Contents: 1. Scope of ground engineering; 2. Fundamental principles for ground engineering 3. Excavation mechanics; 4. Pillar systems; 5. Interaction between workings; 6. Support and reinforcement systems; 7. Ground support design; 8. Pillar extraction; 9. Longwall mining; 10. Overburden subsidence; 11. Operational hazards; 12. Managing risk in ground engineering; Appendices

1st ed. 2016, X, 713 p. 411 illus., 336 illus. in color.

SPECIAL BOOK LAUNCH DISCOUNT
\$75.00 for hardcover version when purchased via the UNSW Bookshop

Email: orders@bookshop.unsw.edu.au

How to purchase your discount copy:

► **At the book launch on April 12**
Pre-order your copy to ensure you have one on the night

If you can't make the launch event you can still take advantage of the special price by ordering from the UNSW bookshop **before 30th March:**

► **University Bookshop**
(Quadrangle Building, UNSW, Sydney)

► **Or email your order to:**
orders@bookshop.unsw.edu.au
(postage costs will apply)



About the author

Emeritus Professor Jim Galvin has a relatively unique combination of industrial, research and academic experience in the mining industry that spans specialist research and applied knowledge in ground engineering, mine management and risk management. His career encompasses directing ground engineering research groups in South Africa and Australia; practical mining experience, including active participation in the mines rescue service and responsibility for the design, operation, and management of large underground coal mines and for the consequences of loss of ground control as a mine manager; appointments as Professor and Head of the School of Mining Engineering at the University of New South Wales; and safety advisor to a number of Boards of Directors of organisations associated with mining.

Peer Reviewers' Excerpts

'The work provides an excellent, detailed, and much needed account of ground engineering for underground coal mining. A particular strength of the book is the way in which good underground coal mining practice is identified and discussed within an understandable, logical and often qualitative applied mechanics framework. It provides a fine example of what good mining engineering argument and practice should be.' Emeritus Professor Ted Brown AC

'This book fills a serious gap in the mining and rock mechanics literature. A particular and unique aspect of the book is the link between ground engineering and risk management. The text does not confine itself to ground control but also highlights how ground control and rock behaviour can influence other coal mining hazards such as those related to coal mine explosions and spontaneous combustion. All essential aspects of ground control in underground coal mines are covered. A comprehensive list of references provides additional sources of information. The longwall chapter is a must for every longwall operator. Although it concentrates on underground coal mining practices in Australia, South Africa and the United States of America, many of the issues raised and discussed are of relevance and considerable value to other underground mining operations.' Emeritus Professor Horst Wagner