
Slope Stability And Stabilization Methods

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Methods*

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Slope Stability and Stabilization Methods John Wiley & Sons

A major revision of the comprehensive text/reference Written by world-leading geotechnical engineers who share almost 100 years of combined experience, Slope Stability and Stabilization, Second Edition assembles the background information, theory, analytical methods, design and construction approaches, and practical examples necessary to carry out a complete slope stability project. Retaining the best features of the previous edition, this new book has been completely updated to address the latest trends and methodology in the field. Features include: All-new chapters on shallow failures and stability of landfill slopes New material on probabilistic stability analysis, cost analysis of stabilization alternatives, and state-of-the-art techniques in time-domain reflectometry to help engineers plan and model new designs Tested and FHA-approved procedures for the geotechnical stage of highway, tunnel, and bridge projects Sound guidance for geotechnical stage design and planning for virtually all types of construction projects Slope Stability and Stabilization, Second Edition is filled with current and comprehensive information, making it one of the best resources available on the subject-and an essential reference for today's and tomorrow's professionals in geology, geotechnical engineering, soil science, and landscape architecture.

Slope Stability and Stabilization Methods Wiley-Interscience

This text includes an introduction to the concepts used in slope stability studies, a discussion of the geologic features that usually give slopes their personality, groundwater and seepage issues that frequently cause slope stability problems, and slope s

Slope Stability Analysis and Stabilization

New Methods and Insight *CRC Press*

A number of methods currently exist for the analysis and design of slopes. This book provides a critical review of these and offers several more appropriate approaches for overcoming numerical convergence and the location of critical failure surfaces in two-dimensional and three-dimensional cases. New concepts in three-dimensional stability analysis, finite element analysis and the extension of slope stability problems to lateral earth pressure problems are also addressed. It gives helpful practical advice and design resources in the form of recommendations for good analysis and design practice, design charts and tables for the engineer. Limitations are detailed of both limit equilibrium and the finite element method in the assessment of the stability of a slope, and guidance is provided for assessing the fundamental assumptions and limitations of stability analysis methods and computer modelling. The book provides ample examples to illustrate how this range of problems should be dealt with. The final chapter touches on design and its implementation on site. The emphasis is on the transfer of the design to its physical implementation on site in a holistic way, taking full account of the latest developments in construction technology. Engineering and construction problems tend to be pigeonholed into different classes of problem such as slope stability, bearing capacity and earth pressure behind retaining structures. This is quite unnecessary. This book offers a unified approach, which is conceptually, practically and philosophically more satisfying.

Short Course on Slope Stability and Stabilization Methods

Hand Out

Soil Strength and Slope Stability *John Wiley & Sons*

"Soil Strength and Slope Stability is the essential text for the critical assessment of natural and man-made slopes. Extensive case studies throughout help illustrate the principles and techniques described, including a new examination of Hurricane Katrina failures, plus examples of soil and slope engineering from around the world. Extraneous theory has been excluded to place the focus squarely on the practical application of slope design and analysis techniques, including information about standards, regulations, formulas, and the use of software in analysis."--pub. desc.

Cost-effective and Sustainable Road Slope Stabilization and Erosion Control *Transportation Research Board*

"In the United States it is estimated that 75 percent of all roads are low volume roads maintained by some 35,000 local agencies. Low volume roads often omit surface slope protection, and this can lead to slope failure, erosion, and maintenance, safety, and ecological issues. This report presents information on cost effective and sustainable road slope stabilization techniques, with a focus on shallow or near surface slope stabilization and related erosion control methods used on low volume roads. To fully address this topic, planning and site investigation are discussed, as well as erosion control techniques, soil bioengineering and biotechnical techniques, mechanical stabilization, and earthwork techniques. Information presented in this report was obtained through an extensive literature review, and from survey and interview responses. From the survey responses, 30 individuals were interviewed based on the information they made available in the survey. A total of 25 interviews were conducted over the phone, and in two cases written responses were received"--Preface.

Subsurface Drainage for Slope Stabilization *American Society of Civil Engineers*

Slope Stability 2000

Proceedings of Sessions of Geo-Denver 2000 : August 5-8, 2000, Denver, Colorado *Amer Society of Civil Engineers*

GSP 101 contains 26 papers on slope stability presented at sessions at Geo-Denver 2000, held in Denver, Colorado, August 5-8, 2000.

Rock Slope Stability *Society for Mining Metallurgy & Exploration*

A comprehensive guide for mining and construction engineers responsible for rock slope stability. This book focuses on rock slope stability, with sections on geological data collection, geotechnical data collection and analysis, surface water and groundwater effects, kinematic and kinetic stability analysis, rock slope stabilization techniques, and rock slope instrumentation and monitoring. Because of the discontinuous nature of rock, the design of stable rock slopes is as much an art as it is applied engineering. Experience can only be achieved from the proper utilization of these theories of soil and rock mechanics, structural geology, and hydrology. Rock Slope Stability is invaluable for engineering geologists, geotechnical engineers, mining engineers, civil engineers, and mine managers-- as well as anyone else dedicated to engineering slopes that are stable and safe and that enable a financial return.

Slope Stabilization and Erosion Control: A Bioengineering Approach

A Bioengineering Approach *Taylor & Francis*

This book is an up-to-date review of research and practice on the use of vegetation for slope stabilization and control of surface erosion caused by water and wind. From a basic understanding of the principles and practices of vegetation growth and establishment, it describes how vegetation can be treated as an engineering material and used to solve erosion and slope stability problems.

Slope Stability and Erosion Control: Ecotechnological Solutions *Springer Science & Business Media*

This book aims to assist in choosing ecotechnological solutions for slopes that are prone to a variety of mass movements e.g. shallow failure or erosion. The book reviews the types of problematic slopes that may occur and describes briefly the nature of mass movements and the causes of these movements. There is focus on the use of vegetation to stabilize soil on slopes prone to mass movements. The book also introduces new ecotechnological methods, and case studies are discussed.

Slope Stability Analysis and Stabilization

New Methods and Insight, Second Edition *CRC Press*

Includes Recommendations for Analysis, Design Practice, Design Charts, Tables, and More Using a unified approach to address a medley of engineering and construction problems, Slope Stability Analysis and Stabilization: New Methods and Insight, Second Edition provides helpful practical advice and design resources for the practicing engineer. This text examines a range of current methods for the analysis and design of slopes, and details the limitations of both limit equilibrium and the finite element method in the assessment of the stability of a slope. It also introduces a variety of alternative approaches for overcoming

numerical non-convergence and the location of critical failure surfaces in two-dimensional and three-dimensional cases. What's New in the Second Edition: This latest edition builds on the concepts of the first edition and covers the case studies involved in slope stability analysis in greater detail. The book adds a chapter on the procedures involved in performing limit equilibrium analysis, as well as a chapter on the design and construction practice in Hong Kong. It includes more examples and illustrations on the distinct element of slope, the relation between limit equilibrium and plasticity theory, the fundamental connections between slope stability analysis and the bearing capacity problem, as well as the stability of the three-dimensional slope under patch load conditions. Addresses new concepts in three-dimensional stability analysis, finite element analysis, and the extension of slope stability problems to lateral earth pressure problems. Offers a unified approach to engineering and construction problems, including slope stability, bearing capacity, and earth pressure behind retaining structures. Emphasizes how to translate the conceptual design conceived in the design office into physical implementation on site in a holistic way. Discusses problems that were discovered during the development of associated computer programs. This text assesses the fundamental assumptions and limitations of stability analysis methods and computer modelling, and benefits students taking an elective course on slope stability, as well as geotechnical engineering professionals specializing in slope stability.

Biotechnical and Soil Bioengineering Slope Stabilization

A Practical Guide for Erosion Control *John Wiley & Sons*

The first comprehensive, practical guide to the selection, construction, and installation of soil bioengineering and biotechnical slope protection. Here is the ultimate guide to physically attractive, environmentally compatible, and cost-effective methods of protecting slopes from erosion and mass wasting. Lavishly illustrated with more than 150 photographs and supplemented with scores of charts and tables, this book covers the entire subject from general principles and background on the nature of soil erosion and mass movement to detailed information on root strengths, treatment selection, unit costs, critical tractive stresses, methods for harvesting and handling live cuttings, and more. Four illustrated case studies, each addressing a different set of problems and solutions, demonstrate both the application of particular technologies and the site investigation, planning, scheduling, and organization required to complete these projects successfully. This unique reference handbook * Reviews the horticultural and engineering underpinnings for biotechnical and soil engineering treatments * Documents and explains the role of woody plants in stabilizing slopes against both surficial erosion and mass movement * Provides details on a broad range of soil bioengineering methods, including live staking, live fascines, brush layering, live crib walls, branch packing, and live slope gratings * Describes various biotechnical methods and materials, including the incorporation of vegetation in erosion control blankets, flexible mats, cellular revetments (geocells), rock armor (riprap), and gabion and open-front crib walls * Summarizes the findings of the National Science Foundation-sponsored workshop to assess the state of the art and determine research needs. For practicing professionals, researchers, and students in geotechnical engineering, geology, soil science, forestry and forest engineering, landscape architecture, environmental horticulture, and restoration ecology, this book offers thorough, up-to-date coverage that is not available from any other single source.

Rock Slope Stability Analysis *CRC Press*

Deals with the methods of assessing the stability of rock slopes and the techniques of improving the stability conditions of natural and artificial slopes which are at risk. It also describes survey and measurement methods to model the behaviour of rock masses.

Soil Testing, Soil Stability and Ground Improvement

Proceedings of the 1st GeoMEast International Congress and Exhibition, Egypt 2017 on Sustainable Civil Infrastructures *Springer*

Earthwork projects are critical components in civil construction and often require detailed management techniques and unique solution methods to address failures. Being earth bound, earthwork is influenced by geomaterial properties at the onset of a project. Hence, an understanding of the in-situ soil properties is essential. Slope stability is a common problem facing earthwork construction, such as excavations and shored structures. Analytical methods for slope stability remain critical for researchers due to the mechanical complexity of the system. Striving for better earthwork project managements, the geotechnical engineering community continues to find improved testing techniques for determining sensitive properties of soil and rock, including stress-wave based, non-destructive testing methods. To minimize failure during earthwork construction, past case studies and data may reveal useful lessons and information to improve project management and minimize economic losses. This volume is part of the proceedings of the 1st GeoMEast International Congress and Exhibition on Sustainable Civil Infrastructures, Egypt 2017.

Slope Engineering *BoD – Books on Demand*

The field of slope engineering encompasses slope stability analysis and design, movement monitoring, and slope safety management and maintenance. Engineers in this field are concerned with landslides and other gravity-stimulated mass movements. Their job is to frequently evaluate existing and proposed slopes to assess their stability. As such, this book provides information on remote sensing in landslide detection, tunnel face stability, stability analysis and maintenance of cut slopes, design techniques in rock and soil engineering, statistical models for landslide risk mapping, slope stability analysis in open-pit mines, ecological engineering for slope stabilization, and asphalt-stabilized strengthening in open-pit coal mining.

Slope Stability Engineering

Developments and Applications : Proceedings of the International Conference on Slope Stability *Thomas Telford*

This volume draws on the experience and extensive research of an international authorship to bring together details on slope stability, causes of landslides, landslide prevention, new techniques for assessing and predicting stability, new methods for stabilising slopes and the special considerations for coastal situations.

Geotechnical Engineering

Unsaturated and Saturated Soils *John Wiley & Sons*

Written by a leader on the subject, *Introduction to Geotechnical Engineering* is first introductory geotechnical engineering textbook to cover both saturated and unsaturated soil mechanics. Destined to become the next leading text in the field, this book presents a new approach to teaching the subject, based on fundamentals of unsaturated soils, and extending the description

of applications of soil mechanics to a wide variety of topics. This groundbreaking work features a number of topics typically left out of undergraduate geotechnical courses.

The Stability of Slopes *CRC Press*

The new edition of this successful book has been thoroughly revised to take account of recent advances in our understanding of slope stability and instability.

Handbook of Slope Stabilisation *Springer Science & Business Media*

This book is aimed at the practising engineer and engineering geologist working in tropical environments, where lands lides are mainly triggered by rain fall. This book is based on a similar work published in 1999 in Portuguese, which became the Rio de Janeiro Slope Manual. This book is an engineering guide for the design of slopes and stabilisation works in rocks and residual soils. It evolves from the cumulative experience gathered by several engineers and geologists who faced severe slope problems. The authors' experience throughout Central and South America (Costa Rica, Argentina, Bolivia, Peru, Ecuador and Venezuela) and the Far East, especially Hong Kong and Malaysia, was used as a foundation for writing this book. The work also benefits enormously from the time spent in Hong Kong in 1996 and 1997 by the first editor on sabbatical at the City University of Hong Kong, and the discussions he had with many colleagues from the Geotechnical Engineering Office (GEO) of the Hong Kong Government, especially Dr. A. Malone, Mr. w.K. Pun, Dr. A. Li, Mr. K. Ho, and Mr. y.c. Chan among others.

Slope Stability Analysis by the Limit Equilibrium Method

Fundamentals and Methods *Amer Society of Civil Engineers*

Slope Stability Analysis by the Limit Equilibrium Method: Fundamentals and Methods presents basic principles for the safe design of constructed or natural earth slopes. The limit equilibrium method is the most common approach for analyzing slope stability in both two and three dimensions. This method identifies potential failure mechanisms and derives factors of safety for a particular geotechnical situation. It is an appropriate choice for assessing the stability of retaining walls shallow and deep foundations earth and rock dams surface mining sites and potential landslides. The fundamentals of slope stability encompass slope movements and methods for stability analysis mechanics of slope failure and factors of safety laboratory and field methods to determine the shear strength of soils estimation of phreatic surfaces and remedial measures for correcting slides. Methods of stability analysis cover simple formulas for determining the factor of safety for plane failures stability charts methods of slices for two-dimensional analysis three-dimensional analysis techniques and reliability of slope design. An appendix provides a preview of a companion product LEAME Software and User's Manual: Analyzing Slope Stability by the Limit Equilibrium Method a computer program for performing the slope stability analysis presented in this work (available from American Society of Civil Engineers). The clear presentation of the principles of slope stability analysis ensures that this work will be a frequently consulted reference for practicing engineers. The wealth of worked examples and problem sets make this a suitable textbook for senior and graduate students in soil mechanics and geotechnical engineering.

Probabilistic Approaches for Geotechnical Site Characterization and Slope Stability Analysis *Springer*

This is the first book to revisit geotechnical site characterization

from a probabilistic point of view and provide rational tools to probabilistically characterize geotechnical properties and underground stratigraphy using limited information obtained from a specific site. This book not only provides new probabilistic approaches for geotechnical site characterization and slope stability analysis, but also tackles the difficulties in practical implementation of these approaches. In addition, this book also develops efficient Monte Carlo simulation approaches for slope stability analysis and implements these approaches in a commonly available spreadsheet environment. These approaches and the software package are readily available to geotechnical practitioners and alleviate them from reliability computational algorithms. The readers will find useful information for a non-specialist to determine project-specific statistics of geotechnical properties and to perform probabilistic analysis of slope stability.

Slope Stability, Retaining Walls, and Foundations

Selected Papers from the 2009 GeoHunan International Conference, August 3-6, 2009, Changsha, Hunan, China

Amer Society of Civil Engineers

This Geotechnical Special Publication contains 35 peer-reviewed technical papers presented at the GeoHunan International Conference: Challenges and Recent Advances in Pavement Technologies and Transportation Geotechnics, which took place in Changsha, Hunan, China, from August 3 to 6, 2009. This proceedings examines topics such as: Ø soil stabilization Ø dynamic behavior of soils and foundations Ø earth retaining walls Ø slope stability This publication will be valuable to geotechnical engineering professors and students, as well as geotechnical engineers and professionals

Landslides

Investigation and Mitigation *Transportation Research Board*

This Special Report is a greatly expanded edition of a previous report on landslides (Special Report 176, "Landslides: Analysis and Control") published in 1978. The new report, which has been designed with an even broader international scope, contains comprehensive, practical discussions of field investigations, laboratory testing, and stability analysis procedures and technologies; comprehensive references to the literature; and discussions of case studies, state-of-the-art techniques, and research directions. The report is presented in five sections: (1) Principles, Definitions, and Assessment; (2) Investigation; (3) Strength and Stability Analysis; (4) Mitigation; and (5) Special Cases and Materials.

Slope Stabilization and Repair Solutions for Local Government Engineers

The purpose of this project is to create a user-friendly guide focusing on locally maintained slopes requiring reoccurring maintenance in Minnesota. This study addresses the need to provide a consistent, logical approach to slope stabilization that is founded in geotechnical research and experience and applies to common slope failures. Authors used input from Minnesota county engineers, case studies from site investigations throughout the state, and a parametric study of slope stability modeling parameters to develop stabilization recommendations. The project, beginning in September 2015, consisted of four primary research phases. In Task 1, researchers identified slope for further analysis via a survey sent to each county engineering department in the state. Responses provided site investigation locations. Researchers conducted site investigations and developed case studies to analyze slope stabilization

methods. Task 2 involved performing a literature review to identify slope stabilization methods. In Task 3, laboratory testing characterized soil properties from case study sites. Additionally, limit equilibrium method (LEM) models were developed for each slope to investigate different stabilization methods in a parametric study. In Task 4, modeling and analysis results were summarized for distribution to local government engineers. The target audience of the guide is county or local municipal engineers who do not have specialized geotechnical engineering experience. The research does not address slope stability issues of the scale that require local municipalities to hire geotechnical engineering specialists. Authors intend the deliverable to assist with efficient stabilization of common recurring slope failures along roadways.

Numerical Methods in Geotechnical Engineering IX

Proceedings of the 9th European Conference on Numerical Methods in Geotechnical Engineering (NUMGE 2018), June 25-27, 2018, Porto, Portugal CRC Press

NUMGE 2018 is the ninth in a series of conferences on Numerical Methods in Geotechnical Engineering organized by the ERTC7 under the auspices of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE). The first conference was held in 1986 in Stuttgart, Germany and the series continued every four years (1990 Santander, Spain; 1994 Manchester, United Kingdom; 1998 Udine, Italy; 2002 Paris, France; 2006 Graz, Austria; 2010 Trondheim, Norway; 2014 Delft, The Netherlands). The conference provides a forum for exchange of ideas and discussion on topics related to numerical modelling in geotechnical engineering. Both senior and young researchers, as well as scientists and engineers from Europe and overseas, are invited to attend this conference to share and exchange their knowledge and experiences.

Failure Mechanism and Stability Analysis of Rock Slope

New Insight and Methods Springer Nature

This book presents in-depth coverage of laboratory experiments, theories, modeling techniques, and practices for the analysis and design of rock slopes in complex geological settings. It addresses new concepts in connection with the kinematical element method, discontinuity kinematical element method, integrated karst cave stochastic model-limit equilibrium method, improved strength reduction method, and fracture mechanics method, taking into account the relevant geological features. The book is chiefly intended as a reference guide for geotechnical engineering and engineering geology professionals, and as a textbook for related graduate courses.

Guidelines for Evaluating Water in Pit Slope Stability CSIRO PUBLISHING

Guidelines for Evaluating Water in Pit Slope Stability is a comprehensive account of the hydrogeological procedures that should be followed when performing open pit slope stability design studies. Created as an outcome of the Large Open Pit (LOP) project, an international research and technology transfer project on the stability of rock slopes in open pit mines, this book expands on the hydrogeological model chapter in the LOP project's previous book Guidelines for Open Pit Slope Design (Read & Stacey, 2009; CSIRO PUBLISHING). The book comprises six sections which outline the latest technology and best practice procedures for hydrogeological investigations. The sections cover: the framework used to assess the effect of water in slope stability; how water pressures are measured and tested in the

field; how a conceptual hydrogeological model is prepared; how water pressures are modelled numerically; how slope depressurisation systems are implemented; and how the performance of a slope depressurisation program is monitored and reconciled with the design. Guidelines for Evaluating Water in Pit Slope Stability offers slope design practitioners a road map that will help them decide how to investigate and treat water pressures in pit slopes. It provides guidance and essential information for mining and civil engineers, geotechnical engineers, engineering geologists and hydrogeologists involved in the investigation, design and construction of stable rock slopes.

Encyclopedia of Engineering Geology Springer

This volume addresses the multi-disciplinary topic of engineering geology and the environment, one of the fastest growing, most relevant and applied fields of research and study within the geosciences. It covers the fundamentals of geology and engineering where the two fields overlap and, in addition, highlights specialized topics that address principles, concepts and paradigms of the discipline, including operational terms, materials, tools, techniques and methods as well as processes, procedures and implications. A number of well known and respected international experts contributed to this authoritative volume, thereby ensuring proper geographic representation, professional credibility and reliability. This superb volume provides a dependable and ready source of information on approximately 300 topical entries relevant to all aspects of engineering geology. Extensive illustrations, figures, images, tables and detailed bibliographic citations ensure that the comprehensively defined contributions are broadly and clearly explained. The Encyclopedia of Engineering Geology provides a ready source of reference for several fields of study and practice including civil engineers, geologists, physical geographers, architects, hazards specialists, hydrologists, geotechnicians, geophysicists, geomorphologists, planners, resource explorers, and many others. As a key library reference, this book is an essential technical source for undergraduate and graduate students in their research. Teachers/professors can rely on it as the final authority and the first source of reference on engineering geology related studies as it provides an exceptional resource to train and educate the next generation of practitioners.

Analysis and Design of Geotechnical Structures CRC Press

Analysis and design of geotechnical structures combines, in a single endeavor, a textbook to assist students in understanding the behavior of the main geotechnical works and a guide for practising geotechnical engineers, designers, and consultants. The subjects are treated in line with limit state design, which underpins the Eurocodes and most North America design codes. Instructors and students will value innovative approaches to numerous issues refined by the experience of the author in teaching generations of enthusiastic students. Professionals will gain from its comprehensive treatment of the topics covered in each chapter, supplemented by a plethora of informative material used by consultants and designers. For the benefit of both academics and professionals, conceptual exercises and practical geotechnical design problems are proposed at the end of most chapters. A final annex includes detailed resolutions of the exercises and problems.

Slope Stability Analysis and Stabilization: New Methods and Insight, Second Edition

Includes Recommendations for Analysis, Design Practice, Design

Charts, Tables, and More Using a unified approach to address a medley of engineering and construction problems, *Slope Stability Analysis and Stabilization: New Methods and Insight*, Second Edition provides helpful practical advice and design resources for the practicing engineer. This text examines a range of current methods for the analysis and design of slopes, and details the limitations of both limit equilibrium and the finite element method in the assessment of the stability of a slope. It also introduces a variety of alternative approaches for overcoming numerical non-convergence and the location of critical failure surfaces in two-dimensional and three-dimensional cases. What's New in the Second Edition: This latest edition builds on the concepts of the first edition and covers the case studies involved in slope stability analysis in greater detail. The book adds a chapter on the procedures involved in performing limit equilibrium analysis, as well as a chapter on the design and construction practice in Hong Kong. It includes more examples and illustrations on the distinct element of slope, the relation between limit equilibrium and plasticity theory, the fundamental connections between slope stability analysis and the bearing capacity problem, as well as the stability of the three-dimensional slope under patch load conditions. Addresses new concepts in three-dimensional stability analysis, finite element analysis, and the extension of slope stability problems to lateral earth pressure problems. Offers a unified approach to engineering and construction problems, including slope stability, bearing capacity, and earth pressure behind retaining structures. Emphasizes how to translate the conceptual design conceived in the design office into physical implementation on site in a holistic way. Discusses problems that were discovered during the development of associated computer programs. This text assesses the fundamental assumptions and limitations of stability analysis methods and computer modelling, and benefits students taking an elective course on slope stability, as well as geotechnical engineering professionals specializing in slope stability."

Landslides

Types, Mechanisms and Modeling *Cambridge University Press*
A comprehensive, one-stop synthesis of landslide science, for researchers and graduate students in geomorphology, engineering geology and geophysics.

Proceedings of a Workshop on Slope Stability

Problems and Solutions in Forest Management, Seattle, Washington, February 6-8, 1984

Recent Advances in Modeling Landslides and Debris Flows *Springer*

Landslides and debris flows belong to the most dangerous natural hazards in many parts of the world. Despite intensive research, these events continue to result in human suffering, property losses, and environmental degradation every year. Better understanding of the mechanisms and processes of landslides and debris flows will help make reliable predictions, develop mitigation strategies and reduce vulnerability of infrastructure. This book presents contributions to the workshop on Recent Developments in the Analysis, Monitoring and Forecast of Landslides and Debris Flow, in Vienna, Austria, September 9, 2013. The contributions cover a broad spectrum of topics from material behavior, physical modelling over numerical simulation to applications and case studies. The workshop is a joint event of three research projects funded by the European Commission within the 7th Framework Program: MUMOLADE (Multiscale

modelling of landslides and debris flows, www.mumolade.com), REVENUES (Numerical Analysis of Slopes with Vegetations, <http://www.revenues-eu.com>) and HYDRODRIL (Integrated Risk Assessment of Hydrologically-Driven Landslides, www.boku.ac.at/igt/).

A Short Course in Soil and Rock Slope Engineering *Thomas Telford Publishing*

This work comprehensively treats soil & rock slope engineering in one volume. It focuses on getting the fundamentals right, explaining simple methods of stability analysis, and applying them to a wide range of practical applications.

Rock Slope Engineering

Third Edition *CRC Press*

This classic handbook deals with the geotechnical problems of rock slope design. It has been written for the non-specialist mining or civil engineer, with worked examples, design charts, coverage of more detailed analytical methods, and of the collection and interpretation of geological and groundwater information and tests for the mechanical properties of rock.

Physical Geology

"Physical Geology is a comprehensive introductory text on the physical aspects of geology, including rocks and minerals, plate tectonics, earthquakes, volcanoes, glaciation, groundwater, streams, coasts, mass wasting, climate change, planetary geology and much more. It has a strong emphasis on examples from western Canada, especially British Columbia, and also includes a chapter devoted to the geological history of western Canada. The book is a collaboration of faculty from Earth Science departments at Universities and Colleges across British Columbia and elsewhere"--BCcampus website.

Slope Stability and Reliability Analysis

Slope stability is always a very important topic in many developed and highly congested cities, particularly for many cities in China where slope failures have killed many people with significant loss of properties. The author has also participated in different types of slope stability research and consultancy works in different countries, and has published two books entitled *Soil Slope stability analysis and stabilization new methods and insights* and *Frontier in civil engineering*, vol.1, *Stability analysis of geotechnical structures which are well favoured by many students, engineers and researchers*. The author also frequently receives email about the details of the more innovative slope stability analysis methods, stabilization and monitoring system, as well as the procedures in the numerical implementation of some of the stability analysis methods. In view of the various improvements in the theory of slope stability analysis over the years, the author would like to write a new book on slope stability analysis and slope reliability analysis, and the new materials will be useful to both students, engineers as well as researchers. In this book, different methods of slope stability analysis will be discussed in a broad sense. Following that, the limit equilibrium and finite element methods will be discussed in more details, as these two methods are the methods commonly used for practical works. Detailed procedures for limit equilibrium analysis will be provided to aid the students in learning, while the program SLOPE2000 will be introduced for the solution of more complicated problems. Some interesting engineering cases will be illustrated in this book. The author will also try to introduce the use of distinct element slope stability method, which is a technique still far from practical applications, but it does offer

some insights which are not possible with the other methods. Following that, the author will introduce the importance of reliability slope stability analysis, which is an important issue for cities with complicated ground conditions and high water table. Due to the intensive computation required for reliability analysis, the author has proposed many improvements to various reliability assessment methods in order to maintain a balance between accuracy and time of computation. The central core of SLOPE 2000 and SLOPE 3D for two-dimensional and three-dimensional slope stability analysis as introduced in this book are developed mainly by the author, while there are many research personnel who have helped in various works associated with the research works. The authors would like to thank Yip C.J., Wei W.B., Li N., Li L. Li D.Z. and Liu L.L. for the helps in preparing parts of the works and the preparation of some of the figures in this book.

Rock Slope Engineering, Fourth Edition

Fourth edition *CRC Press*

The stability of rock slopes is an important issue in both civil and mining engineering. On civil projects, rock cuts must be safe from rock falls and large-scale slope instability during both construction and operation. In open pit mining, where slope heights can be many hundreds of meters, the economics of the operation are closely related to the steepest stable slope angle that can be mined. This extensively updated version of the classic text, *Rock Slope Engineering* by Hoek and Bray, deals

comprehensively with the investigation, design and operation of rock slopes. Investigation methods include the collection and interpretation of geological and groundwater data, and determination of rock strength properties, including the Hoek Brown rock mass strength criterion. Slope design methods include the theoretical basis for the design of plane, wedge, circular and toppling failures, and design charts are provided to enable rapid checks of stability to be carried out. New material contained in this book includes the latest developments in earthquake engineering related to slope stability, probabilistic analysis, numerical analysis, blasting, slope movement monitoring and stabilization methods. The types of stabilization include rock anchors, shotcrete, drainage and scaling, as well as rock fall protecting methods involving barriers, ditches, nets and sheds. *Rock Slopes: Civil and Mining Engineering* contains both worked examples illustrating data interpretation and design methods, and chapters on civil and mining case studies. The case studies demonstrate the application of design methods to the construction of stable slopes in a wide variety of geological conditions. The book provides over 300 carefully selected references for those who wish to study the subject in greater detail. It also includes an introduction by Dr. Evert Hoek.

Geotechnical Earthquake Engineering, Second Edition

McGraw Hill Professional

This one-stop resource--filled with in-depth earthquake engineering analysis, testing procedures, seismic and construction codes--features new coverage of the 2012 International Building Code.