

## Free Introduction To Topology And Modern Analysis By G F Simmons

This is a free sample chapter from a short book on chemical process design. The book derives from a course on chemical process design that I taught at the University of Cambridge, UK, between 2008 and 2018 and is intended to serve as a basic introduction to a number of disciplines within the topic. Given the immense breadth and depth of this subject, the aim of this book is to introduce and illustrate certain key points and concepts and to provide a template 'workflow' for certain procedures such as gaseous relief header design or distillation optimisation. Reference is made to specialist design manuals for specific topics such that more information can be obtained by the reader where necessary. The aim of this book is not to provide a definitive reference for all design scenarios but rather to act as an introductory guide! The book was originally written for undergraduate students embarking on their design project, but it is also intended to serve as a succinct reference guide to existing practitioners.

Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you About This Book Step into the amazing world

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of intelligent apps using this comprehensive guide Enter the world of Artificial Intelligence, explore it, and create your own applications Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python would be useful to play around with the code. It will also be useful for experienced Python programmers who are looking to use Artificial Intelligence techniques in their existing technology stacks. What You Will Learn Realize different classification and regression techniques Understand the concept of clustering and how to use it to automatically segment data See how to build an intelligent recommender system Understand logic programming and how to use it Build automatic speech recognition systems Understand the basics of heuristic search and genetic programming Develop games using Artificial Intelligence Learn how reinforcement learning works Discover how to build intelligent applications centered on images, text, and time series data See how to use deep learning algorithms and build applications based on it In Detail Artificial Intelligence is becoming increasingly relevant in the modern world where everything is driven by technology and data. It is used extensively across many fields such as search engines, image recognition,

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robotics, finance, and so on. We will explore various real-world scenarios in this book and you'll learn about various algorithms that can be used to build Artificial Intelligence applications. During the course of this book, you will find out how to make informed decisions about what algorithms to use in a given context. Starting from the basics of Artificial Intelligence, you will learn how to develop various building blocks using different data mining techniques. You will see how to implement different algorithms to get the best possible results, and will understand how to apply them to real-world scenarios. If you want to add an intelligence layer to any application that's based on images, text, stock market, or some other form of data, this exciting book on Artificial Intelligence will definitely be your guide! Style and approach This highly practical book will show you how to implement Artificial Intelligence. The book provides multiple examples enabling you to create smart applications to meet the needs of your organization. In every chapter, we explain an algorithm, implement it, and then build a smart application.

The Wolfram Language represents a major advance in programming languages that makes leading-edge computation accessible to everyone. Unique in its approach of building in vast knowledge and automation, the Wolfram Language scales from a single line of easy-to-understand interactive code to million-line

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production systems. This book provides an elementary introduction to the Wolfram Language and modern computational thinking. It assumes no prior knowledge of programming, and is suitable for both technical and non-technical college and high-school students, as well as anyone with an interest in the latest technology and its practical application.

An Introduction to Statistical Learning provides an accessible overview of the field of statistical learning, an essential toolset for making sense of the vast and complex data sets that have emerged in fields ranging from biology to finance to marketing to astrophysics in the past twenty years. This book presents some of the most important modeling and prediction techniques, along with relevant applications. Topics include linear regression, classification, resampling methods, shrinkage approaches, tree-based methods, support vector machines, clustering, and more. Color graphics and real-world examples are used to illustrate the methods presented. Since the goal of this textbook is to facilitate the use of these statistical learning techniques by practitioners in science, industry, and other fields, each chapter contains a tutorial on implementing the analyses and methods presented in R, an extremely popular open source statistical software platform. Two of the authors co-wrote *The Elements of Statistical Learning* (Hastie, Tibshirani and Friedman, 2nd edition 2009), a popular reference book for

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statistics and machine learning researchers. An Introduction to Statistical Learning covers many of the same topics, but at a level accessible to a much broader audience. This book is targeted at statisticians and non-statisticians alike who wish to use cutting-edge statistical learning techniques to analyze their data. The text assumes only a previous course in linear regression and no knowledge of matrix algebra.

The current political standoffs of the 'War on Terror' illustrate that the interaction within and between the so-called Western and Middle Eastern civilizations is constantly in flux. A recurring theme however is how Islam and Muslims signify the 'Enemy' in the Western socio-cultural imagination and have become the 'Other' against which the West identifies itself. In a unique and insightful blend of critical race, feminist and post-colonial theory, Sunera Thobani examines how Islam is foundational to the formation of Western identity at critical points in its history, including the Crusades, the Reconquista and the colonial period. More specifically, she explores how masculinity and femininity are formed at such pivotal junctures and what role feminism has played in the wars against 'radical' Islam. Exposing these symbiotic relationships, Thobani explores how the return of 'religion' is reworking the racial, gender and sexual politics by which Western society defines itself, and more specifically, defines itself against Islam.

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Contesting Islam, Constructing Race and Sexuality unpacks conventional as well as unconventional orthodoxies to open up new spaces in how we think about sexual and racial identity in the West and the crucial role that Islam has had and continues to have in its development.

This book is an introduction to singularities for graduate students and researchers. It is said that algebraic geometry originated in the seventeenth century with the famous work *Discours de la méthode pour bien conduire sa raison, et chercher la vérité dans les sciences* by Descartes. In that book he introduced coordinates to the study of geometry. After its publication, research on algebraic varieties developed steadily. Many beautiful results emerged in mathematicians' works. Most of them were about non-singular varieties. Singularities were considered "bad" objects that interfered with knowledge of the structure of an algebraic variety. In the past three decades, however, it has become clear that singularities are necessary for us to have a good description of the framework of varieties. For example, it is impossible to formulate minimal model theory for higher-dimensional cases without singularities. Another example is that the moduli spaces of varieties have natural compactification, the boundaries of which correspond to singular varieties. A remarkable fact is that the study of singularities is developing and people are beginning to see that singularities are interesting and can be handled by human beings. This book is a handy introduction to singularities for anyone interested in singularities. The focus is on an isolated singularity in an algebraic variety. After preparation of varieties, sheaves, and homological algebra, some known results about 2-dimensional isolated singularities are introduced. Then a classification

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of higher-dimensional isolated singularities is shown according to plurigenera and the behavior of singularities under a deformation is studied.

Introduction to Sociology 2e adheres to the scope and sequence of a typical, one-semester introductory sociology course. It offers comprehensive coverage of core concepts, foundational scholars, and emerging theories, which are supported by a wealth of engaging learning materials. The textbook presents detailed section reviews with rich questions, discussions that help students apply their knowledge, and features that draw learners into the discipline in meaningful ways. The second edition retains the book's conceptual organization, aligning to most courses, and has been significantly updated to reflect the latest research and provide examples most relevant to today's students. In order to help instructors transition to the revised version, the 2e changes are described within the preface. The images in this textbook are grayscale. Authors include: Heather Griffiths, Nathan Keirns, Eric Strayer, Susan Cody-Rydzewski, Gail Scaramuzzo, Tommy Sadler, Sally Vyain, Jeff Bry, Faye Jones

Covering both theory and applications, this important work provides a comprehensive introduction to the modern theory of X-ray and electronic spectra of free atoms. Romas Karazija discusses methods of angular momenta, irreducible tensorial operators, and coefficients of fractional parentage and their use in determining cross sections and probabilities of elementary processes. In addition, Karazija addresses the structure of electronic shells with inner vacancies and many-body effects.

Every day we seem to make and act upon all kinds of free choices - some of them trivial, and some so consequential that they may change the course of our life, or even the course of history. But are these choices really free? Or are we compelled to act the way we do by factors

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beyond our control? Is the feeling that we could have made different decisions just an illusion? And if our choices are not free, why should we be held morally responsible for our actions? This Very Short Introduction, written by a leading authority on the subject, looks at a range of issues surrounding this fundamental philosophical question, exploring it from the ideas of the Greek and medieval philosophers through to the thoughts of present-day thinkers. It provides a interesting and incisive introduction to this perennially fascinating subject. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

'I disapprove of what you say, but I will defend to the death your right to say it' This slogan, attributed to Voltaire, is frequently quoted by defenders of free speech. Yet it is rare to find anyone prepared to defend all expression in every circumstance, especially if the views expressed incite violence. So where do the limits lie? What is the real value of free speech? Here, Nigel Warburton offers a concise guide to important questions facing modern society about the value and limits of free speech: Where should a civilized society draw the line? Should we be free to offend other people's religion? Are there good grounds for censoring pornography? Has the Internet changed everything? This Very Short Introduction is a thought-provoking, accessible, and up-to-date examination of the liberal assumption that free speech is worth preserving at any cost. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors

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combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. Used by sites as varied as Twitter, GitHub, Disney, and Airbnb, Ruby on Rails is one of the most popular frameworks for developing web applications, but it can be challenging to learn and use. Whether you're new to web development or new only to Rails, *Ruby on Rails™ Tutorial, Fourth Edition*, is the solution. Best-selling author and leading Rails developer Michael Hartl teaches Rails by guiding you through the development of three example applications of increasing sophistication. The tutorial's examples focus on the general principles of web development needed for virtually any kind of website. The updates to this edition include full compatibility with Rails 5, a division of the largest chapters into more manageable units, and a huge number of new exercises interspersed in each chapter for maximum reinforcement of the material. This indispensable guide provides integrated tutorials not only for Rails, but also for the essential Ruby, HTML, CSS, and SQL skills you need when developing web applications. Hartl explains how each new technique solves a real-world problem, and then he demonstrates it with bite-sized code that's simple enough to understand, yet novel enough to be useful. Whatever your previous web development experience, this book will guide you to true Rails mastery. This book will help you Install and set up your Rails development environment, including pre-installed integrated development environment (IDE) in the cloud Go beyond generated code to truly understand how to build Rails applications from scratch Learn testing and test-driven development (TDD) Effectively use the Model-View-Controller (MVC) pattern Structure

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applications using the REST architecture Build static pages and transform them into dynamic ones Master the Ruby programming skills all Rails developers need Create high-quality site layouts and data models Implement registration and authentication systems, including validation and secure passwords Update, display, and delete users Upload images in production using a cloud storage service Implement account activation and password reset, including sending email with Rails Add social features and microblogging, including an introduction to Ajax Record version changes with Git and create a secure remote repository at Bitbucket Deploy your applications early and often with Heroku

This title provides a comprehensive, unified tutorial covering the most recent advances in the emerging technology of free-space optics (FSO), a field in which interest and attention continue to grow along with the number of new challenges. This book is intended as an all-inclusive source to serve the needs of those who require information about the fundamentals of FSO, as well as up-to-date advanced knowledge of the state-of-the-art in the technologies available today. This text is intended for graduate students, and will also be useful for research scientists and engineers with an interest in the field. FSO communication is a practical solution for creating a three dimensional global broadband communications grid, offering bandwidths far beyond what is possible in the Radio Frequency (RF) range. However, the attributes of atmospheric turbulence and scattering impose perennial limitations on availability and reliability of FSO links. From a systems point-of-view, this groundbreaking book provides a thorough understanding of channel behavior, which can be used to design and evaluate optimum transmission techniques that operate under realistic atmospheric conditions. Topics addressed include:

- FSO Physical and Statistical Models: Single/Multiple Inputs/Outputs
- Understanding

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FSO: Theory and Systems Analysis • Modulation and Coding for Free-Space Optical Channels • Atmospheric Mitigation and Compensation for FSO Links • Non-line-of-sight (NLOS) Ultraviolet and Indoor FSO Communications • FSO Platforms: UAV and Mobile • Retromodulators for Free Space Data links • Hybrid Optical RF Communications • Free-space and Atmospheric Quantum Communications • Other related topics: Chaos-based and Terahertz (THz) FSO Communications

An introduction to a broad range of topics in deep learning, covering mathematical and conceptual background, deep learning techniques used in industry, and research perspectives. “Written by three experts in the field, Deep Learning is the only comprehensive book on the subject.” —Elon Musk, cochair of OpenAI; cofounder and CEO of Tesla and SpaceX Deep learning is a form of machine learning that enables computers to learn from experience and understand the world in terms of a hierarchy of concepts. Because the computer gathers knowledge from experience, there is no need for a human computer operator to formally specify all the knowledge that the computer needs. The hierarchy of concepts allows the computer to learn complicated concepts by building them out of simpler ones; a graph of these hierarchies would be many layers deep. This book introduces a broad range of topics in deep learning. The text offers mathematical and conceptual background, covering relevant concepts in linear algebra, probability theory and information theory, numerical computation, and machine learning. It describes deep learning techniques used by practitioners in industry, including deep feedforward networks, regularization, optimization algorithms, convolutional networks, sequence modeling, and practical methodology; and it surveys such applications as natural language processing, speech recognition, computer vision, online recommendation

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systems, bioinformatics, and videogames. Finally, the book offers research perspectives, covering such theoretical topics as linear factor models, autoencoders, representation learning, structured probabilistic models, Monte Carlo methods, the partition function, approximate inference, and deep generative models. Deep Learning can be used by undergraduate or graduate students planning careers in either industry or research, and by software engineers who want to begin using deep learning in their products or platforms. A website offers supplementary material for both readers and instructors.

Drawing from the vast literature available on free radicals, this book presents a helpful selection of fundamentally useful material. An Introduction to Free Radicals presents coverage of basic concepts, electron spin resonance, an overview of diradicals and triplet states, radical pairs, CIDNP and CIDEP, the small radicals, radical sources, selected alkyl radicals, conjugated carbon radicals, synthetic applications, electron transfer and related concepts. An Introduction to Free Radicals will supply important information about free radicals and provide a firm foundation for more specialized study for organic chemists, physical chemists, biochemists, polymer chemists, synthetic chemists, and photochemists. Polymer chemists and pharmaceutical chemists will find a wealth of synthetic applications within this book.

Environmental engineers will find the chapters on the small radicals and electron transfer and related concepts extremely useful. That's because radical reactions are important in the degradation of both natural and man-made products. Numerous tables, diagrams, and selected references to the literature make this book an essential learning and reference tool. Voltaire's comment - 'I disapprove of what you say, but I will defend to the death your right to say it' - is frequently quoted by defenders of free speech. Yet it is rare to find someone

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prepared to defend all freedom of speech, especially if the views expressed are obnoxious or obviously false. So where do the limits lie? How important really is our right to freedom of speech? Here, Nigel Warburton offers a concise guide to the important questions facing modern society about free speech: Should a civilized society set limits on the freedom of speech? How can we square free speech with the sensitivities of religious and minority groups? Does copyright law clash with our right to free speech? And how have new technologies such as the Internet changed the debate? This Very Short Introduction is a thought-provoking, accessible, and up-to-date examination of the liberal assumption that free speech is worth preserving at any cost.

The absence of derivatives, often combined with the presence of noise or lack of smoothness, is a major challenge for optimisation. This book explains how sampling and model techniques are used in derivative-free methods and how these methods are designed to efficiently and rigorously solve optimisation problems.

During the past decade there has been an explosion in computation and information technology. With it have come vast amounts of data in a variety of fields such as medicine, biology, finance, and marketing. The challenge of understanding these data has led to the development of new tools in the field of statistics, and spawned new areas such as data mining, machine learning, and bioinformatics. Many of these tools have common underpinnings but are often expressed with different terminology. This book describes the important ideas in these areas in a common conceptual framework. While the approach is statistical, the emphasis is on concepts rather than mathematics. Many examples are given, with a liberal use of color graphics. It should be a valuable resource for statisticians and

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anyone interested in data mining in science or industry. The book's coverage is broad, from supervised learning (prediction) to unsupervised learning. The many topics include neural networks, support vector machines, classification trees and boosting---the first comprehensive treatment of this topic in any book. This major new edition features many topics not covered in the original, including graphical models, random forests, ensemble methods, least angle regression & path algorithms for the lasso, non-negative matrix factorization, and spectral clustering. There is also a chapter on methods for "wide" data ( $p$  bigger than  $n$ ), including multiple testing and false discovery rates. Trevor Hastie, Robert Tibshirani, and Jerome Friedman are professors of statistics at Stanford University. They are prominent researchers in this area: Hastie and Tibshirani developed generalized additive models and wrote a popular book of that title. Hastie co-developed much of the statistical modeling software and environment in R/S-PLUS and invented principal curves and surfaces. Tibshirani proposed the lasso and is co-author of the very successful *An Introduction to the Bootstrap*. Friedman is the co-inventor of many data-mining tools including CART, MARS, projection pursuit and gradient boosting.

"This book introduces you to R, RStudio, and the tidyverse, a collection of R packages designed to work together to make data science fast, fluent, and fun. Suitable for readers with no previous programming experience"--

Faith & Morals Here - carefully documented, footnoted, and indexed - is not only what the Church teaches but also why it is obligated to do so. And, why its members are obligated to examine and to apply that teaching. This updated and expanded edition of a text long trusted and widely used in colleges, universities, and seminaries (as well as in high schools and parish

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religious-education programs), offers the latest Catholic teaching on moral theology, including: Moral theology: its nature, purpose, and biblical foundation Human dignity, free human action, virtue, and conscience Natural law, moral absolutes, and sin Christian faith and our moral life Read why - and how - living what the Church teaches can transform hearts, minds, and souls. The significantly expanded and updated new edition of a widely used text on reinforcement learning, one of the most active research areas in artificial intelligence. Reinforcement learning, one of the most active research areas in artificial intelligence, is a computational approach to learning whereby an agent tries to maximize the total amount of reward it receives while interacting with a complex, uncertain environment. In Reinforcement Learning, Richard Sutton and Andrew Barto provide a clear and simple account of the field's key ideas and algorithms. This second edition has been significantly expanded and updated, presenting new topics and updating coverage of other topics. Like the first edition, this second edition focuses on core online learning algorithms, with the more mathematical material set off in shaded boxes. Part I covers as much of reinforcement learning as possible without going beyond the tabular case for which exact solutions can be found. Many algorithms presented in this part are new to the second edition, including UCB, Expected Sarsa, and Double Learning. Part II extends these ideas to function approximation, with new sections on such topics as artificial neural networks and the Fourier basis, and offers expanded treatment of off-policy learning and policy-gradient methods. Part III has new chapters on reinforcement learning's relationships to psychology and neuroscience, as well as an updated case-studies chapter including AlphaGo and AlphaGo Zero, Atari game playing, and IBM Watson's wagering strategy. The final chapter discusses the future societal impacts of reinforcement learning.

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Introduction to Magnetochemistry provides an introduction to the more important aspects of magnetochemistry. The measurement of magnetic moment has been one of the most consistently useful to coordination chemists. For teaching purposes it provides a simple method of illustrating the ideas of electronic structure, and in research it can provide fundamental information about the bonding and stereochemistry of complexes. The book contains six chapters covering topics such as free atoms and ions, transition metal complexes, crystal field theory, second and third row transition metal complexes, antiferromagnetism, and spin-pairing of electrons. The final chapter describes important experimental methods and then to shows briefly the way in which the problems of interpretation may be tackled.

A surprisingly simple way for students to master any subject--based on one of the world's most popular online courses and the bestselling book *A Mind for Numbers* *A Mind for Numbers* and its wildly popular online companion course "Learning How to Learn" have empowered more than two million learners of all ages from around the world to master subjects that they once struggled with. Fans often wish they'd discovered these learning strategies earlier and ask how they can help their kids master these skills as well. Now in this new book for kids and teens, the authors reveal how to make the most of time spent studying. We all have the tools to learn what might not seem to come naturally to us at first--the secret is to understand how the brain works so we can unlock its power. This book explains:

- Why sometimes letting your mind wander is an important part of the learning process
- How to avoid "rut think" in order to think outside the box
- Why having a poor memory can be a good thing
- The value of metaphors in developing understanding
- A simple, yet powerful, way to stop procrastinating

Filled with illustrations, application questions, and exercises, this book makes learning easy and fun.

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John Roemer challenges the morality of an economic system based on the private ownership of the means of production. Unless you start with a certain amount of wealth in such a society, you are only "free to lose." This book addresses crucial questions of political philosophy and normative economics in terms understandable by readers with a minimal knowledge of economics.

THIS BOOK COMES WITH FREE, READY-TO-USE, DOWNLOADABLE, INTERACTIVE PROJECTABLE CLASSES (IPCs). Coaching For Language Learning (CFLL) offers solutions to many problems encountered by language teachers and learners, such as where students are not progressing. A new energy and atmosphere are made available through CFLL, where language teachers do not have to teach at all, but exclusively listen and respond. It is extremely rewarding. CFLL is a new way of teaching and learning based on solid action research in the domain of ESL (English as a Second Language), particularly English for Business. It is also applicable to other contexts in ELT (English Language Teaching) or the teaching of other second languages, and will be useful to anyone working in International Communication, or to improve Spoken Performance and Public Speaking. This book contributes to developing teachers' coaching skills, which is the next step forward in our dedicated efforts to innovating and improving language teaching and learning. You will find here everything you need to know about the coaching approach to language learning, and numerous practical steps you can take to embody this approach - A MUST FOR THE MODERN TEACHER.

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