

1 Engineering Projects

This is the first book to examine the actual impact of physical and social engineering projects in more than fifty countries from a multidisciplinary perspective. The book brings together an international team of nearly two hundred authors from over two dozen different countries and more than a dozen different social, environmental, and engineering sciences. Together they document and illustrate with case studies, maps and photographs the scale and impacts of many megaprojects and the importance of studying these projects in historical, contemporary and postmodern perspectives. This pioneering book will stimulate interest in examining a variety of both social and physical engineering projects at local, regional, and global scales and from disciplinary and trans-disciplinary perspectives.

Constructability has been defined as the optimum integration of construction knowledge and experience in planning, engineering, procurement and field operations to achieve overall project objectives. Those who advocate it as a concept claim that it can bring real benefits to all involved - clients, consultants, contractors and users. This book provides for the advanced student or practitioner a review of the concepts, principles and practices of constructability at each stage of the total construction process.

STEAM Lab for Kids is an art-forward doorway to science, math, technology, and engineering through 52 family-friendly experiments and activities. While many aspiring artists don't necessarily identify with STEM subjects, and many young inventors don't see the need for art, one is essential to the other.

Revealing this connection and encouraging kids to explore it fills hungry minds with tools essential to problem solving and creative thinking. Each of the projects in this book is designed to demonstrate that the deeper you look into art, the more engineering and math you'll find. "The STEAM Behind the Fun" sections throughout explain the science behind the art. Learn about: angular momentum by making tied-dyed fidget spinners, electrical conductors by making graphite circuits, kinetic energy by making a rubber band shooter, symmetry by making fruit and veggie stamps, much more! From graphite circuit comic books to edible stained glass, young engineers and artists alike will find inspiration aplenty. The popular Lab for Kids series features a growing list of books that share hands-on activities and projects on a wide host of topics, including art, astronomy, clay, geology, math, and even how to create your own circus—all authored by established experts in their fields. Each lab contains a complete materials list, clear step-by-step photographs of the process, as well as finished samples. The labs can be used as singular projects or as part of a yearlong curriculum of experiential learning. The activities are open-ended, designed to be explored over and over, often with different results. Geared toward being taught or guided by adults, they are enriching for a range of ages and skill levels. Gain firsthand knowledge on your favorite topic with Lab for Kids.

The material in this book is intended primarily as an introduction to managing senior design projects for undergraduate engineering students during their junior or senior year; however, the text may be used by other young engineers working on development of commercial products. The text is aimed at having students gain knowledge and perhaps understand the management processes required to develop and produce a prototype system or device. Other goals are to have the students or young engineers learn not only by performing the design and project management processes, but also to learn about the various types of required project documents and management reports.

Practices, Crosscutting Concepts, and Core Ideas

Engineering Projects to Build On

Pro Skills for Next Level Maker Projects

Shaping Institutions, Risks, and Governance

Engineering Design

Construction Phase

This is an account of the performance of three variables in the control of engineering projects - time, cost and manpower - which must be kept in harmony. It uses examples from industry to explain the selection, control and planning of a number of projects and looks at financial control.

Project Management for Engineering, Business and Technology is a highly regarded textbook that addresses project management across all industries. First covering the essential background, from origins and philosophy to methodology, the bulk of the book is dedicated to concepts and techniques for practical application. Coverage includes project initiation and proposal development, scheduling, budgeting, risk analysis, control, project selection and portfolio management, program management, project organization, and all-important "people" aspects—project leadership, team building, conflict resolution, and stress management. The systems development cycle is used as a framework to discuss project management in a variety of situations, making this the go-to book for managing virtually any kind of project, program, or task force. The authors focus on the ultimate purpose of project management—to unify and integrate the interests, resources and work efforts of many stakeholders, as well as the planning, scheduling, and budgeting needed to accomplish overall project goals. This sixth edition features: updates throughout to cover the latest developments in project management methodologies; a new chapter on project procurement management and contracts; an expansion of case study coverage throughout, including those on the topic of sustainability and climate change, as well as cases and examples from across the globe, including India, Africa, Asia, and Australia; and extensive instructor support materials, including an instructor's manual, PowerPoint slides, answers to chapter review questions and a test bank of questions. Taking a technical yet accessible approach, this book is an ideal resource and reference for all advanced undergraduate and graduate students in project management courses, as well as for practicing project managers across all industry sectors.

Contracts for Construction and Engineering Projects provides unique and invaluable guidance on the role of contracts in construction and engineering projects. The work explores various aspects of the intersection of contracts and construction projects involving the work of engineers and other professionals engaged in construction, whether as project managers, designers, schedulers, claims consultants, forensic engineers or expert witnesses. Compiling papers written and edited by the author, refined and expanded with additional chapters in this new edition, this book draws together a lifetime of lessons learned in these fields and covers the topics a practicing professional might encounter in construction and engineering projects, developed in bite-sized chunks. The chapters are divided into five key parts: 1. The engineer and the contract 2. The project and the contract 3. Avoidance and resolution of disputes 4. Forensic engineers and expert witnesses, and 5. International construction contracts. The inclusion of numerous case studies to illustrate the importance of getting the contract right before it is entered into - and the consequences that may ensue if this is not done - makes this book essential reading for professionals practising in any area of design, construction, contract administration, preparation of claims or expert evidence, as well as construction lawyers who interact with construction professionals. Build Excitement for Engineering Make engineering for kids fun and inspiring. From toothpick towers and marble runs to egg drops and water rockets, Awesome Engineering Activities for Kids is filled with exciting projects that will challenge and delight kids ages 5-10. Kids learn how and why things work as they explore amazing projects all by themselves. These engineering for kids activities also help them discover important STEAM connections, showing how engineering relies on science, technology, art, and math. Awesome Engineering Activities for Kids features: MORE THAN 50 PROJECTS-Learn about different kinds of engineering for kids by constructing shoebox foosball, rubber band race cars and more. EASY-TO-FIND MATERIALS-Create a makerspace-a place to freely start and explore projects-with items readily found around the house. STEP-BY-STEP INSTRUCTIONS-Engineering for kids is easy with detailed steps that make it simple for kids to take the lead on activities and build on their own. Unlock the world of engineering for kids with Awesome Engineering Activities for Kids.

Achieving Positive Outcomes in a Complex World

Project Engineering

The Impacts of Megaengineering Projects

Industrial Engineering Projects

Guidelines for Integrating Process Safety into Engineering Projects

A Project-based Experience in Engineering Methods

There is much industry guidance on implementing engineering projects and a similar amount of guidance on Process Safety Management (PSM). However, there is a gap in transferring the key deliverables from the engineering group to the operations group, where PSM is implemented. This book provides the engineering and process safety deliverables for each project phase along with the impacts to the project budget, timeline and the safety and operability of the delivered equipment. Written specifically for engineering students, this handbook is packed with practical guidance on conducting projects and writing clear and coherent reports. It takes students step-by-step through the key stages in a project, from identifying the problem and analysing its causes to defining solution requirements and developing and implementing solutions. It also provides guidance on other important aspects of project work, such as communicating with industrial partners and presenting their report. Chapters feature a wealth of examples and top tips to help students apply concepts to their own projects. This will be an essential companion for engineering students of all disciplines who are undertaking a group or individual project or report. This handbook contains information and practical guidance on the environmental issues likely to be encountered at each stage in the tendering and construction phases of a building or civil engineering project. It is aimed at informing construction managers, clients, designers and other consultants, engineers and scientists on their obligations and the opportunities open to them to improve the project.

This work is divided into two parts. The first part mainly discusses civil engineering project management. Among them, Chapter 1 mainly discusses the organization and management of civil engineering projects. Chapter 2 mainly discusses the cost management of civil engineering projects. Chapter 3 mainly discusses the quality management of civil engineering project. Chapter 4 mainly discusses the cost management of civil engineering projects. Chapter 5 mainly discusses the civil engineering project schedule management; Chapter 6 mainly discusses the safety management of civil engineering projects. Chapter 7 mainly discusses the information management of civil engineering projects. The second part mainly discusses the technical application of civil engineering projects. Chapter 1 mainly discusses the earthwork construction technology; Chapter 2 mainly discusses blasting engineering. Chapter 3 mainly discusses the foundation engineering; Chapter 4 mainly discusses the reinforced concrete engineering; Chapter 5 mainly discusses the steel structure engineering. Chapter 6 mainly discusses the structure hoisting engineering; Chapter 7 mainly discusses the masonry works. Chapter 8 mainly discusses the decoration project.

Division 1: Environmental impacts, assessments in major engineering projects ; Division 2: Water resources planning

STEAM Lab for Kids

Control of Engineering Projects

Project Management for Engineering Design

Project Management and Technology Application in Civil Engineering

Doing Projects and Reports in Engineering

This handbook provides a clear explanation of the commercial, contractual and statutory aspects of a capital project in the process industries from feasibility studies, through commissioning/contract, to construction operation.

With this book, kids can learn how to build a colorful working catapult, assemble a simple-machine maze, and more. Each workshop project includes easy-to-read, step-by-step instructions paired with photographs. Budding craftpeople and engineers will love learning how to use the tools of the trade to make one-of-a-kind creations. Covers the science of risk management, risk analysis, control, project selection and portfolio management, program management, project organization, and all-important "people" aspects—project leadership, team building, conflict resolution, and stress management. The systems development cycle is used as a framework to discuss project management in a variety of situations, making this the go-to book for managing virtually any kind of project, program, or task force. The authors focus on the ultimate purpose of project management—to unify and integrate the interests, resources and work efforts of many stakeholders, as well as the planning, scheduling, and budgeting needed to accomplish overall project goals. This sixth edition features: updates throughout to cover the latest developments in project management methodologies; a new chapter on project procurement management and contracts; an expansion of case study coverage throughout, including those on the topic of sustainability and climate change, as well as cases and examples from across the globe, including India, Africa, Asia, and Australia; and extensive instructor support materials, including an instructor's manual, PowerPoint slides, answers to chapter review questions and a test bank of questions. Taking a technical yet accessible approach, this book is an ideal resource and reference for all advanced undergraduate and graduate students in project management courses, as well as for practicing project managers across all industry sectors.

Make and test projects are used as introductory design experiences in almost every engineering educational institution world wide. However, the educational benefits and costs associated with these projects have been seldom examined. Make and Test Projects in Engineering Design provides a serious examination of the design of make and test projects and their associated educational values. A taxonomy is provided for the design of make and test projects as well as a catalogue of technical information about unconventional engineering materials and energy sources. Case studies are included based on the author's experience of supervising make and test projects for over twenty-five years. The book is aimed at the engineering educator and all those planning and conducting make and test projects. Up until now, this topic has been dealt with informally. Make and Test Projects in Engineering Design is the first book that formalises this important aspect of early learning in engineering design. It will be an invaluable teaching tool and resource for educators in engineering design.

10-Minute Science Projects

50+ Exciting STEAM Projects to Design and Build

Explore STEM Concepts with Microcomputers

Cool, Inventive Projects for Tinkers, Makers & Future Scientists

Constructability in Building and Engineering Projects

Requirements Engineering and Management for Software Development Projects

Requirements Engineering and Management for Software Development Projects presents a complete guide on requirements for software development including engineering, computer science and management activities. It is the first book to cover all aspects of requirements management in software development projects. This book introduces the understanding of the requirements, elicitation and gathering, requirements analysis, verification and validation of the requirements, establishment of requirements, different methodologies in brief, requirements traceability and change management among other topics. The best practices, pitfalls, and metrics used for efficient software requirements management are also covered. Intended for the professional market, including software engineers, programmers, designers and researchers, this book is also suitable for advanced-level students in computer science or engineering courses as a textbook or reference.

Looking for science-themed makerspace projects that won't take too long? Look no more! From bots and goo to lava and cells, these 10-minute STEM projects will have kids making in no time!

Turn your projects from a weekend hack to a long-lasting creation! Loosely drawing from the field known in large software companies as Site Reliability Engineering (SRE), this book distills from these disciplines and addresses issues that matter to makers: keeping projects up and running, and providing means to control, monitor, and troubleshoot them. Most examples use the Raspberry Pi, but the techniques discussed apply to other platforms as well. This book is all about breadth, and in the spirit of making, it visits different technologies as needed. However, the big goal in this book is to create a shift in the reader's mindset, where weekend hacks are pushed to the next level and are treated as products to be deployed. In that regard, this book can be a stepping stone for hobbyist makers into developing a broader, professional skill set. First, the book describes techniques for creating web-browser based dashboards for projects. These allow project creators to monitor, control, and troubleshoot their projects in real-time. Project Reliability Engineering discusses various aspects of the process of creating a web dashboard, such as network communication protocols, multithreading, and web design, and data visualization. Later chapters cover configuration of the project and the machine it's running on, and additional techniques for project monitoring and diagnosis. These include good logging practices; automatic log and metrics monitoring; and alerting via email and text messages: A mixture of advanced concepts forms the last chapter of the book, touching on topics such as usage of microservices in complex projects; debugging techniques for object-oriented projects; and fail-safing the project's software and hardware. What You'll Learn Monitor and control projects, keep them up and running, and troubleshoot them efficiently Get acquainted with available tools and libraries, and learn how to make your own tools Expand your knowledge in Python, JavaScript and Linux Develop deeper understanding of web technologies Design robust and complex systems Who This Book Is For Members of the maker community with some development skills.

Cornerstone Engineering Design combines a wide range of topics such as design, engineering design, project management, team dynamics and project-based learning into a single introductory work. The text focuses particularly on conceptual design, providing a brief, and yet comprehensive introduction to design methodology and project management tools to students early on in their careers.

Cardboard Box Engineering

Effective Project Management

Practice and procedures for capital projects in the engineering, manufacturing and process industries

Requirements in Engineering Projects

Engineering Earth

4D an Augmented Reading Experience

10 Performance-Based STEM Projects For Grades K-1 provides 10 ready-made projects designed to help students achieve higher levels of thinking and develop 21st-century skills while learning about science, technology, engineering, and math. Projects are aligned to national standards and feature crosscurricular connections, allowing students to explore and be creative as well as gain an enduring understanding. Each project is linked to national STEM education goals and represents one of a variety of performance assessments, including oral presentations, research papers, and exhibitions. Included for each project are a suggested calendar to allow teachers to easily plan a schedule, mini-lessons that allow students to build capacity and gain an understanding of what they are doing, as well as multiple rubrics that can be used to objectively assess the performance of students. The lessons are laid out in an easy-to-follow format that will allow teachers to implement the projects immediately. Grades K-1

For newly hired young engineers assigned to their first real 'project', there has been little to offer in the way of advice on 'where to begin', 'what to look out for and avoid', and 'how to get the job done right'. This book gives this advice from an author with long experience as senior engineer in government and industry (U.S. Army Corps of Engineers and Exxon-Mobil). Beginning with guidance on understanding the typical organizational structure of any type of technical firm or company, author Plummer incorporates numerous hands-on examples and provides help on getting started with a project team, understanding key roles, and avoiding common pitfalls. In addition, he offers unique help on first-time experiences of working in other countries with engineering cultures that can be considerably different from the US. Reviews essentials of management for a new engineer suddenly thrust into responsibility Emphasizes skills that can get you promoted/and pitfalls that can get you fired Expanded case study to show typical evolution of a new engineer handed responsibility for a major design project

The book is based on an international research project that analyzed sixty LEPs, among them the Boston Harbor cleanup; the first phase of subway construction in Ankara, Turkey; a hydro dam on the Caroni River in Venezuela; and the construction of offshore oil platforms west of Flor, Norway. As the number, complexity, and scope of large engineering projects (LEPs) increase worldwide, the huge stakes may endanger the survival of corporations and threaten the stability of countries that approach these projects unprepared. According to the authors, the "front-end" engineering of institutional arrangements and strategic systems is a far greater determinant of an LEP's success than are the more tangible aspects of project engineering and management. The book is based on an international research project that analyzed sixty LEPs, among them the Boston Harbor cleanup; the first phase of subway construction in Ankara, Turkey; a hydro dam on the Caroni River in Venezuela; and the construction of offshore oil platforms west of Flor, Norway. The authors use the research results to develop an experience-based theoretical framework that will allow managers to understand and respond to the complexity and uncertainty inherent in all LEPs. In addition to managers and scholars of large-scale projects, the book will be of interest to those studying the relationship between institutions and strategy, risk management, and corporate governance in general. Contributors Bjorn Andersen, Richard Brealey, Ian Cooper, Sergei Florcel, Michel Habib, Brian Hobbs, Donald R. Lessard, Pascale Michaud, Roger Miller, Xavier Olier

This book focuses on various topics related to engineering and management of requirements, in particular elicitation, negotiation, prioritisation, and documentation (whether with natural languages or with graphical models). The book provides methods and techniques that help to characterise, in a systematic manner, the requirements of the intended engineering system. It was written with the goal of being adopted as the main text for courses on requirements engineering, or as a strong reference to the topics of requirements in courses with a broader scope. It can also be used in vocational courses, for professionals interested in the software and information systems domain. Readers who have finished this book will be able to: - establish and plan a requirements engineering process within the development of complex engineering systems; - define and identify the types of relevant requirements in engineering projects; - choose and apply the most appropriate techniques to elicit the requirements of a given system; - conduct and manage negotiation and prioritisation processes for the requirements of a given engineering system; - document the requirements of the system under development, either in natural language or with graphical and formal models. Each chapter includes a set of exercises.

Building the World

Guidance and Checklists for Engineering and Construction

Geology for Ground Engineering Projects

Science and Engineering Projects Using the Arduino and Raspberry Pi

Oh, the Places You'll Go!

Systems Engineering for Projects

In today's globalized world, failure to implement projects can cause companies to struggle in trying to achieve their mission and vision. To ensure a company's success, the implementation of project management maturity and an increase in project complexity have become vital components in the modern engineering field. Measuring Maturity in Complex Engineering Projects is a collection of innovative research on the methods and applications of project management and complex projects with an embracing vision of the maturity model genesis. Highlighting a range of topics such as knowledge management, project classification, and maturity analysis in the mining, energy, and civil construction sectors, this book is ideally designed for project coordinators and managers, business executives, business professionals, academicians, researchers, and graduate-level students seeking current research on project management maturity in engineering.

Hone your understanding of science and engineering concepts with the versatile Arduino microcontroller and powerful Raspberry Pi mini-computer. The simple, straightforward, fun projects in this book use the Arduino and Raspberry Pi to build systems that explore key scientific concepts and develop engineering skills. Areas explored include force/acceleration, heat transfer, light, and astronomy. You'll work with advanced tools, such as data logging, advanced design, manufacturing, and assembly techniques that will take you beyond practical application of the projects you'll be creating. Technology is ever evolving and changing. This book goes beyond simple how-tos to teach you the concepts behind these projects and sciences. You'll gain the skills to observe and adapt to changes in technology as you work through fun and easy projects that explore fundamental concepts of engineering and science. What You'll LearnMeasure the acceleration of a car you're riding in Simulate zero gravity Calculate the heat transfer in and out of your house Photography the moon and planets Who This Book Is ForHobbyists, students, and instructors interested in practical applications and methods to measure and learn about the physical world using inexpensive Maker technologies.

Systems engineering has been applied to some of the most important projects of our time, including those that have helped humanity explore the world and the universe, expand our technical abilities, and enhance the quality of human life. Without formal training in systems engineering, the discipline is often difficult to understand and apply, and its use within projects is often confusing. Systems Engineering for Projects: Achieving Positive Outcomes in a Complex World provides an approach that utilizes a combination of the most effective processes from both project management and systems engineering disciplines in a simplified and straightforward manner. The processes described in the book are lightweight, flexible, and tailorable. They provide the shortest path to success in projects across the entire project life cycle, from research to operations, and from simple to the most complex. The book also addresses how this methodology can be used in a continually adapting and changing world, as projects span disciplines and become even more interconnected across all areas of human existence. Each chapter includes diagrams, templates, summary lists, a case study, and a thought-provoking question and answer section that assists readers in immediate application of the material to their own projects. The book is a project manager's resource for understanding how to directly apply essential processes to projects in a way that increases the probability of achieving success. It is a comprehensive, go-to manual on the application of systems engineering processes to projects of all types and complexity.

A practical and accessible guide to managing a successful project Effective Project Management is based around an activities and action check list approach to project management. It provides a guide to the basic principles and the disciplines that managers need to master in order to be successful. The author's check lists approach (based on his years of practical experience on projects) ensure that project managers are following valid processes, helping them to be innovative in their approach to developing plans and resolving problems. In addition, the author's check list pick and mix format is designed to be flexible in order to meet the individual needs of the reader. Effective Project Management also contains some information on the theories underpinning project management. Knowledge of the theory helps in the understanding of how project management works in practice. In addition to the book's check lists of what activities need to be performed, the author offers suggestions on how tasks could be carried out. This important resource: Covers a wide range of project management topics including the project management process, programme and portfolio management, initiating and contracting a project, personal skills and more Offers a highly accessible guide to the author's verified check list approach Presents flexible guidelines applicable for a wide range projects Includes guidance for project managers at all levels of experience Written for project managers working on engineering or construction projects, Effective Project Management reviews all aspects of a project from initiation and execution to project completion together with the specialist topics and personal skills needed to manage projects effectively.

A Framework for K-12 Science Education

The Strategic Management of Large Engineering Projects

Risk Management for Engineering Projects

The Essential Toolbox for Young Engineers

Engineering Project Management

Cool Engineering Projects

A hands-on guide for creating a winning engineering project Engineering Project Management is a practical, step-by-step guide to project management for engineers. The author - a successful, long-time practicing engineering project manager - describes the techniques and strategies for creating a successful engineering project. The book introduces engineering projects and their management, and then proceeds stage-by-stage through the engineering life-cycle project, from requirements, implementation, to phase-out. The book offers information for understanding the needs of the end user of a product and other stakeholders associated with a project, and is full of techniques based on real, hands-on management of engineering projects. The book starts by explaining how we perform the actual engineering on projects; the techniques for project management contained in the rest of the book use those engineering methods to create superior management techniques. Every topic - from developing a work-breakdown structure and an effective project plan, to creating credible predictions for schedules and costs, through monitoring the progress of your engineering project - is infused with actual engineering techniques, thereby vastly increasing the effectiveness and credibility of those management techniques. The book also teaches you how to draw the right conclusions from numeric data and calculations, avoiding the mistakes that often cause managers to make incorrect decisions. The book also provides valuable insight about what the author calls the social aspects of engineering project management: aligning and motivating people, interacting successfully with your stakeholders, and many other important people-oriented topics. The book ends with a section on ethics in engineering. This important book: Offers a hands-on guide for developing and implementing a project management plan Includes background information, strategies, and techniques on project management designed for engineers Takes an easy-to-understand, step-by-step approach to project management Contains ideas for launching a project, managing large amount of software, and tips for ending a project Structured to support both undergraduate and graduate courses in engineering project management, Engineering Project Management is an essential guide for managing a successful project from the idea phase to the completion of the project.

Dr. Seuss's wonderfully wise Oh, the Places You'll Go! is the perfect gift to celebrate all of our special milestones—from graduations to birthdays and beyond! From soaring to high heights and seeing great sights to being left in a Lurch on a prickly-l-y perch, Dr. Seuss addresses life's ups and downs with his trademark humorous verse and whimsical illustrations. The inspiring and timeless message encourages readers to find the success that lies within, no matter what challenges they face. A perennial favorite and a perfect gift for anyone starting a new phase in their life!

Stack it higher with engineering projects that teach kids science concepts—and then build on them. Start with the basics, and then grow on what you know. Learn what shapes are best for building, how they work together, and then and how to make and take them to the next level. Download the Capstone 4D app to access a variety of bonus content.

Bridges the Gap between Geology and Ground Engineering High-quality geological models are crucial for ground engineering projects, but many engineers are not always at ease with the geological terminology and analysis presented in these models, nor with their implications and limitations. Project engineers need to have a sound comprehension of the geological models presented to them, and to be able to discuss the models in so far as they might impinge on the design, safety and possible budgetary or time constraints of the project. They should also fully understand how site investigation data and samples are used to develop and substantiate geological models. Geology for Ground Engineering Projects provides a comprehensive presentation of, and insight into, the critical geological phenomena that may be encountered in many engineering projects, for example rock contact relationships, weathering and karst phenomena in tropical areas, composition of fault zones and variability of rock discontinuities. Examples are provided from around the world, including Southeast Asia, Europe, North and South America, China and India. Comprehensive and well-illustrated, this definitive book: Describes the important geological phenomena that could affect ground engineering projects Provides a practical knowledge-base for relevant geological processes

Addresses common geological issues and concerns Rocks are described in relation to the environment of their formation, highlighting the variation in composition, distribution and geotechnical properties that can be expected within a variety of rock associations. Case studies, where geology has been a vital factor, are included. These are written by the project engineers or geologists responsible for the projects. Geology for Ground Engineering Projects is well illustrated with color diagrams and photographs. Readers are directed to satellite images of selected areas to explore for themselves many of the geological features described in this book.

52 Creative Hands-On Projects for Exploring Science, Technology, Engineering, Art, and Math

Awsome Engineering Activities for Kids

10 Performance-Based STEM Projects For Grades K-1

Procedures, Methods and Tools

Make and Test Projects in Engineering Design

The brief will describe how to develop a risk analysis applied to a project, through a sequence of steps: risk management planning, risk identification, risk classification, risk assessment, risk quantification, risk response planning, risk monitoring and control, process close out and lessons learning. The project risk analysis and management process will be applied to large engineering projects, in particular related to the oil and gas industry. The brief will address the overall range of possible events affecting the project moving from certainty (project issues) through uncertainty (project risks) to unpredictability (unforeseeable events), considering both negative and positive events. Some quantitative techniques (simulation, event tree, Bayesian inference, etc.) will be used to develop risk quantification. The brief addresses a typical subject in the area of project management, with reference to large engineering projects concerning the realization of large plants and infrastructures. These projects are characterized by a high level of change, uncertainty, complexity and ambiguity. The brief represents an extension of the material developed for the course Project Risk Analysis and Management of the Master in Strategic Project Management (Erasmus Mundus) developed jointly by Politecnico di Milano, Heriot Watt University (Edimburgh) and Umea (Sweden). The brief may be used both in courses addressing project management subjects and by practitioners as a guide for developing an effective project risk management plan.

Cardboard is everywhere! For creative kids aged 9 to 14, it's the perfect eco-friendly building material, and Cardboard Box Engineering is the perfect guide to get them started on inventive tinkering. A working kaleidoscope, a marble roller coaster, a robotic hand, and a wind-powered tractor with cardboard gears are just some of the ingenious projects developed by Jonathan Adolph, author of the best-selling Mason Jar Science. Working with simple household tools, kids can follow the step-by-step photographic instructions to exercise their design smarts, expand their 3-D thinking, and learn the basics of physics and engineering with activities that have real-life applications.

Science, engineering, and technology permeate nearly every facet of modern life and hold the key to solving many of humanity's most pressing current and future challenges. The United States' position in the global economy is declining, in part because U.S. workers lack fundamental knowledge in these fields. To address the critical issues of U.S. competitiveness and to better prepare the workforce, A Framework for K-12 Science Education proposes a new approach to K-12 science education that will capture students' interest and provide them with the necessary foundational knowledge in the field. A Framework for K-12 Science Education outlines a broad set of expectations for students in science and engineering in grades K-12. These expectations will inform the development of new standards for K-12 science education and, subsequently, revisions to curriculum, instruction, assessment, and professional development for educators. This book identifies three dimensions that convey the core ideas and practices around which science and engineering education in these grades should be built. These three dimensions are:

crosscutting concepts that unify the study of science through their common application across science and engineering; scientific and engineering practices; and disciplinary core ideas in the physical sciences, life sciences, and earth and space sciences and for engineering, technology, and the applications of science. The overarching goal is for all high school graduates to have sufficient knowledge of science and engineering to engage in public discussions on science-related issues, be careful consumers of scientific and technical information, and enter the careers of their choice. A Framework for K-12 Science Education is the first step in a process that can inform state-level decisions and achieve a research-grounded basis for improving science instruction and learning across the country. The book will guide standards developers, teachers, curriculum designers, assessment developers, state and district science administrators, and educators who teach science in informal environments.

Engineering Project ManagementJohn Wiley & Sons

Fun & Creative Workshop Activities

Environmental Handbook for Building and Civil Engineering Projects

Managing the Continuum: Certainty, Uncertainty, Unpredictability in Large Engineering Projects

Project Management for Engineering, Business and Technology

Contracts for Construction and Engineering Projects

Project Reliability Engineering

An encyclopedia of the history and importance of the most iconic engineering structures in world history

A Project-Based Introduction

An Encyclopedia of the Great Engineering Projects in History

Creativity, Engagement and Learning

Measuring Maturity in Complex Engineering Projects

Introduction to Engineering