

Maple Tutorials For Engineers

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Electrical Engineering Springer
Engineering Mathematics with Examples and Applications provides a compact and concise primer in the field, starting with the foundations, and then gradually developing to the advanced level of mathematics that is necessary for all engineering disciplines. Therefore, this book's aim is to help undergraduates rapidly develop the fundamental knowledge of engineering mathematics. The book can also be used by graduates to review and refresh their mathematical skills. Step-by-step worked examples will help the students gain more insights and build sufficient confidence in engineering mathematics and problem-solving. The main approach and style of this book is informal, theorem-free, and practical. By using an informal and theorem-free approach, all fundamental mathematics topics required for engineering are covered, and readers can gain such basic knowledge of all important topics without worrying about rigorous (often boring) proofs. Certain rigorous proof and derivatives are presented in an informal way by direct, straightforward mathematical operations and calculations, giving students the same level of fundamental knowledge without any tedious steps. In addition, this practical approach provides over 100 worked examples so that students can see how each step of mathematical problems can be derived without any gap or jump in steps. Thus, readers can build their understanding and mathematical confidence gradually and in a step-by-step manner. Covers fundamental engineering topics that are presented at the right level, without worry of rigorous proofs Includes step-by-step worked examples (of which

100+ feature in the work) Provides an emphasis on numerical methods, such as root-finding algorithms, numerical integration, and numerical methods of differential equations Balances theory and practice to aid in practical problem-solving in various contexts and applications

Dynamical Systems with Applications using Maple™ CRC Press

If you're just learning how to program, Julia is an excellent JIT-compiled, dynamically typed language with a clean syntax. This hands-on guide uses Julia 1.0 to walk you through programming one step at a time, beginning with basic programming concepts before moving on to more advanced capabilities, such as creating new types and multiple dispatch. Designed from the beginning for high performance, Julia is a general-purpose language ideal for not only numerical analysis and computational science but also web programming and scripting. Through exercises in each chapter, you'll try out programming concepts as you learn them. Think Julia is perfect for students at the high school or college level as well as self-learners and professionals who need to learn programming basics. Start with the basics, including language syntax and semantics Get a clear definition of each programming concept Learn about values, variables, statements, functions, and data structures in a logical progression Discover how to work with files and databases Understand types, methods, and multiple dispatch Use debugging techniques to fix syntax, runtime, and semantic errors Explore interface design and data structures through case studies

Getting Started Maple Cambridge University Press

Based on a teach-yourself approach, the fundamentals of MATLAB are illustrated throughout with many examples from a number of different scientific and engineering areas, such as simulation, population modelling, and numerical methods, as well as from business and everyday life. Some of the examples draw on first-year university level maths, but these are self-contained so that their omission will not detract from learning the principles of using MATLAB. This completely revised new edition is based on the latest version of MATLAB. New chapters cover handle graphics, graphical user interfaces (GUIs), structures and cell arrays, and importing/exporting data. The chapter on numerical methods now

includes a general GUI-driver ODE solver. * Maintains the easy informal style of the first edition * Teaches the basic principles of scientific programming with MATLAB as the vehicle * Covers the latest version of MATLAB

Maple V Flight Manual John Wiley & Sons Incorporated

This book is designed primarily for undergraduates in mathematics, engineering, and the physical sciences. Rather than concentrating on technical skills, it focuses on a deeper understanding of the subject by providing many unusual and challenging examples. The basic topics of vector geometry, differentiation and integration in several variables are explored. It also provides numerous computer illustrations and tutorials using MATLAB® and Maple®, that bridge the gap between analysis and computation. Features: •Includes numerous computer illustrations and tutorials using MATLAB® and Maple® •Covers the major topics of vector geometry, differentiation, and integration in several variables •Instructors' ancillaries available upon adoption

Applied Abstract Algebra with Maple™ and MATLAB® Packt Publishing Ltd

Fourier transform theory is of central importance in a vast range of applications in physical science, engineering, and applied mathematics. This new edition of a successful student text provides a concise introduction to the theory and practice of Fourier transforms, using qualitative arguments wherever possible and avoiding unnecessary mathematics. After a brief description of the basic ideas and theorems, the power of the technique is then illustrated by referring to particular applications in optics, spectroscopy, electronics and telecommunications. The rarely discussed but important field of multi-dimensional Fourier theory is covered, including a description of computer-aided tomography (CAT-scanning). The final chapter discusses digital methods, with particular attention to the fast Fourier transform. Throughout, discussion of these applications is reinforced by the inclusion of worked examples. The book assumes no previous knowledge of the subject, and will be invaluable to students of physics, electrical and electronic engineering, and computer science.

Solving Problems in Scientific Computing Using

Maple and MATLAB® Arden Shakespeare
As the role of the modern engineer is markedly different from that of even a decade ago, the theme of engineering mathematics education (EME) is an important one. The need for mathematical modeling (MM) courses and consideration of the educational impact of computer-based technology environments merit special attention. This book contains the proceeding of the NATO Advanced Research Workshop held on this theme in July 1993. We have left the industrial age behind and have entered the information age. Computers and other emerging technologies are penetrating society in depth and gaining a strong influence in determining how in future society will be organised, while the rapid change of information requires a more qualified work force. This work force is vital to high technology and economic competitiveness in many industrialised countries throughout the world. Within this framework, the quality of EME has become an issue. It is expected that the content of mathematics courses taught in schools of engineering today have to be re-evaluated continuously with regard to computer-based technology and the needs of modern information society. The main aim of the workshop was to provide a forum for discussion between mathematicians, engineering scientists, mathematics educationalists, and courseware developers in the higher education sector and to focus on the issues and problems of the design of more relevant and appropriate MM courses for engineering education.

Multivariable and Vector Calculus Mercury Learning and Information
Teaches problem-solving using two of the most important mathematical software packages: Maple and MATLAB. This new edition contains five completely new chapters covering new developments.

CAEN Newsletter Springer
The Handbook of Software for Engineers and Scientists is a single-volume, ready reference for the practicing engineer and scientist in industry, government, and academia as well as the novice computer user. It provides the most up-to-date information in a variety of areas such as common platforms and operating systems, applications programs, networking, and many other problem-solving tools necessary to effectively use computers on a daily basis. Specific platforms and environments thoroughly discussed include MS-DOS®, Microsoft® Windows™, the Macintosh® and its various systems, UNIX™, DEC VAX™, IBM® mainframes, OS/2®, Windows™ NT, and NeXTSTEP™. Word processing, desktop publishing, spreadsheets, databases, integrated packages, computer presentation systems, groupware, and a number of useful utilities are also covered. Several extensive sections in the book are devoted to mathematical and statistical software.

Information is provided on circuits and control simulation programs, finite element tools, and solid modeling tools.
Essential MATLAB for Scientists and Engineers
UM Libraries

Maple is a very powerful computer algebra system used by students, educators, mathematicians, statisticians, scientists, and engineers for doing numerical and symbolic computations. Greatly expanded and updated from the author's MAPLE V Primer, The MAPLE Book offers extensive coverage of the latest version of this outstanding software package, MAPLE 7.0 The MAPLE Book serves both as an introduction to Maple and as a reference. Organized according to level and subject area of mathematics, it first covers the basics of high school algebra and graphing, continues with calculus and differential equations then moves on to more advanced topics, such as linear algebra, vector calculus, complex analysis, special functions, group theory, number theory and combinatorics. The MAPLE Book includes a tutorial for learning the Maple programming language. Once readers have learned how to program, they will appreciate the real power of Maple. The convenient format and straightforward style of The MAPLE Book let users proceed at their own pace, practice with the examples, experiment with graphics, and learn new functions as they need them. All of the Maple commands used in the book are available on the Internet, as are links to various other files referred to in the book.

Whatever your level of expertise, you'll want to keep The MAPLE Book next to your computer.
GNU Octave Academic Press
The Effective Learning and Teaching in Higher Education series is packed with up-to-date advice, guidance and expert opinion on teaching in the key subjects in higher education today, and is backed up by the authority of the Institute for Learning and Teaching. This book covers all of the key issues surrounding the effective teaching of maths- a key subject in its own right, and one that forms an important part of many other disciplines. The book includes contributions from a wide range of experts in the field, and has a broad and international perspective.

Rechargeable Lithium Batteries Brooks/Cole Publishing Company
The articles that comprise this distinguished annual volume for the Advances in Mechanics and Mathematics series have been written in honor of Gilbert Strang, a world renowned mathematician and exceptional person. Written by leading experts in complementarity, duality, global optimization, and quantum computations, this collection reveals the beauty of these mathematical disciplines and investigates recent developments in global optimization, nonconvex and nonsmooth analysis, nonlinear programming, theoretical and engineering mechanics, large scale computation, quantum algorithms and computation, and information theory.

A Student's Guide to Fourier Transforms Cambridge University Press

Excellent reviews of the first edition (Mathematical Reviews, SIAM, Reviews, UK Nonlinear News, The Maple Reporter) New edition has been thoroughly updated and expanded to include more applications, examples, and exercises, all with solutions Two new chapters on neural networks and simulation have also been added Wide variety of topics covered with applications to many fields, including mechanical systems, chemical kinetics, economics, population dynamics, nonlinear optics, and materials science Accessible to a broad, interdisciplinary audience of readers with a general mathematical background, including senior undergraduates, graduate students, and working scientists in various branches of applied mathematics, the natural sciences, and engineering A hands-on approach is used with Maple as a pedagogical tool throughout; Maple worksheet files are listed at the end of each chapter, and along with commands, programs, and output may be viewed in color at the author's website with additional applications and further links of interest at Maplesoft's Application Center

A First Course in Scientific Computing
Routledge

This book constitutes refereed proceedings of the 4th Maple Conference, MC 2020, held in Waterloo, Ontario, Canada, in November 2020. The 25 revised full papers and 3 short papers were carefully reviewed and selected out of 75 submissions, one invited paper is also presented in the volume. The papers included in this book cover topics in education, algorithms, and applications of the mathematical software Maple.

Modern Mathematics Education for Engineering Curricula in Europe Springer Science & Business Media

Presents an innovative synthesis of methods used to study problems of equivalence and symmetry.

Maple V: Mathematics and its Applications
Association for Computing Machinery (ACM)

Annotation Your work demands results, and you don't have time for tedious, repetitive mathematical tasks. Sage is a free, open-source software package that automates symbolic and numerical calculations with the power of the Python programming language, so you can focus on the analytical and creative aspects of your work or studies. Sage Beginner's Guide shows you how to do calculations with Sage. Each concept is illustrated with a complete example that you can use as a starting point for your own work. You will learn how to use many of the functions that are built in to Sage, and how to use Python to write sophisticated programs that utilize the power of Sage. This book starts by showing you how to download and install Sage, and introduces the command-line interface and the graphical notebook interface. It also includes an introduction to Python so you can start programming in Sage. Every major concept is illustrated with a practical example. After learning the fundamentals of variables and functions in

Sage, you will learn how to symbolically simplify expressions, solve equations, perform integrals and derivatives, and manipulate vectors and matrices. You will learn how Sage can produce numerous kinds of plots and graphics. The book will demonstrate numerical methods in Sage, and explain how to use object-oriented programming to improve your code. Sage Beginner's Guide will give you the tools you need to unlock the full potential of Sage for simplifying and automating mathematical computing. Effectively use Sage to eliminate tedious algebra, speed up numerical calculations, implement algorithms and data structures, and illustrate your work with publication-quality plots and graphics.

Equivalence, Invariants and Symmetry Prentice Hall For undergraduate introductory or survey courses in electrical engineering. ELECTRICAL ENGINEERING: PRINCIPLES AND APPLICATIONS, 5/e helps students learn electrical-engineering fundamentals with minimal frustration. Its goals are to present basic concepts in a general setting, to show students how the principles of electrical engineering apply to specific problems in their own fields, and to enhance the overall learning process. Circuit analysis, digital systems, electronics, and electromechanics are covered. A wide variety of pedagogical features stimulate student interest and engender awareness of the material's relevance to their chosen profession.

Bookboon

A presentation of what Maple can do and how it does it in the context of environmental sciences. The text includes introductory tutorials in each chapter combined with extensive marginal comments which are followed by a complete application. These include the contouring of water table data, the physical chemistry of kidney stones, and acid rain. The book also provides a special application to enable students to use "self help" in the case that Maple seem unable to do the simplest things.

Engineering Mathematics with Maple The Electrochemical Society

This book is open access under a CC BY License. It provides a comprehensive overview of the core subjects comprising mathematical curricula for engineering studies in five European countries and identifies differences between two strong traditions of teaching mathematics to engineers. The collective work of experts from a dozen universities critically examines various aspects of higher mathematical education. The two EU Tempus-IV projects – MetaMath and MathGeAr – investigate the current methodologies of mathematics education for technical and engineering disciplines. The projects aim to improve the existing mathematics curricula in Russian, Georgian and Armenian universities by

introducing modern technology-enhanced learning (TEL) methods and tools, as well as by shifting the focus of engineering mathematics education from a purely theoretical tradition to a more applied paradigm. MetaMath and MathGeAr have brought together mathematics educators, TEL specialists and experts in education quality assurance from 21 organizations across six countries. The results of a comprehensive comparative analysis of the entire spectrum of mathematics courses in the EU, Russia, Georgia and Armenia has been conducted, have allowed the consortium to pinpoint and introduce several modifications to their curricula while preserving the generally strong state of university mathematics education in these countries. The book presents the methodology, procedure and results of this analysis. This book is a valuable resource for teachers, especially those teaching mathematics, and curriculum planners for engineers, as well as for a general audience interested in scientific and technical higher education.

The Maple Book Springer Science & Business Media

Today, scientific computing and data analysis play an integral part in most scientific disciplines ranging from mathematics and biology to imaging processing and finance. With GNU Octave you have a highly flexible tool that can solve a vast number of such different problems as complex statistical analysis and dynamical system studies. The GNU Octave Beginner's Guide gives you an introduction that enables you to solve and analyze complicated numerical problems. The book is based on numerous concrete examples and at the end of each chapter you will find exercises to test your knowledge. It's easy to learn GNU Octave, with the GNU Octave Beginner's Guide to hand. Using real-world examples the GNU Octave Beginner's Guide will take you through the most important aspects of GNU Octave. This practical guide takes you from the basics where you are introduced to the interpreter to a more advanced level where you will learn how to build your own specialized and highly optimized GNU Octave toolbox package. The book starts by introducing you to work variables like vectors and matrices, demonstrating how to perform simple arithmetic operations on these objects before explaining how to use some of the simple functionality that comes with GNU Octave, including plotting. It then goes on to show you how to write new functionality into GNU Octave and how to make a toolbox package to solve your specific problem. Finally, it demonstrates how to optimize your

code and link GNU Octave with C and C++ code enabling you to solve even the most computationally demanding tasks. After reading GNU Octave Beginner's Guide you will be able to use and tailor GNU Octave to solve most numerical problems and perform complicated data analysis with ease.

Maple Computer Manual for Advanced Engineering Mathematics Springer Science & Business Media

This well-respected text gives an introduction to the theory and application of modern numerical approximation techniques for students taking a one- or two-semester course in numerical analysis. With an accessible treatment that only requires a calculus prerequisite, Burden and Faires explain how, why, and when approximation techniques can be expected to work, and why, in some situations, they fail. A wealth of examples and exercises develop students' intuition, and demonstrate the subject's practical applications to important everyday problems in math, computing, engineering, and physical science disciplines. The first book of its kind built from the ground up to serve a diverse undergraduate audience, three decades later Burden and Faires remains the definitive introduction to a vital and practical subject. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.