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KEY=LAW - LEVY RODNEY

POPULAR MECHANICS

Popular Mechanics inspires, instructs and influences readers to help them master the modern world. Whether it's practical DIY home-improvement tips, gadgets and digital technology, information on the newest cars or the latest breakthroughs in science -- *PM* is the ultimate guide to our high-tech lifestyle.

POPULAR SCIENCE

Popular Science gives our readers the information and tools to improve their technology and their world. The core belief that *Popular Science* and our readers share: The future is going to be better, and science and technology are the driving forces that will help make it better.

CLINICAL SUPERVISION AND PROFESSIONAL DEVELOPMENT OF THE SUBSTANCE ABUSE COUNSELOR

DIANE Publishing Clinical supervision (CS) is emerging as the crucible in which counselors acquire knowledge and skills for the substance abuse (SA) treatment profession, providing a bridge between the classroom and the clinic. Supervision is necessary in the SA treatment field to improve client care, develop the professionalism of clinical personnel, and maintain ethical standards. Contents of this report: (1) CS and Prof'l. Develop. of the SA Counselor: Basic info. about CS in the SA treatment field; Presents the ¿how to¿ of CS.; (2) An Implementation Guide for Admin.; Will help admin. understand the benefits and rationale behind providing CS for their program¿s SA counselors. Provides tools for making the tasks assoc. with implementing a CS system easier. Illustrations.

ORBITAL MECHANICS FOR ENGINEERING STUDENTS

Elsevier Orbital Mechanics for Engineering Students, Second Edition, provides an introduction to the basic concepts of space mechanics. These include vector kinematics in three dimensions; Newton's laws of motion and gravitation; relative motion; the vector-based solution of the classical two-body problem; derivation of Kepler's equations; orbits in three dimensions; preliminary orbit determination; and orbital maneuvers. The book also covers relative motion and the two-impulse rendezvous problem; interplanetary mission design using patched conics; rigid-body dynamics used to characterize the attitude of a space vehicle; satellite attitude dynamics; and the characteristics and design of multi-stage launch vehicles. Each chapter begins with an outline of key concepts and concludes with problems that are based on the material covered. This text is written for undergraduates who are studying orbital mechanics for the first time and have completed courses in physics, dynamics, and mathematics, including differential equations and applied linear algebra. Graduate students, researchers, and experienced practitioners will also find useful review materials in the book. NEW: Reorganized and improved discussions of coordinate systems, new discussion on perturbations and quaternions NEW: Increased coverage of attitude dynamics, including new Matlab algorithms and examples in chapter 10 New examples and homework problems

RANKING TASK EXERCISES IN PHYSICS

Addison-Wesley This book features Ranking Task exercises - an innovative type of conceptual exercise that challenges readers to make comparative judgments about a set of variations on a particular physical situation. Two-hundred-and-eighteen exercises encourage readers to formulate their own ideas about the behavior of a physical system, correct any misconceptions they may have, and build a better conceptual foundation of physics. Covering as many topic domains in physics as possible, the book contains Kinematics Ranking Tasks, Force Ranking Tasks, Projectile and Other Two-Dimensional Motion Ranking Tasks, Work-Energy Ranking Tasks, Impulse-Momentum Ranking Tasks, Rotation Ranking Tasks, SHM and Properties of Matter Ranking Tasks, Heat and Thermodynamics Ranking Tasks, Electrostatics Ranking Tasks, DC Circuit Ranking Tasks, Magnetism and Electromagnetism Ranking Tasks, and Wave and Optics Ranking Tasks. For anyone who wants a better conceptual understanding of the many areas of physics.

CATALOG OF COPYRIGHT ENTRIES. THIRD SERIES

1971: TITLE INDEX

Copyright Office, Library of Congress

THE STORY OF THE SPACE SHUTTLE

Springer Science & Business Media In spite of the Challenger and Columbia disasters, the US Space Shuttle, which entered service in 1981, remains the most successful spacecraft ever developed. Conceived and designed as a reusable spacecraft to provide cheap access to low Earth orbit, and to supersede expendable launch vehicles, serving as the National Space Transportation System, it now coexists with a new range of commercial rockets. David Harland's definitive work on the Space Shuttle explains the scientific contribution the Space Shuttle has made to the international space programme, detailing missions to Mir, Hubble and more recently its role in the assembly of the International Space Station. This substantial revision to existing chapters and extension of 'The Space Shuttle', following the loss of Columbia, will include a comprehensive account of the run-up to resumption of operations and conclude with a chapter beyond the Shuttle, looking at possible future concepts for a partly or totally reusable space vehicle which are being considered to replace the Shuttle.

FROM QUANTUM FLUCTUATIONS TO COSMOLOGICAL STRUCTURES

PROCEEDINGS OF THE FIRST MOROCCAN SCHOOL OF ASTROPHYSICS, CASABLANCA, MOROCCO, 1-10 DECEMBER 1996

THE REALM OF THE NEBULAE

Yale University Press No modern astronomer made a more profound contribution to our understanding of the cosmos than did Edwin Hubble, who first conclusively demonstrated that the universe is expanding. Basing his theory on the observation of the change in distant galaxies, called red shift, Hubble showed that this is a Doppler effect, or alteration in the wavelength of light, resulting from the rapid motion of celestial objects away from Earth. In 1935, Hubble described his principal observations and conclusions in the Silliman lectures at Yale University. These lectures were published the following year as "The Realm of the Nebulae," which quickly became a classic work.

GALAXY FORMATION AND EVOLUTION

Cambridge University Press A coherent introduction for researchers in astronomy, particle physics, and cosmology on the formation and evolution of galaxies.

EDWIN HUBBLE

MARINER OF THE NEBULAE

Routledge Edwin Hubble: Mariner of the Nebulae is both the biography of an extraordinary human being and the story of the greatest quest in the history of astronomy since the Copernican revolution. The book is a revealing portrait of scientific genius, an incisive engaging history of ideas, and a shimmering evocation of what we see when gazing at the stars. Born in 1889 and reared in the village of Marshfield, Missouri, Edwin Powell Hubble-star athlete, Rhodes Scholar, military officer, and astronomer- became one of the towering figures in twentieth-century science. Hubble worked with the great 100-inch Hooker telescope at California's Mount Wilson Observatory and made a series of discoveries that revolutionized humanity's vision of the cosmos. In 1923 he was able to confirm the existence of other nebulae (now known to be galaxies) beyond our own Milky Way. By the end of the decade, Hubble had proven that the universe is expanding, thus laying the very cornerstone of the big bang theory of creation. It was Hubble who developed the elegant scheme by which the galaxies are classified as ellipticals and spirals, and it was Hubble who first provided reliable evidence that the universe is homogeneous, the same in all directions as far as the telescope can see. An incurable Anglophile with a penchant for tweed jackets and English briars, Hubble, together with his brilliant and witty wife, Grace Burke, became a fixture in Hollywood society in the 1930s and 40s. They counted among their friends Charlie Chaplin, the Marx brothers, Anita Loos, Aldous and Maria Huxley, Walt Disney, Helen Hayes, and William Randolph Hearst. Albert Einstein, a frequent visitor to Southern California, called Hubble's work "beautiful" and modified his equations on relativity to account for the discovery that the cosmos is expanding.

SOLUTION-FOCUSED BRIEF THERAPY

A HANDBOOK OF EVIDENCE-BASED PRACTICE

Oxford University Press Therapy is frequently miscast as requiring an enormous amount of time and financial commitment, but helpful, goal-oriented therapy can produce positive results after only a few sessions. By focusing on solutions instead of problems, SFBT asks clients to set concrete goals and to draw upon strengths in their lives that can help bring about the desired change for a preferred future.

CATALOG OF COPYRIGHT ENTRIES. FOURTH SERIES

ENDURANCE

A YEAR IN SPACE, A LIFETIME OF DISCOVERY

*Random House From the Nasa astronaut who spent a record-breaking year aboard the International Space Station - what it's like out there and what it's like now, back here. Enter Scott Kelly's fascinating world and dare to think of your own a little differently. As soon as you realize you aren't going to die, space is the most fun you'll ever have... The veteran of four space flights and the American record holder for most consecutive days spent in space, Scott Kelly has experienced things very few of us ever have and very few of us ever will. Kelly's humanity, compassion, humour, and passion shine as he describes navigating the extreme challenge of long-term spaceflight, both existential and banal. He touches on what's happened to his body, the sadness of being isolated from everyone he loves; the pressures of constant close cohabitation; the catastrophic risks of colliding with space junk, and the still more haunting threat of being absent should tragedy strike at home. From a natural storyteller Endurance is one of the finest examples the triumph of the human imagination, the strength of the human will, and the boundless wonder of the galaxy. * What readers are saying... 'Takes you up into space and lets you be a part of astronaut life' 'Tough to put down! Tells a side you don't often hear or read about for that matter' 'Mind blowing . . . up there with Ernest Shackleton for me' 'My husband said it is the next best thing to going into space yourself' 'Six stars!'*

BOOKS AND PAMPHLETS, INCLUDING SERIALS AND CONTRIBUTIONS TO PERIODICALS

NOETHER'S THEOREM AND SYMMETRY

MDPI In Noether's original presentation of her celebrated theorem of 1918, allowances were made for the dependence of the coefficient functions of the differential operator which generated the infinitesimal transformation of the Action Integral upon the derivatives of the dependent variable(s), the so-called generalized, or dynamical, symmetries. A similar allowance is to be found in the variables of the boundary function, often termed a gauge function by those who have not read the original paper. This generality was lost after texts such as those of Courant and Hilbert or Lovelock and Rund confined attention to only point transformations. In recent decades, this diminution of the power of Noether's Theorem has been partly countered, in particular, in the review of Sarlet and Cantrijn. In this Special Issue, we emphasize the generality of Noether's Theorem in its original form and explore the applicability of even more general coefficient functions by allowing for nonlocal terms. We also look at the application of these more general symmetries to problems in which parameters or parametric functions have a more general dependence upon the independent variables.

A DOLL'S HOUSE

BoD - Books on Demand Reproduction of the original: A Doll's House by Henrik Ibsen

FOR THE LOVE OF PHYSICS

FROM THE END OF THE RAINBOW TO THE EDGE OF TIME - A JOURNEY THROUGH THE WONDERS OF PHYSICS

Simon and Schuster Largely autobiographical account of the author's life as one who fell in love first with physics and then with teaching physics to students.

SPACE CHRONICLES: FACING THE ULTIMATE FRONTIER

W. W. Norton & Company "A compelling appeal, at just the right time, for continuing to look up."—Air & Space America's space program is at a turning point. After decades of global primacy, NASA has ended the space-shuttle program, cutting off its access to space. No astronauts will be launched in an American craft, from American soil, until the 2020s, and NASA may soon find itself eclipsed by other countries' space programs. With his signature wit and thought-provoking insights, Neil deGrasse Tyson—one of our foremost thinkers on all things space—illuminates the past, present, and future of space exploration and brilliantly reminds us why NASA matters now as much as ever. As Tyson reveals, exploring the space frontier can profoundly enrich many aspects of our daily lives, from education systems and the economy to national security and morale. For America to maintain its status as a global leader and a technological innovator, he explains, we must regain our enthusiasm and curiosity about what lies beyond our world. Provocative, humorous, and wonderfully readable, Space Chronicles represents the best of Tyson's recent commentary, including a must-read prologue on NASA and partisan politics. Reflecting on topics that range from scientific literacy to space-travel missteps, Tyson gives us an urgent, clear-eyed, and ultimately inspiring vision for the future.

MARTINDALE'S AMERICAN LAW DIRECTORY

RARE EARTH

WHY COMPLEX LIFE IS UNCOMMON IN THE UNIVERSE

Springer What determines whether complex life will arise on a planet, or even any life at all? Questions such as these are investigated in this groundbreaking book. In doing so, the authors synthesize information from astronomy, biology, and paleontology, and apply it to what we know about the rise of life on Earth and to what could possibly happen elsewhere in the universe. Everyone who has been thrilled by the recent discoveries of extrasolar planets and the indications of life on Mars and the Jovian moon Europa will be fascinated by Rare Earth, and its implications for those who look to the

heavens for companionship.

INTRODUCTION TO COSMOLOGY

Cambridge University Press A substantial update of this award-winning and highly regarded cosmology textbook, for advanced undergraduates in physics and astronomy.

COSMOLOGY: A VERY SHORT INTRODUCTION

OUP Oxford This book is a simple, non-technical introduction to cosmology, explaining what it is and what cosmologists do. Peter Coles discusses the history of the subject, the development of the Big Bang theory, and more speculative modern issues like quantum cosmology, superstrings, and dark matter. 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.

CHILD PROTECTIVE SERVICES

A GUIDE FOR CASEWORKERS

From the Preface: This manual, *Child Protective Services: A Guide for Caseworkers*, examines the roles and responsibilities of child protective services (CPS) workers, who are at the forefront of every community's child protection efforts. The manual describes the basic stages of the CPS process and the steps necessary to accomplish each stage: intake, initial assessment or investigation, family assessment, case planning, service provision, evaluation of family progress, and case closure. Best practices and critical issues in casework practice are underscored throughout. The primary audience for this manual includes CPS caseworkers, supervisors, and administrators. State and local CPS agency trainers may use the manual for preservice or inservice training of CPS caseworkers, while schools of social work may add it to class reading lists to orient students to the field of child protection. In addition, other professionals and concerned community members may consult the manual for a greater understanding of the child protection process. This manual builds on the information presented in *A Coordinated Response to Child Abuse and Neglect: The Foundation for Practice*. Readers are encouraged to begin with that manual as it addresses important information on which CPS practice is based-including definitions of child maltreatment, risk factors, consequences, and the Federal and State basis for intervention. Some manuals in the series also may be of interest in understanding the roles of other professional groups in responding to child abuse and neglect, including: Substance abuse treatment providers; Domestic violence victim advocates; Educators; Law enforcement personnel. Other manuals address special issues, such as building partnerships and working with the courts on CPS cases.

WOMEN OF GODDARD

CAREERS IN SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS

INTERNATIONAL AEROSPACE ABSTRACTS

THE COSMIC MICROWAVE BACKGROUND

Springer Proceedings of the NATO Advanced Study Institute on the Cosmological Background Radiation, Strasbourg, France, May 27-June 7, 1996

SEARCH ENGINES

INFORMATION RETRIEVAL IN PRACTICE

Pearson Higher Ed 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. *Search Engines: Information Retrieval in Practice* is ideal for introductory information retrieval courses at the undergraduate and graduate level in computer science, information science and computer engineering departments. It is also a valuable tool for search engine and information retrieval professionals. Written by a leader in the field of information retrieval, *Search Engines: Information Retrieval in Practice*, is designed to give undergraduate students the understanding and tools they need to evaluate, compare and modify search engines. Coverage of the underlying IR and mathematical models reinforce key concepts. The book's numerous programming exercises make extensive use of Galago, a Java-based open source search engine.

SOLUTION-FOCUSED BRIEF THERAPY IN SCHOOLS

A 360-DEGREE VIEW OF THE RESEARCH AND PRACTICE PRINCIPLES

Oxford University Press Revised edition of: *Solution-focused brief therapy in schools: a 360-degree view of research and practice* / Michael S. Kelly, Johnny S. Kim, Cynthia Franklin.

MATERIALS SELECTION IN MECHANICAL DESIGN

Pergamon New materials enable advances in engineering design. This book describes a procedure for material selection in mechanical design, allowing the most suitable materials for a given application to be identified from the full range of materials and section shapes available. A novel approach is adopted not found elsewhere. Materials are introduced through their properties; materials selection charts (a new development) capture the important features of all materials, allowing rapid retrieval of information and application of selection techniques. Merit indices, combined with charts, allow optimisation of the materials selection process. Sources of material property data are reviewed and approaches to their use are given. Material processing and its influence on the design are discussed. The book closes with chapters on aesthetics and industrial design. Case studies are developed as a method of illustrating the procedure and as a way of developing the ideas further.

ANALYSIS OF EVIDENCE

Cambridge University Press This extensively revised second edition is a rigorous introduction to the construction and criticism of arguments about questions of fact, and to the marshalling and evaluation of evidence at all stages of litigation. It covers the principles underlying the logic of proof; the uses and dangers of story-telling; standards for decision and the relationship between probabilities and proof; the chart method and other methods of analyzing and ordering evidence in fact-investigation, in preparing for trial, and in connection with other important decisions in legal processes and in criminal investigation and intelligence analysis. Most of the chapters in this new edition have been rewritten; the treatment of fact investigation, probabilities and narrative has been extended; and new examples and exercises have been added. Designed as a flexible tool for undergraduate and postgraduate courses on evidence and proof, students, practitioners and teachers alike will find this book challenging but rewarding.

PRIMAL LEADERSHIP

UNLEASHING THE POWER OF EMOTIONAL INTELLIGENCE

Harvard Business Press Annotation.

COSMOLOGY AND CONTROVERSY

THE HISTORICAL DEVELOPMENT OF TWO THEORIES OF THE UNIVERSE

Princeton University Press For over three millennia, most people could understand the universe only in terms of myth, religion, and philosophy. Between 1920 and 1970, cosmology transformed into a branch of physics. With this remarkably rapid change came a theory that would finally lend empirical support to many long-held beliefs about the origins and development of the entire universe: the theory of the big bang. In this book, Helge Kragh presents the development of scientific cosmology for the first time as a historical event, one that embroiled many famous scientists in a controversy over the very notion of an evolving universe with a beginning in time. In rich detail he examines how the big-bang theory drew inspiration from and eventually triumphed over rival views, mainly the steady-state theory and its concept of a stationary universe of infinite age. In the 1920s, Alexander Friedmann and Georges Lemaître showed that Einstein's general relativity equations possessed solutions for a universe expanding in time. Kragh follows the story from here, showing how the big-bang theory evolved, from Edwin Hubble's observation that most galaxies are receding from us, to the discovery of the cosmic microwave background radiation. Sir Fred Hoyle proposed instead the steady-state theory, a model of dynamic equilibrium involving the continuous creation of matter throughout the universe. Although today it is generally accepted that the universe started some ten billion years ago in a big bang, many readers may not fully realize that this standard view owed much of its formation to the steady-state theory. By exploring the similarities and tensions between the theories, Kragh provides the reader with indispensable background for understanding much of today's commentary about our universe.

THE LARGE SCALE STRUCTURE OF THE UNIVERSE

Springer Science & Business Media The significance of the present IAU symposium, "The Large Scale Structure of the Universe", fortunately requires no elaboration by the editors. The quality of the wide range of observational and theoretical astrophysics contained in this volume speaks for itself. The published version of the proceedings contains all the contributions presented at the symposium with the exception of the introductory lecture by V. A. Ambartsumian. Contributed papers, short contributions and discussions have been included according to the recommendations of the IAU. Many people contributed to the success of the symposium. First of all, thanks are due to the USSR Academy of Sciences and to the Estonian Academy of Sciences for sponsoring this symposium in Tallinn. The efforts of Academician K. Rebane, President of the Estonian Academy of Sciences, are particularly appreciated. The astronomical hosts of the symposium were the members of the W. Struve Astrophysical Observatory of Tartu who made outstanding efforts to lavish participants with Estonian hospitality which was greatly appreciated and enjoyed by them and their guests. The members of the Scientific and Local Organising Committees are listed below and we thank all of them for their contributions which were central to the success of the symposium. In addition are listed members of the Technical Organising Committee who were responsible for all details of the organisation and whose vigilance ensured that all aspects of the symposium ran smoothly and efficiently. Their contributions are all gratefully acknowledged.

COSMOLOGY

Cambridge University Press Based on the author's popular lecture notes, this graduate-level textbook provides an accessible and self-contained introduction to cosmology, ideal as a course companion or for self-study. Concepts are explained at an appropriate level of detail, with hundreds of worked examples and problems to facilitate a deeper understanding.

THREE SIGMA LEADERSHIP

OR, THE WAY OF THE CHIEF ENGINEER

As a technical organization, charged with performing groundbreaking and pathfinding challenges on a daily basis, NASA has long valued the role of its Chief Engineers and Lead Systems Engineers. Although it takes a team to accomplish our missions and no members are unimportant, the Chief Engineers and Lead Systems Engineers who we look to lead our technical teams are critical to the success of our endeavors. It is this corps of dedicated, experienced, and passionate problem solvers and leaders who battle the technical headwinds that face every project, finding often hidden solutions and overcoming seemingly insurmountable obstacles to create paths to success. Furthermore, it is that indomitable spirit of ingenuity and perseverance that defines the Agency. Developing our Chief Engineers and Lead Systems Engineers is a commitment of the NASA engineering community, and one of our tenets for excellence. This development ensures our corps of engineers obtain the depth of technical acumen that they require, first as discipline engineers and then as Chief Engineers and Lead Systems Engineers, but also the associated management skills and experience to ensure they can interact with the rest of the project team and with program, Center, and Agency leadership. What's more, this development also ensures that NASA Chief Engineers and Lead Systems Engineers proficiently serve as leaders of their own technical teams, and that's what this book is all about. These technical leaders are critical to successfully implementing the three safety tenets we inherited from the Apollo program. These include the following: Strong in-line checks and balances. This means that engineers check their fellow engineers, and that no one checks their own homework. 1. Healthy tension between responsible organizations. In NASA today that is the programs and the three Technical Authorities (Engineering, Safety, and Health and Medical). Each organization has to be on equal footing with separate but equal chains of command to allow issues to be raised independently and provide the healthy tension to create organizational checks and balances. 2. "Value-added" independent assessment. "Value-added" means you bring in outside technical experts to peer review critical issues. Having a fresh set of eyes on a problem can provide a different perspective, leverage different experiences and result in more robust solutions. 3. NASA arrived at these three tenets through considerable blood, sweat, and loss, and our commitment to them is now inscribed in our Agency governance. As Chief Engineers and Lead Systems Engineers, your role in this is paramount, and achieving excellence in this is an expectation of your job. Serving in this role is not an easy task, but it is a tremendously reward-ing one. You are the leaders of your technical teams, owners of the technical baseline, standard bearers of engineering best practices, decision makers, risk mitigators and problem solvers. You are Chief Engineers and Lead Systems Engineers, the title of which should say it all.

RELATIVISTIC COSMOLOGY

Cambridge University Press Cosmology has been transformed by dramatic progress in high-precision observations and theoretical modelling. This book surveys key developments and open issues for graduate students and researchers. Using a relativistic geometric approach, it focuses on the general concepts and relations that underpin the standard model of the Universe. Part I covers foundations of relativistic cosmology whilst Part II develops the dynamical and observational relations for all models of the Universe based on general relativity. Part III focuses on the standard model of cosmology, including inflation, dark matter, dark energy, perturbation theory, the cosmic microwave background, structure formation and gravitational lensing. It also examines modified gravity and inhomogeneity as possible alternatives to dark energy. Anisotropic and inhomogeneous models are described in Part IV, and Part V reviews deeper issues, such as quantum cosmology, the start of the universe and the multiverse proposal. Colour versions of some figures are available at www.cambridge.org/9780521381154.

BETTER RESULTS

USING DELIBERATE PRACTICE TO IMPROVE THERAPEUTIC EFFECTIVENESS

American Psychological Association (APA) This book is a step-by-step guide to using deliberate practice as an individualized professional development plan for psychotherapists to improve the quality of their service using client outcome data.

ARCHAEOLOGY, ANTHROPOLOGY, AND INTERSTELLAR COMMUNICATION

National Aeronautics & Space Admin Are we alone? asks the writeup on the back cover of the dust jacket. The contributors to this collection raise questions that may have been overlooked by physical scientists about the ease of establishing meaningful communication with an extraterrestrial intelligence. By drawing on issues at the core of contemporary archaeology and anthropology, we can be much better prepared for contact with an extraterrestrial civilization, should that day ever come. NASA SP-2013-4413.

ASTRONOMY

Astronomy is written in clear non-technical language, with the occasional touch of humor and a wide range of clarifying illustrations. It has many analogies drawn from everyday life to help non-science majors appreciate, on their own terms, what our modern exploration of the universe is revealing. The book can be used for either a one-semester or two-semester introductory course (bear in mind, you can customize your version and include only those chapters or sections you will be teaching.) It is made available free of charge in electronic form (and low cost in printed form) to students around the world. If you have ever thrown up your hands in despair over the spiraling cost of astronomy textbooks, you owe your students a good look at this one. Coverage and Scope Astronomy was written, updated, and reviewed by a broad range of astronomers and astronomy educators in a strong community

effort. It is designed to meet scope and sequence requirements of introductory astronomy courses nationwide. Chapter 1: Science and the Universe: A Brief Tour Chapter 2: Observing the Sky: The Birth of Astronomy Chapter 3: Orbits and Gravity Chapter 4: Earth, Moon, and Sky Chapter 5: Radiation and Spectra Chapter 6: Astronomical Instruments Chapter 7: Other Worlds: An Introduction to the Solar System Chapter 8: Earth as a Planet Chapter 9: Cratered Worlds Chapter 10: Earthlike Planets: Venus and Mars Chapter 11: The Giant Planets Chapter 12: Rings, Moons, and Pluto Chapter 13: Comets and Asteroids: Debris of the Solar System Chapter 14: Cosmic Samples and the Origin of the Solar System Chapter 15: The Sun: A Garden-Variety Star Chapter 16: The Sun: A Nuclear Powerhouse Chapter 17: Analyzing Starlight Chapter 18: The Stars: A Celestial Census Chapter 19: Celestial Distances Chapter 20: Between the Stars: Gas and Dust in Space Chapter 21: The Birth of Stars and the Discovery of Planets outside the Solar System Chapter 22: Stars from Adolescence to Old Age Chapter 23: The Death of Stars Chapter 24: Black Holes and Curved Spacetime Chapter 25: The Milky Way Galaxy Chapter 26: Galaxies Chapter 27: Active Galaxies, Quasars, and Supermassive Black Holes Chapter 28: The Evolution and Distribution of Galaxies Chapter 29: The Big Bang Chapter 30: Life in the Universe Appendix A: How to Study for Your Introductory Astronomy Course Appendix B: Astronomy Websites, Pictures, and Apps Appendix C: Scientific Notation Appendix D: Units Used in Science Appendix E: Some Useful Constants for Astronomy Appendix F: Physical and Orbital Data for the Planets Appendix G: Selected Moons of the Planets Appendix H: Upcoming Total Eclipses Appendix I: The Nearest Stars, Brown Dwarfs, and White Dwarfs Appendix J: The Brightest Twenty Stars Appendix K: The Chemical Elements Appendix L: The Constellations Appendix M: Star Charts and Sky Event Resources