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KEY=PRACTICAL - GRETCHEN MELENDEZ

Practical Computing for Biologists

Sinauer Associates Incorporated **To help with the increasingly large data sets that many scientists deal with, this book illustrates how to use many freely available computing tools to work more powerfully and effectively. The book was born out of the authors' experiences developing tools for their research and to fix other biologist's computational problems.**

Computing for Biologists

Python Programming and Principles

Cambridge University Press **Computing is revolutionizing the practice of biology. This book, which assumes no prior computing experience, provides students with the tools to write their own Python programs and to understand fundamental concepts in computational biology and bioinformatics. Each major part of the book begins with a compelling biological question, followed by the algorithmic ideas and programming tools necessary to explore it: the origins of pathogenicity are examined using gene finding, the evolutionary history of sex determination systems is studied using sequence alignment, and the origin of modern humans is addressed using phylogenetic methods. In addition to providing general programming skills, this book explores the design of efficient algorithms, simulation, NP-hardness, and the maximum likelihood method, among other key concepts and methods. Easy-to-read and designed to equip students with the skills to write programs for solving a range of biological problems, the book is accompanied by numerous programming exercises, available at www.cs.hmc.edu/CFB.**

The Princeton Guide to Evolution

Princeton University Press **The Princeton Guide to Evolution is a comprehensive, concise, and authoritative reference to the major subjects and key concepts in evolutionary biology, from genes to mass extinctions. Edited by a distinguished team of evolutionary biologists, with contributions from leading researchers, the guide contains some 100 clear, accurate, and up-to-date articles on the most important topics in seven major areas: phylogenetics and the history of life; selection and adaptation; evolutionary processes; genes, genomes, and phenotypes; speciation and macroevolution; evolution of behavior, society, and humans; and evolution and modern society. Complete with more than 100 illustrations (including eight pages in color), glossaries of key terms, suggestions for further reading on each topic, and an index, this is an essential volume for undergraduate and graduate students, scientists in related fields, and anyone else with a serious interest in evolution. Explains key topics in some 100 concise and authoritative articles written by a team of leading evolutionary biologists Contains more than 100 illustrations, including eight pages in color Each article includes an outline, glossary, bibliography, and cross-references Covers phylogenetics and the history of life; selection and adaptation; evolutionary processes; genes, genomes, and phenotypes; speciation and macroevolution; evolution of behavior, society, and humans; and evolution and modern society**

UNIX and Perl to the Rescue!

A Field Guide for the Life Sciences (and Other Data-rich Pursuits)

Cambridge University Press **Your research has generated gigabytes of data and now you need to analyse it. You hate using spreadsheets but it is all you know, so what else can you do? This book will transform how you work with large**

and complex data sets, teaching you powerful programming tools for slicing and dicing data to suit your needs. Written in a fun and accessible style, this step-by-step guide will inspire and inform non-programmers about the essential aspects of Unix and Perl. It shows how, with just a little programming knowledge, you can write programs that could save you hours, or even days. No prior experience is required and new concepts are introduced using numerous code examples that you can try out for yourself. Going beyond the basics, the authors touch upon many broader topics that will help those new to programming, including debugging and how to write in a good programming style.

Tree Thinking

An Introduction to Phylogenetic Biology

<u>Roberts & Company</u> **Baum and Smith, both professors evolutionary biology and researchers in the field of systematics, present this highly accessible introduction to phylogenetics and its importance in modern biology. Ever since Darwin, the evolutionary histories of organisms have been portrayed in the form of branching trees or "phylogenies." However, the broad significance of the phylogenetic trees has come to be appreciated only quite recently. Phylogenetics has myriad applications in biology, from discovering the features present in ancestral organisms, to finding the sources of invasive species and infectious diseases, to identifying our closest living (and extinct) hominid relatives. Taking a conceptual approach, Tree Thinking introduces readers to the interpretation of phylogenetic trees, how these trees can be reconstructed, and how they can be used to answer biological questions. Examples and vivid metaphors are incorporated throughout, and each chapter concludes with a set of problems, valuable for both students and teachers. Tree Thinking is must-have textbook for any student seeking a solid foundation in this fundamental area of evolutionary biology.**

Ubiquitous Computing Fundamentals

<u>CRC Press</u> **"...a must-read text that provides a historical lens to see how ubicomp has matured into a multidisciplinary endeavor. It will be an essential reference to researchers and those who want to learn more about this evolving field." -From the Foreword, Professor Gregory D. Abowd, Georgia Institute of Technology First introduced two decades ago, the term ubiquitous computing is now part of the common vernacular. Ubicomp, as it is commonly called, has grown not just quickly but broadly so as to encompass a wealth of concepts and technology that serves any number of purposes across all of human endeavor. While such growth is positive, the newest generation of ubicomp practitioners and researchers, isolated to specific tasks, are in danger of losing their sense of history and the broader perspective that has been so essential to the field's creativity and brilliance. Under the guidance of John Krumm, an original ubicomp pioneer, Ubiquitous Computing Fundamentals brings together eleven ubiquitous computing trailblazers who each report on his or her area of expertise. Starting with a historical introduction, the book moves on to summarize a number of self-contained topics. Taking a decidedly human perspective, the book includes discussion on how to observe people in their natural environments and evaluate the critical points where ubiquitous computing technologies can improve their lives. Among a range of topics this book examines: How to build an infrastructure that supports ubiquitous computing applications Privacy protection in systems that connect personal devices and personal information Moving from the graphical to the ubiquitous computing user interface Techniques that are revolutionizing the way we determine a person's location and understand other sensor measurements While we needn't become expert in every sub-discipline of ubicomp, it is necessary that we appreciate all the perspectives that make up the field and understand how our work can influence and be influenced by those perspectives. This is important, if we are to encourage future generations to be as successfully innovative as the field's originators.**

Reproducible Research with R and RStudio

<u>CRC Press</u> **Praise for previous editions: "Gandrud has written a great outline of how a fully reproducible research project should look from start to finish, with brief explanations of each tool that he uses along the way... Advanced undergraduate students in mathematics, statistics, and similar fields as well as students just beginning their graduate studies would benefit the most from reading this book. Many more experienced R users or second-year graduate students might find themselves thinking, 'I wish I'd read this book at the start of my studies, when I was first learning R!'...This book could be used as the main text for a class on reproducible research ..." (The American Statistician) Reproducible Research with R and R Studio, Third Edition brings together the skills and tools needed for doing and presenting computational research. Using straightforward examples, the book takes you through an entire reproducible research workflow. This practical workflow enables you to gather and analyze data as well as dynamically present results in print and on the web. Supplementary materials and example are available on the author's website. New to the Third Edition Updated package recommendations, examples, URLs, and removed technologies no longer in regular use. More advanced R Markdown (and less LaTeX) in discussions of markup languages and examples. Stronger focus on reproducible working directory tools. Updated discussion of cloud storage services and persistent reproducible material citation. Added discussion of Jupyter notebooks and reproducible practices in industry. Examples of data manipulation with Tidyverse tibbles (in addition to standard data frames) and pivot_longer() and pivot_wider() functions for pivoting data. Features Incorporates the most important advances that have been developed since the editions were published Describes a complete reproducible research workflow, from data gathering to the presentation**

of results Shows how to automatically generate tables and figures using R Includes instructions on formatting a presentation document via markup languages Discusses cloud storage and versioning services, particularly Github Explains how to use Unix-like shell programs for working with large research projects

The Optics of Life

A Biologist's Guide to Light in Nature

<u>Princeton University Press</u> **Optics--a field of physics focusing on the study of light--is also central to many areas of biology, including vision, ecology, botany, animal behavior, neurobiology, and molecular biology. The Optics of Life introduces the fundamentals of optics to biologists and nonphysicists, giving them the tools they need to successfully incorporate optical measurements and principles into their research. Sönke Johnsen starts with the basics, describing the properties of light and the units and geometry of measurement. He then explores how light is created and propagates and how it interacts with matter, covering topics such as absorption, scattering, fluorescence, and polarization. Johnsen also provides a tutorial on how to measure light as well as an informative discussion of quantum mechanics. The Optics of Life features a host of examples drawn from nature and everyday life, and several appendixes that offer further practical guidance for researchers. This concise book uses a minimum of equations and jargon, explaining the basic physics of light in a succinct and lively manner. It is the essential primer for working biologists and for anyone seeking an accessible introduction to optics. Some images inside the book are unavailable due to digital copyright restrictions.**

Practical Haskell

A Real World Guide to Programming

<u>Apress</u> **Get a practical, hands-on introduction to the Haskell language, its libraries and environment, and to the functional programming paradigm that is fast growing in importance in the software industry. This book contains excellent coverage of the Haskell ecosystem and supporting tools, include Cabal and Stack for managing projects, HUnit and QuickCheck for software testing, the Spock framework for developing web applications, Persistent and Esqueleto for database access, and parallel and distributed programming libraries. You'll see how functional programming is gathering momentum, allowing you to express yourself in a more concise way, reducing boilerplate, and increasing the safety of your code. Haskell is an elegant and noise-free pure functional language with a long history, having a huge number of library contributors and an active community. This makes Haskell the best tool for both learning and applying functional programming, and Practical Haskell takes advantage of this to show off the language and what it can do. What You Will Learn Get started programming with Haskell Examine the different parts of the language Gain an overview of the most important libraries and tools in the Haskell ecosystem Apply functional patterns in real-world scenarios Understand monads and monad transformers Proficiently use laziness and resource management Who This Book Is For Experienced programmers who may be new to the Haskell programming language. However, some prior exposure to Haskell is recommended.**

A Primer for Computational Biology

A Primer for Computational Biology aims to provide life scientists and students the skills necessary for research in a data-rich world. The text covers accessing and using remote servers via the command-line, writing programs and pipelines for data analysis, and provides useful vocabulary for interdisciplinary work. The book is broken into three parts: Introduction to Unix/Linux: The command-line is the "natural environment" of scientific computing, and this part covers a wide range of topics, including logging in, working with files and directories, installing programs and writing scripts, and the powerful "pipe" operator for file and data manipulation. Programming in Python: Python is both a premier language for learning and a common choice in scientific software development. This part covers the basic concepts in programming (data types, if-statements and loops, functions) via examples of DNA-sequence analysis. This part also covers more complex subjects in software development such as objects and classes, modules, and APIs. Programming in R: The R language specializes in statistical data analysis, and is also quite useful for visualizing large datasets. This third part covers the basics of R as a programming language (data types, if-statements, functions, loops and when to use them) as well as techniques for large-scale, multi-test analyses. Other topics include S3 classes and data visualization with ggplot2.

The Psychology of Fake News

Accepting, Sharing, and Correcting Misinformation

<u>Routledge</u> **This volume examines the phenomenon of fake news by bringing together leading experts from different fields within psychology and related areas, and explores what has become a prominent feature of public discourse since the first Brexit referendum and the 2016 US election campaign. Dealing with misinformation is important in many**

areas of daily life, including politics, the marketplace, health communication, journalism, education, and science. In a general climate where facts and misinformation blur, and are intentionally blurred, this book asks what determines whether people accept and share (mis)information, and what can be done to counter misinformation? All three of these aspects need to be understood in the context of online social networks, which have fundamentally changed the way information is produced, consumed, and transmitted. The contributions within this volume summarize the most up-to-date empirical findings, theories, and applications and discuss cutting-edge ideas and future directions of interventions to counter fake news. Also providing guidance on how to handle misinformation in an age of "alternative facts", this is a fascinating and vital reading for students and academics in psychology, communication, and political science and for professionals including policy makers and journalists.

BSCS Biology

A Human Approach. Teacher's guide

Kendall Hunt

Report of the Presidential Commission on the Space Shuttle Challenger Accident

DIANE Publishing **Reviews the circumstances surrounding the Challenger accident to establish the probable cause or causes of the accident. Develops recommendations for corrective or other action based upon the Commission1s findings and determinations. Color photos, charts and tables.**

Smart Computing and Informatics

Proceedings of the First International Conference on SCI 2016, Volume 1

Springer **This volume contains 74 papers presented at SCI 2016: First International Conference on Smart Computing and Informatics. The conference was held during 3-4 March 2017, Visakhapatnam, India and organized communally by ANITS, Visakhapatnam and supported technically by CSI Division V – Education and Research and PRF, Vizag. This volume contains papers mainly focused on applications of advanced intelligent techniques to video processing, medical imaging, machine learning, sensor technologies, and network security.**

An Introduction to Bioinformatics Algorithms

MIT Press **An introductory text that emphasizes the underlying algorithmic ideas that are driving advances in bioinformatics. This introductory text offers a clear exposition of the algorithmic principles driving advances in bioinformatics. Accessible to students in both biology and computer science, it strikes a unique balance between rigorous mathematics and practical techniques, emphasizing the ideas underlying algorithms rather than offering a collection of apparently unrelated problems. The book introduces biological and algorithmic ideas together, linking issues in computer science to biology and thus capturing the interest of students in both subjects. It demonstrates that relatively few design techniques can be used to solve a large number of practical problems in biology, and presents this material intuitively. An Introduction to Bioinformatics Algorithms is one of the first books on bioinformatics that can be used by students at an undergraduate level. It includes a dual table of contents, organized by algorithmic idea and biological idea; discussions of biologically relevant problems, including a detailed problem formulation and one or more solutions for each; and brief biographical sketches of leading figures in the field. These interesting vignettes offer students a glimpse of the inspirations and motivations for real work in bioinformatics, making the concepts presented in the text more concrete and the techniques more approachable.PowerPoint presentations, practical bioinformatics problems, sample code, diagrams, demonstrations, and other materials can be found at the Author's website.**

The Theoretical Biologist's Toolbox

Quantitative Methods for Ecology and Evolutionary Biology

Cambridge University Press **Mathematical modelling is widely used in ecology and evolutionary biology and it is a topic that many biologists find difficult to grasp. In this new textbook Marc Mangel provides a no-nonsense introduction to**

the skills needed to understand the principles of theoretical and mathematical biology. Fundamental theories and applications are introduced using numerous examples from current biological research, complete with illustrations to highlight key points. Exercises are also included throughout the text to show how theory can be applied and to test knowledge gained so far. Suitable for advanced undergraduate courses in theoretical and mathematical biology, this book forms an essential resource for anyone wanting to gain an understanding of theoretical ecology and evolution.

Effective Computation in Physics

Field Guide to Research with Python

"O'Reilly Media, Inc." **More physicists today are taking on the role of software developer as part of their research, but software development isn't always easy or obvious, even for physicists. This practical book teaches essential software development skills to help you automate and accomplish nearly any aspect of research in a physics-based field. Written by two PhDs in nuclear engineering, this book includes practical examples drawn from a working knowledge of physics concepts. You'll learn how to use the Python programming language to perform everything from collecting and analyzing data to building software and publishing your results. In four parts, this book includes: Getting Started: Jump into Python, the command line, data containers, functions, flow control and logic, and classes and objects Getting It Done: Learn about regular expressions, analysis and visualization, NumPy, storing data in files and HDF5, important data structures in physics, computing in parallel, and deploying software Getting It Right: Build pipelines and software, learn to use local and remote version control, and debug and test your code Getting It Out There: Document your code, process and publish your findings, and collaborate efficiently; dive into software licenses, ownership, and copyright procedures**

Systematic Reviews in the Social Sciences

A Practical Guide

John Wiley & Sons **Such diverse thinkers as Lao-Tze, Confucius, and U.S. Defense Secretary Donald Rumsfeld have all pointed out that we need to be able to tell the difference between real and assumed knowledge. The systematic review is a scientific tool that can help with this difficult task. It can help, for example, with appraising, summarising, and communicating the results and implications of otherwise unmanageable quantities of data. This book, written by two highly-respected social scientists, provides an overview of systematic literature review methods: Outlining the rationale and methods of systematic reviews; Giving worked examples from social science and other fields; Applying the practice to all social science disciplines; It requires no previous knowledge, but takes the reader through the process stage by stage; Drawing on examples from such diverse fields as psychology, criminology, education, transport, social welfare, public health, and housing and urban policy, among others. Including detailed sections on assessing the quality of both quantitative, and qualitative research; searching for evidence in the social sciences; meta-analytic and other methods of evidence synthesis; publication bias; heterogeneity; and approaches to dissemination.**

Signs in the Dust

A Theory of Natural Culture and Cultural Nature

Oxford University Press **Modern thought is characterized by a dichotomy of meaningful culture and unmeaning nature. Signs in the Dust uses medieval semiotics to develop a new theory of nature and culture that resists this familiar picture of things. Through readings of Thomas Aquinas, Nicholas of Cusa, and John Poinsot (John of St. Thomas), it offers a semiotic analysis of human culture in both its anthropological breadth as an enterprise of creaturely sign-making, and its theological height as a finite participation in the Trinity, which can be understood as an absolute 'cultural nature'. Signs in the Dust then extends this account of human culture backwards into the natural depth of biological and physical nature. It puts the biosemiotics of its medieval sources, along with Félix Ravaisson's philosophy of habit, into dialogue with the Extended Evolutionary Synthesis that is emerging in contemporary biology, to show how all living things participate in semiosis, so that that a cultural dimension is present through the whole order of nature and the whole of natural history. It also retrieves Aquinas' doctrine of intentions in the medium to show how signification can be attributed in a diminished way to even inanimate nature, with the ontological implication that being as such should be reconceived in semiotic terms. The phenomena of human culture are therefore to be understood not as breaks with a meaningless nature, but instead as heightenings and deepenings of natural movements of meaning that long precede and far exceed us. Against the modern divorce of nature and culture, Signs in the Dust argues that culture is natural and nature is cultural, through and through.**

Data Manipulation with R

Springer Science & Business Media **This book presents a wide array of methods applicable for reading data into R, and efficiently manipulating that data. In addition to the built-in functions, a number of readily available packages from CRAN (the Comprehensive R Archive Network) are also covered. All of the methods presented take advantage of the core features of R: vectorization, efficient use of subscripting, and the proper use of the varied functions in R that are provided for common data management tasks. Most experienced R users discover that, especially when working with large data sets, it may be helpful to use other programs, notably databases, in conjunction with R. Accordingly, the use of databases in R is covered in detail, along with methods for extracting data from spreadsheets and datasets created by other programs. Character manipulation, while sometimes overlooked within R, is also covered in detail, allowing problems that are traditionally solved by scripting languages to be carried out entirely within R. For users with experience in other languages, guidelines for the effective use of programming constructs like loops are provided. Since many statistical modeling and graphics functions need their data presented in a data frame, techniques for converting the output of commonly used functions to data frames are provided throughout the book.**

The Psychosocial Implications of Disney Movies

MDPI **In this volume of 15 articles, contributors from a wide range of disciplines present their analyses of Disney movies and Disney music, which are mainstays of popular culture. The power of the Disney brand has heightened the need for academics to question whether Disney's films and music function as a tool of the Western elite that shapes the views of those less empowered. Given its global reach, how the Walt Disney Company handles the role of race, gender, and sexuality in social structural inequality merits serious reflection according to a number of the articles in the volume. On the other hand, other authors argue that Disney productions can help individuals cope with difficult situations or embrace progressive thinking. The different approaches to the assessment of Disney films as cultural artifacts also vary according to the theoretical perspectives guiding the interpretation of both overt and latent symbolic meaning in the movies. The authors of the 15 articles encourage readers to engage with the material, showcasing a variety of views about the good, the bad, and the best way forward.**

Python for Biologists

Createspace Independent Pub **Python for biologists is a complete programming course for beginners that will give you the skills you need to tackle common biological and bioinformatics problems.**

Advances in Computational Biology

Proceedings of the 2nd Colombian Congress on Computational Biology and Bioinformatics (CCBCOL)

Springer Science & Business Media **This volume compiles accepted contributions for the 2nd Edition of the Colombian Computational Biology and Bioinformatics Congress CCBCOL, after a rigorous review process in which 54 papers were accepted for publication from 119 submitted contributions. Bioinformatics and Computational Biology are areas of knowledge that have emerged due to advances that have taken place in the Biological Sciences and its integration with Information Sciences. The expansion of projects involving the study of genomes has led the way in the production of vast amounts of sequence data which needs to be organized, analyzed and stored to understand phenomena associated with living organisms related to their evolution, behavior in different ecosystems, and the development of applications that can be derived from this analysis.**

Testimonios: Stories of Latinx and Hispanic Mathematicians

American Mathematical Soc. **Testimonios brings together first-person narratives from the vibrant, diverse, and complex Latinx and Hispanic mathematical community. Starting with childhood and family, the authors recount their own individual stories, highlighting their upbringing, education, and career paths. Their particular stories, told in their own voices, from their own perspectives, give visibility to some of the experiences of Latinx/Hispanic mathematicians. Testimonios seeks to inspire the next generation of Latinx and Hispanic mathematicians by featuring the stories of people like them, holding a mirror up to our own community. It also aims to provide a window for mathematicians (and aspiring mathematicians) from all ethnicities, with the hope of inspiring a better understanding of the diversity of the mathematical community.**

Legal Directives and Practical Reasons

<u>Oxford University Press, USA</u> **This book takes up a central question in jurisprudence: What difference can law make to normative reasons relevant to our actions? Following a critical examination of two competing models, an exclusionary model and a weighing model, Gur proposes a third way that aims to capture the strengths of both of these models while avoiding their pitfalls.**

Life on an Ocean Planet

Teacher digital resource package includes 2 CD-ROMs and 1 user guide. Includes Teacher curriculum guide, PowerPoint chapter presentations, an image gallery of photographs, illustrations, customizable presentations and student materials, Exam Assessment Suite, PuzzleView for creating word puzzles, and LessonView for dynamic lesson planning. Laboratory and activity disc includes the manual in both student and teacher editions and a lab materials list.

The Righteous Mind

Why Good People are Divided by Politics and Religion

<u>Vintage</u> **Presents a groundbreaking investigation into the origins of morality at the core of religion and politics, offering scholarly insight into the motivations behind cultural clashes that are polarizing America.**

GMAT Prep Plus 2021

6 Practice Tests + Proven Strategies + Online + Mobile

<u>Simon and Schuster</u> **Updated for the most recent exam changes, Kaplan's GMAT Prep Plus 2020 has the strategies and practice you need for an advantage on test day. This edition includes 6 online practice tests and our proven test-taking strategies, plus more than 120 new practice questions and updated videos in the online resources. We're so confident that GMAT Prep Plus 2020 will raise your score that we guarantee it: After studying with the book and online resources, you'll score higher on the GMAT or you'll get your money back. The Best Practice 1,200+ practice questions—including new questions for the 2020 edition—cover all sections of the test and come with detailed explanations. Six full-length online practice tests in the same shorter format as the revised GMAT help you practice using the same interface and adaptivity you'll see on test day. A 200-question online Quiz Bank lets you select problems by topic, customizing your practice. Questions have been reviewed, revised, and updated by Kaplan's expert teachers. Efficient Strategies and Expert Guidance 1-on-1 academic support from Kaplan faculty on our Facebook page: facebook.com/KaplanGMAT Video workshops with top Kaplan faculty help you master our proven methods and strategies for scoring higher. Kaplan's books and practice questions are written by veteran GMAT teachers who know students—and every explanation is written to help you learn. We know the test. The Kaplan team has spent years studying every GMAT-related document available. We invented test prep. Kaplan has been helping students achieve their goals for over 80 years. Find out more at kaptest.com. Want to boost your studies with even more online practice and in-depth GMAT math and verbal workbooks? Try Kaplan's GMAT Complete 2020.**

The Handmaid's Tale

<u>Everyman's Library</u> **A chilling look at the near future presents the story of Offred, a Handmaid in the Republic of Gilead, once the United States, an oppressive world where women are no longer allowed to read and are valued only as long as they are viable for reproduction. 25,000 first printing.**

Bioluminescence

<u>Harvard University Press</u> **Bioluminescence is everywhere on earth—most of all in the ocean, from angler fish in the depths to flashing dinoflagellates at the surface. Wilson and Hastings explore the natural history, evolution, and biochemistry of the diverse array of organisms that emit light and offer an evolutionary explanation for their sporadic distribution and rarity.**

Morphological Plant Modeling: Unleashing Geometric and Topological Potential within the Plant Sciences

<u>Frontiers Media SA</u> **An increasing population faces the growing demand for agricultural products and accurate global climate models that account for individual plant morphologies to predict favorable human habitat. Both demands are rooted in an improved understanding of the mechanistic origins of plant development. Such understanding requires geometric and topological descriptors to characterize the phenotype of plants and its link to genotypes. However, the**

current plant phenotyping framework relies on simple length and diameter measurements, which fail to capture the exquisite architecture of plants. The Research Topic "Morphological Plant Modeling: Unleashing Geometric and Topological Potential within the Plant Sciences" is the result of a workshop held at National Institute for Mathematical and Biological Synthesis (NIMBioS) in Knoxville, Tennessee. From 2.-4. September 2015 over 40 scientists from mathematics, computer science, engineering, physics and biology came together to set new frontiers in combining plant phenotyping with recent results from shape theory at the interface of geometry and topology. In doing so, the Research Topic synthesizes the views from multiple disciplines to reveal the potential of new mathematical concepts to analyze and quantify the relationship between morphological plant features. As such, the Research Topic bundles examples of new mathematical techniques including persistent homology, graph-theory, and shape statistics to tackle questions in crop breeding, developmental biology, and vegetation modeling. The challenge to model plant morphology under field conditions is a central theme of the included papers to address the problems of climate change and food security, that require the integration of plant biology and mathematics from geometry and topology research applied to imaging and simulation techniques. The introductory white paper written by the workshop participants identifies future directions in research, education and policy making to integrate biological and mathematical approaches and to strengthen research at the interface of both disciplines.

Handbook of Simulation

Principles, Methodology, Advances, Applications, and Practice

John Wiley & Sons **The only complete guide to all aspects and uses of simulation-from the international leaders in the field There has never been a single definitive source of key information on all facets of discrete-event simulation and its applications to major industries. The Handbook of Simulation brings together the contributions of leading academics, practitioners, and software developers to offer authoritative coverage of the principles, techniques, and uses of discrete-event simulation. Comprehensive in scope and thorough in approach, the Handbook is the one reference on discrete-event simulation that every industrial engineer, management scientist, computer scientist, operations manager, or operations researcher involved in problem-solving should own, with an in-depth examination of: * Simulation methodology, from experimental design to data analysis and more * Recent advances, such as object-oriented simulation, on-line simulation, and parallel and distributed simulation * Applications across a full range of manufacturing and service industries * Guidelines for successful simulations and sound simulation project management * Simulation software and simulation industry vendors**

Marine Mammals and Noise

Academic Press **Many marine mammals communicate by emitting sounds that pass through water. Such sounds can be received across great distances and can influence the behavior of these undersea creatures. In the past few decades, the oceans have become increasingly noisy, as underwater sounds from propellers, sonars, and other human activities make it difficult for marine mammals to communicate. This book discusses, among many other topics, just how well marine mammals hear, how noisy the oceans have become, and what effects these new sounds have on marine mammals. The baseline of ambient noise, the sounds produced by machines and mammals, the sensitivity of marine mammal hearing, and the reactions of marine mammals are also examined. An essential addition to any marine biologist's library, Marine Mammals and Noise will be especially appealing to marine mammalogists, researchers, policy makers and regulators, and marine biologists and oceanographers using sound in their research.**

Demographic Methods Across the Tree of Life

Oxford University Press **This novel book provides the reader with the fundamentals of data collection, model construction, analyses, and interpretation across a wide repertoire of demographic techniques and protocols, clearly guided throughout with fully reproducible R scripts.**

Molecular Ecology

John Wiley & Sons **Molecular Ecology provides a comprehensive introduction to the many diverse aspects of this subject. The book unites theory with examples from a wide range of taxa in a logical and progressive manner, and its accessible writing style makes subjects such as population genetics and phylogenetics highly comprehensible to its readers. The first part of the book introduces the essential underpinnings of molecular ecology, starting with a review of genetics and a discussion of the molecular markers that are most frequently used in ecological research. This leads into an overview of population genetics in ecology. The second half of the book then moves on to specific applications of molecular ecology, covering phylogeography, behavioural ecology and conservation genetics. The final chapter looks at molecular ecology in a wider context by using a number of case studies that are relevant to various economic and social concerns, including wildlife forensics, agriculture, and overfishing * comprehensive overview of the different aspects of molecular ecology * attention to both theoretical and applied concerns * accessible writing style and logical structure * numerous up-to-date examples and references This will be an invaluable reference for those studying**

molecular ecology, population genetics, evolutionary biology, conservation genetics and behavioural ecology, as well as researchers working in these fields.

The Maritime Engineering Reference Book

A Guide to Ship Design, Construction and Operation

Elsevier **The Maritime Engineering Reference Book is a one-stop source for engineers involved in marine engineering and naval architecture. In this essential reference, Anthony F. Molland has brought together the work of a number of the world's leading writers in the field to create an inclusive volume for a wide audience of marine engineers, naval architects and those involved in marine operations, insurance and other related fields. Coverage ranges from the basics to more advanced topics in ship design, construction and operation. All the key areas are covered, including ship flotation and stability, ship structures, propulsion, seakeeping and maneuvering. The marine environment and maritime safety are explored as well as new technologies, such as computer aided ship design and remotely operated vehicles (ROVs). Facts, figures and data from world-leading experts makes this an invaluable ready-reference for those involved in the field of maritime engineering. Professor A.F. Molland, BSc, MSc, PhD, CEng, FRINA. is Emeritus Professor of Ship Design at the University of Southampton, UK. He has lectured ship design and operation for many years. He has carried out extensive research and published widely on ship design and various aspects of ship hydrodynamics. * A comprehensive overview from best-selling authors including Bryan Barrass, Rawson and Tupper, and David Eyres * Covers basic and advanced material on marine engineering and Naval Architecture topics * Have key facts, figures and data to hand in one complete reference book**

Cambridge Handbook of Experimental Political Science

Cambridge University Press **This volume provides the first comprehensive overview of how political scientists have used experiments to transform their field of study.**

The Science of Effective Mentorship in STEMM

National Academies Press **Mentorship is a catalyst capable of unleashing one's potential for discovery, curiosity, and participation in STEMM and subsequently improving the training environment in which that STEMM potential is fostered. Mentoring relationships provide developmental spaces in which students' STEMM skills are honed and pathways into STEMM fields can be discovered. Because mentorship can be so influential in shaping the future STEMM workforce, its occurrence should not be left to chance or idiosyncratic implementation. There is a gap between what we know about effective mentoring and how it is practiced in higher education. The Science of Effective Mentorship in STEMM studies mentoring programs and practices at the undergraduate and graduate levels. It explores the importance of mentorship, the science of mentoring relationships, mentorship of underrepresented students in STEMM, mentorship structures and behaviors, and institutional cultures that support mentorship. This report and its complementary interactive guide present insights on effective programs and practices that can be adopted and adapted by institutions, departments, and individual faculty members.**

New Visions of Nature

Complexity and Authenticity

Springer Science & Business Media **"New Visions of Nature" focuses on the emergence of these new visions of complex nature in three domains. The first selection of essays reflects public visions of nature, that is, nature as it is experienced, encountered, and instrumentalized by diverse publics. The second selection zooms in on micro nature and explores the world of contemporary genomics. The final section returns to the macro world and discusses the ethics of place in present-day landscape philosophy and environmental ethics. The contributions to this volume explore perceptual and conceptual boundaries between the human and the natural, or between an 'out there' and 'in here.' They attempt to specify how nature has been publicly and genomically constructed, known and described through metaphors and re-envisioned in terms of landscape and place. By parsing out and rendering explicit these divergent views, the volume asks for a re-thinking of our relationship with nature.**

The Practice of Everyday Life

Univ of California Press **Repackage of a classic sociology text in which the author develops the idea of resistance to social and economic pressures.**