

Cambridge Technicals In Engineering Ocr

A practical introduction to the core mathematics required for engineering study and practice. Now in its seventh edition, *Engineering Mathematics* is an established textbook that has helped thousands of students to succeed in their exams. John Bird's approach is based on worked examples and interactive problems. This makes it ideal for students from a wide range of academic backgrounds as the student can work through the material at their own pace. Mathematical theories are explained in a straightforward manner, being supported by practical engineering examples and applications in order to ensure that readers can relate theory to practice. The extensive and thorough topic coverage makes this an ideal text for a range of Level 2 and 3 engineering courses. This title is supported by a companion website with resources for both students and lecturers, including lists of essential formulae, multiple choice tests, full solutions for all 1,800 further questions contained within the practice exercises, and biographical information on the 24 famous mathematicians and engineers referenced throughout the book. The companion website for this title can be accessed from www.routledge.com/cw/bird

All students of engineering, science, and mathematics take courses on mathematical techniques or 'methods', and large numbers of these students are insecure in their mathematical grounding. This book offers a course in mathematical methods for students in the first stages of a science or engineering degree. Its particular intention is to cover the range of topics typically required, while providing for students whose mathematical background is minimal. The topics covered are: * Analytic geometry, vector algebra, vector fields (div and curl), differentiation, and integration. * Complex numbers, matrix operations, and linear systems of equations. * Differential equations and first-order linear systems, functions of more than one variable, double integrals, and line integrals. * Laplace transforms and Fourier series and Fourier transforms. * Probability and statistics. The earlier part of this list consists largely of what is thought pre-university material. However, many science students have not studied mathematics to this level, and among those that have the content is frequently only patchily understood. *Mathematical Techniques* begins at an elementary level but proceeds to give more advanced material with a minimum of manipulative complication. Most of the concepts can be explained using quite simple examples, and to aid understanding a large number of fully worked examples is included. As far as is possible chapter topics are dealt with in a self-contained way so that a student only needing to master certain techniques can omit others without trouble. The widely illustrated text also includes simple numerical processes which lead to examples and projects for computation, and a large number of exercises (with answers) is included to reinforce understanding.

Now in its seventh edition, *Basic Engineering Mathematics* is an established textbook that has helped thousands of students to succeed in their exams. Mathematical theories are explained in a straightforward manner, being supported by practical engineering examples and applications in order to ensure that readers can relate theory to practice. The extensive and thorough topic coverage makes this an ideal text for introductory level engineering courses. This title is supported by a companion website with resources for both students and lecturers, including lists of essential formulae, multiple choice tests, and full solutions for all 1,600 further questions.

This book takes a look at fully automated, autonomous vehicles and discusses many open questions: How can autonomous vehicles be integrated into the current transportation system with diverse users and human drivers? Where do automated vehicles fall under current legal frameworks? What risks are associated with automation and how will society respond to these risks? How will the marketplace react to automated vehicles and what changes may be necessary for companies? Experts from Germany and the United States define key societal,

engineering, and mobility issues related to the automation of vehicles. They discuss the decisions programmers of automated vehicles must make to enable vehicles to perceive their environment, interact with other road users, and choose actions that may have ethical consequences. The authors further identify expectations and concerns that will form the basis for individual and societal acceptance of autonomous driving. While the safety benefits of such vehicles are tremendous, the authors demonstrate that these benefits will only be achieved if vehicles have an appropriate safety concept at the heart of their design. Realizing the potential of automated vehicles to reorganize traffic and transform mobility of people and goods requires similar care in the design of vehicles and networks. By covering all of these topics, the book aims to provide a current, comprehensive, and scientifically sound treatment of the emerging field of "autonomous driving".

An insight into the use of the finite method in geotechnical engineering. The first volume covers the theory and the second volume covers the applications of the subject. The work examines popular constitutive models, numerical techniques and case studies.

Class-tested and coherent, this textbook teaches classical and web information retrieval, including web search and the related areas of text classification and text clustering from basic concepts. It gives an up-to-date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents; methods for evaluating systems; and an introduction to the use of machine learning methods on text collections. All the important ideas are explained using examples and figures, making it perfect for introductory courses in information retrieval for advanced undergraduates and graduate students in computer science. Based on feedback from extensive classroom experience, the book has been carefully structured in order to make teaching more natural and effective. Slides and additional exercises (with solutions for lecturers) are also available through the book's supporting website to help course instructors prepare their lectures.

Thinking Skills, second edition, is the only endorsed book offering complete coverage of the Cambridge International AS and A Level syllabus.

Images play a crucial role in shaping and reflecting political life. Digitization has vastly increased the presence of such images in daily life, creating valuable new research opportunities for social scientists. We show how recent innovations in computer vision methods can substantially lower the costs of using images as data. We introduce readers to the deep learning algorithms commonly used for object recognition, facial recognition, and visual sentiment analysis. We then provide guidance and specific instructions for scholars interested in using these methods in their own research.

Authored by a qualified engineer with professional experience in both engineering and English language teaching, the book covers essential technical English vocabulary in context. Over 1000 words and phrases are presented to help engineers or engineering students better communicate in English on the job, using a format designed to make self-study more intuitive-- words and expressions are explained on the left-hand pages, and practice activities are on the right hand pages. Suitable for Upper Intermediate level learners of English (CEF B1-B2).

We live in a networked world. Online social networking platforms and the World Wide Web have changed how society thinks about connectivity. Because of the technological nature of such networks, their study has predominantly taken place within the domains of computer science and related scientific fields. But arts and humanities scholars are increasingly using the same kinds of visual and quantitative analysis to shed light on aspects of culture and society hitherto concealed. This Element contends that networks are a category of study that cuts across traditional academic barriers, uniting diverse

disciplines through a shared understanding of complexity in our world. Moreover, we are at a moment in time when it is crucial that arts and humanities scholars join the critique of how large-scale network data and advanced network analysis are being harnessed for the purposes of power, surveillance, and commercial gain. This title is also available as Open Access on Cambridge Core.

This volume contains seven keynote lectures and over 100 technical contributions by scientists, researchers, engineers and students from more than 25 countries and regions worldwide on the subject of soft soil engineering.

Supporting Student Transitions 14-19 offers transition focused approaches to planning, teaching, learning and assessment designed to meet the needs of these unique learners. Drawing upon the latest research and theory, as well as the authors' extensive experience in the field, it examines in detail transitions in teaching and learning in this complex sector. Drawing out and critically analysing the key features of both pedagogy and andragogy, the book presents the best elements of each to provide all tutors and practitioners involved in the teaching of 14-19 learners with clear strategies for supporting this group. Practical advice backed by sound theory will provide readers with a clear understanding of the requirements and needs of learners in the school, college and university. Topics explored include: The role of the teacher in supporting student transitions Understanding transition focused approaches Emotional and social factors involved Recognising difficulties and helping students prepare Supporting Student Transitions 14-19 is a practical guide also offering a unique contribution to the discourse on this important sector of education, increasingly afforded the attention it deserves. It will be an essential resource for trainee teachers, students of PCET, lecturers and teachers wanting to build upon their understanding of this group of learners.

Making the right choice of GCSE subjects is one of the first major decisions you will make about your future. Some subjects will be compulsory but you will have a choice of other options. Which GCSEs? is full of information to help you make the best choice for you. It also tells you about the other qualifications that you can take at Key Stage 4 as well as outlining other pathways such as apprenticeships. Each subject area covers: - What and how you study - Careers related to your GCSE choices - Your options after your GCSEs.

Exam board: OCR Level: GCSE Subject: Business First teaching: September 2017 First exams: Summer 2019 Target success in OCR GCSE (9-1) Business with this proven formula for effective, structured revision; key content coverage is combined with exam-style tasks and practical tips to create a revision guide that students can rely on to review, strengthen and test their knowledge. With My Revision Notes every student can: - Plan and manage a successful revision programme using the topic-by-topic planner - Consolidate their knowledge by working through clear and focused coverage of the OCR GCSE Business specification - Test understanding and identify areas for improvement with regular 'Check your understanding' activities and answers, plus end-of-topic 'I can' checklists - Improve exam technique through practice questions, expert tips and examples of typical mistakes to avoid - Revise, remember and accurately use key business terms with definitions alongside the text for quick and easy reference An encyclopaedic guide to production techniques and materials for product and industrial designers, engineers, and architects. Today's product designers are

presented with a myriad of choices when creating their work and preparing it for manufacture. They have to be knowledgeable about a vast repertoire of processes, ranging from what used to be known as traditional "crafts" to the latest technology, to enable their designs to be manufactured effectively and efficiently. Information on the internet about such processes is often unreliable, and search engines do not usefully organize material for designers. This fundamental new resource explores innovative production techniques and materials that are having an impact on the design industry worldwide. Organized into four easily referenced parts—Forming, Cutting, Joining, and Finishing—over seventy manufacturing processes are explained in depth with full technical descriptions; analyses of the typical applications, design opportunities, and considerations each process offers; and information on cost, speed, and environmental impact. The accompanying step-by-step case studies look at a product or component being manufactured at a leading international supplier. A directory of more than fifty materials includes a detailed technical profile, images of typical applications and finishes, and an overview of each material's design characteristics. With some 1,200 color photographs and technical illustrations, specially commissioned for this book, this is the definitive reference for product designers, 3D designers, engineers, and architects who need a convenient, highly accessible, and practical reference.

Cambridge National Level 1/2 Award/Certificate in Engineering Design

Exam board: OCR Level: A-level Subject: Design and Technology First teaching:

September 2015 First exams: Summer 2016 Inspire your students to tackle the iterative design process with creativity and confidence, using a textbook that delivers the knowledge, understanding and skills they need for the 2017 OCR Design & Technology AS and A-level specifications. Our trusted author team help you to confidently navigate both the designing and technical principles at the heart of OCR's enquiry approach and to apply them to each of the Product Design, Fashion and Textiles and Design Engineering endorsed titles. - Supports co-teaching of AS and A Level with clear signposting to the additional knowledge, understanding and skills needed at A Level - Inspires your students as they undertake the iterative design process, with a look at how to approach the Non-Exam Assessments, including creative examples of students' work for both the Product Development at AS and the Iterative Design Project at A Level - Helps students to prepare for the written exams with practice questions and guidance on the 'Principles' papers at both AS and A Level, and the 'Problem Solving' papers at A Level

Introduces machine learning and its algorithmic paradigms, explaining the principles behind automated learning approaches and the considerations underlying their usage. This popular introduction to engineering materials features completely rewritten chapters on non-metallic materials that reflect the significant advances in the field of ceramics and composite materials since the last edition and the increased industrial use of polymers. The sections devoted to metals and alloys have also been comprehensively updated and the examination of materials and process selection has been expanded.

Learning to Teach Design and Technology in the Secondary School is a core text for all those training to teach design and technology in the secondary school. It helps you develop subject knowledge, acquire a deeper understanding of the role, purpose and potential of design and technology within the secondary curriculum, and provides the

practical skills needed to plan, teach and evaluate stimulating and creative lessons. This fully updated fourth edition includes information on all areas of design and technology, and on new subject requirements relating to exam qualifications. It includes three new chapters on the role of critiquing in design and technology education, transitions after secondary design and technology, and using and producing design and technology education research. Designed to be read as a course or dipped into for support and advice, it covers: Each area of design and technology: materials, textiles, electronics and food Integrating new curriculum topics, such as emerging technologies, into your teaching Developing areas of subject knowledge Health and safety Planning lessons Organising and managing the classroom Teaching wider issues through design and technology Assessment issues Your own professional development. Bringing together insights from current educational theory and the best contemporary classroom teaching and learning, this book will prove an invaluable resource for students on all training routes – as well as their mentors – who aspire to become effective, reflective design and technology teachers.

This Guide to OCR for Arabic Scripts is the first book of its kind, specifically devoted to this emerging field. Topics and features: contains contributions from the leading researchers in the field; with a Foreword by Professor Bente Maegaard of the University of Copenhagen; presents a detailed overview of Arabic character recognition technology, covering a range of different aspects of pre-processing and feature extraction; reviews a broad selection of varying approaches, including HMM-based methods and a recognition system based on multidimensional recurrent neural networks; examines the evaluation of Arabic script recognition systems, discussing data collection and annotation, benchmarking strategies, and handwriting recognition competitions; describes numerous applications of Arabic script recognition technology, from historical Arabic manuscripts to online Arabic recognition.

An OCR endorsed textbook Build strong knowledge and skills with this market-leading Student Book from OCR's Publishing Partner for GCSE Business; fully updated by subject experts for the 2017 specification, it provides comprehensive content coverage, engaging case studies and assessment activities. - Develops understanding of business concepts and theories through clear explanations, illustrated by diagrams and cartoons that help all learners access the content - Cements and extends subject knowledge with case studies that encourage students to think commercially about contemporary issues and contexts - Enables students to apply their learning and strengthen their investigative, analytical and evaluation skills as they progress through a range of activities - Prepares students for assessment with a variety of practice questions and handy tips for successfully answering different question types - Supports revision by summarising the learning outcomes, key terms and facts for each unit Help your learners develop their knowledge and prepare for assessment with this brand-new classroom resource - the only textbook tailored to the Cambridge National Level 1/2 Award and Certificate in Engineering Design. Covering all four units, this Student Book will: - develop learners' skills and confidence in preparation for assessment with detailed guidance on each learning outcome - contextualise knowledge with activities and case studies throughout - include

practice questions to help with unit R105: Design briefs, design specifications and user requirements - provide expert advice to help students understand the format of the centre-assessed units and develop their portfolio of evidence. This book gives a comprehensive coverage of mechanical science for HNC/HND students taking mechanical engineering courses (including all topics likely to be covered in both years of such courses) and for first year undergraduate courses in mechanical engineering. The book covers principles of statics, mechanics of materials, principles of dynamics and mechanics of machines.

Studying engineering, whether it is mechanical, electrical or civil relies heavily on an understanding of mathematics. This new textbook clearly demonstrates the relevance of mathematical principles and shows how to apply them to solve real-life engineering problems. It deliberately starts at an elementary level so that students who are starting from a low knowledge base will be able to quickly get up to the level required. Students who have not studied mathematics for some time will find this an excellent refresher. Each chapter starts with the basics before gently increasing in complexity. A full outline of essential definitions, formulae, laws and procedures are introduced before real world situations, practicals and problem solving demonstrate how the theory is applied. Focusing on learning through practice, it contains examples, supported by 1,600 worked problems and 3,000 further problems contained within exercises throughout the text. In addition, 34 revision tests are included at regular intervals. An interactive companion website is also provided containing 2,750 further problems with worked solutions and instructor materials

Making the right choice of A levels is crucial. Not only will it affect your enjoyment of studying over the next two years but it also has implications for your choice of career, further training or higher education options. The tenth edition of this student-friendly guide has been revised and updated and includes study and employment options after 16 as well as at degree level. It also contains information on apprenticeships, an increasingly popular alternative to full-time higher education. Each subject entry covers: What and how you study Which A levels fit well together for competitive courses and careers Related higher education courses Career and training options after A levels and degree courses Alternative qualifications such as the International Baccalaureate.

Previous ed.: published as The new Lean toolbox by John Bicheno. 2004

Every other day we hear about new ways to put deep learning to good use: improved medical imaging, accurate credit card fraud detection, long range weather forecasting, and more. PyTorch puts these superpowers in your hands, providing a comfortable Python experience that gets you started quickly and then grows with you as you—and your deep learning skills—become more sophisticated. Deep Learning with PyTorch will make that journey engaging and fun. Summary Every other day we hear about new ways to put deep learning to good use: improved medical imaging, accurate credit card fraud detection, long range weather forecasting, and more. PyTorch puts these superpowers in your hands,

providing a comfortable Python experience that gets you started quickly and then grows with you as you—and your deep learning skills—become more sophisticated. Deep Learning with PyTorch will make that journey engaging and fun. Foreword by Soumith Chintala, Cocreator of PyTorch. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Although many deep learning tools use Python, the PyTorch library is truly Pythonic. Instantly familiar to anyone who knows PyData tools like NumPy and scikit-learn, PyTorch simplifies deep learning without sacrificing advanced features. It's excellent for building quick models, and it scales smoothly from laptop to enterprise. Because companies like Apple, Facebook, and JPMorgan Chase rely on PyTorch, it's a great skill to have as you expand your career options. It's easy to get started with PyTorch. It minimizes cognitive overhead without sacrificing the access to advanced features, meaning you can focus on what matters the most - building and training the latest and greatest deep learning models and contribute to making a dent in the world. PyTorch is also a snap to scale and extend, and it partners well with other Python tooling. PyTorch has been adopted by hundreds of deep learning practitioners and several first-class players like FAIR, OpenAI, FastAI and Purdue. About the book Deep Learning with PyTorch teaches you to create neural networks and deep learning systems with PyTorch. This practical book quickly gets you to work building a real-world example from scratch: a tumor image classifier. Along the way, it covers best practices for the entire DL pipeline, including the PyTorch Tensor API, loading data in Python, monitoring training, and visualizing results. After covering the basics, the book will take you on a journey through larger projects. The centerpiece of the book is a neural network designed for cancer detection. You'll discover ways for training networks with limited inputs and start processing data to get some results. You'll sift through the unreliable initial results and focus on how to diagnose and fix the problems in your neural network. Finally, you'll look at ways to improve your results by training with augmented data, make improvements to the model architecture, and perform other fine tuning. What's inside Training deep neural networks Implementing modules and loss functions Utilizing pretrained models from PyTorch Hub Exploring code samples in Jupyter Notebooks About the reader For Python programmers with an interest in machine learning. About the author Eli Stevens had roles from software engineer to CTO, and is currently working on machine learning in the self-driving-car industry. Luca Antiga is cofounder of an AI engineering company and an AI tech startup, as well as a former PyTorch contributor. Thomas Viehmann is a PyTorch core developer and machine learning trainer and consultant. consultant based in Munich, Germany and a PyTorch core developer. Table of Contents PART 1 - CORE PYTORCH 1 Introducing deep learning and the PyTorch Library 2 Pretrained networks 3 It starts with a tensor 4 Real-world data representation using tensors 5 The mechanics of learning 6 Using a neural network to fit the data 7 Telling birds from airplanes: Learning from images 8

Using convolutions to generalize PART 2 - LEARNING FROM IMAGES IN THE REAL WORLD: EARLY DETECTION OF LUNG CANCER 9 Using PyTorch to fight cancer 10 Combining data sources into a unified dataset 11 Training a classification model to detect suspected tumors 12 Improving training with metrics and augmentation 13 Using segmentation to find suspected nodules 14 End-to-end nodule analysis, and where to go next PART 3 - DEPLOYMENT 15 Deploying to production

Master the core concepts and applications of foundation analysis and design with Das/Sivakugan's best-selling PRINCIPLES OF FOUNDATION ENGINEERING, 9th Edition. Written specifically for those studying undergraduate civil engineering, this invaluable resource by renowned authors in the field of geotechnical engineering provides an ideal balance of today's most current research and practical field applications. A wealth of worked-out examples and figures clearly illustrate the work of today's civil engineer, while timely information and insights help readers develop the critical skills needed to properly apply theories and analysis while evaluating soils and foundation design. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

This book addresses Integrated Design Engineering (IDE), which represents a further development of Integrated Product Development (IPD) into an interdisciplinary model for both a human-centred and holistic product development. The book covers the systematic use of integrated, interdisciplinary, holistic and computer-aided strategies, methods and tools for the development of products and services, taking into account the entire product lifecycle. Being applicable to various kinds of products (manufactured, software, services, etc.), it helps readers to approach product development in a synthesised and integrated way. The book explains the basic principles of IDE and its practical application. IDEs usefulness has been demonstrated in case studies on actual industrial projects carried out by all book authors. A neutral methodology is supplied that allows the reader to choose the appropriate working practices and performance assessment techniques to develop their product quickly and efficiently. Given its manifold topics, the book offers a valuable reference guide for students in engineering, industrial design, economics and computer science, product developers and managers in industry, as well as industrial engineers and technicians. The Project Management Pocketbook is a practical, step-by-step guide to managing a project through to completion. It looks at each key stage and identifies the management techniques that can be applied. From objective-setting through to implementation, the book stresses the importance of good communication, teamworking and influencing skills. All too often, books on this subject cover the process of project management and not the people aspects. This Pocketbook addresses both. "Project management requires a multitude of skills - from vision and planning, to monitoring, communication, leadership and, of course, delivery. This pocketbook pulls together best practice from these diverse areas into one simple, easy-to-read booklet. Refreshingly, it has been written from a general business perspective (rather than I.T.), and is therefore applicable to anyone managing change." Adrian Guttridge, Vice President UK & Ireland, EDS "A lively guide based on real events that any of us may encounter in our everyday life at work or (as I found out after reading this) at home." Johann de Waal, Director, International SOS Insurance Services Ltd

A new approach to safety, based on systems thinking, that is more effective, less costly, and easier to use than current techniques. Engineering has experienced a technological revolution, but the basic engineering techniques applied in safety and reliability engineering, created in a simpler, analog world, have changed very little over the years. In this groundbreaking book, Nancy Leveson proposes a new approach to safety—more suited to today's complex, sociotechnical, software-intensive world—based on modern systems thinking and systems theory. Revisiting and updating ideas pioneered by 1950s aerospace engineers in their System Safety concept, and testing her new model extensively on real-world examples, Leveson has created a new approach to safety that is more effective, less expensive, and easier to use than current techniques. Arguing that traditional models of causality are inadequate, Leveson presents a new, extended model of causation (Systems-Theoretic Accident Model and Processes, or STAMP), then shows how the new model can be used to create techniques for system safety engineering, including accident analysis, hazard analysis, system design, safety in operations, and management of safety-critical systems. She applies the new techniques to real-world events including the friendly-fire loss of a U.S. Blackhawk helicopter in the first Gulf War; the Vioxx recall; the U.S. Navy SUBSAFE program; and the bacterial contamination of a public water supply in a Canadian town. Leveson's approach is relevant even beyond safety engineering, offering techniques for “reengineering” any large sociotechnical system to improve safety and manage risk.

A new series of bespoke, full-coverage resources developed for the 2015 GCSE Mathematics qualifications. Endorsed for the OCR J560 GCSE Mathematics Higher tier specification for first teaching from 2015, this Student Book provides full coverage of the new GCSE Mathematics qualification. With a strong focus on developing problem-solving skills, reasoning and fluency, it helps students understand concepts, apply techniques, solve problems, reason, interpret and communicate mathematically. Written by experienced teachers, it also includes a solid breadth and depth of quality questions set in a variety of contexts. GCSE Mathematics Online - an enhanced digital resource incorporating progression tracking - is also available, as well as Problem-solving Books, Homework Books and a free Teacher's Resource.

The Structural Engineer's Pocket Book British Standards Edition is the only compilation of all tables, data, facts and formulae needed for scheme design to British Standards by structural engineers in a handy-sized format. Bringing together data from many sources into a compact, affordable pocketbook, it saves valuable time spent tracking down information needed regularly. This second edition is a companion to the more recent Eurocode third edition. Although small in size, this book contains the facts and figures needed for preliminary design whether in the office or on-site. Based on UK conventions, it is split into 14 sections including geotechnics, structural steel, reinforced concrete, masonry and timber, and includes a section on sustainability covering general concepts, materials, actions and targets for structural engineers.

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