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KEY=SPACE - ALICIA ARTHUR

Space Mission Engineering The New SMAD *This book is a completely rewritten, updated, and expanded follow-on to the 3rd edition of Space mission analysis and design.* **Space Mission Engineering The New SMAD** *This book is a completely rewritten, updated, and expanded follow-on to the 3rd edition of Space mission analysis and design.* **Space Mission Engineering - the New SMAD. Workbook Space Mission Analysis and Design Springer** *With the second edition of Space Mission Analysis and Design, two changes have been introduced in the Space Technology Library. Foremost among these is the introduction of the Space Technology Series as a part of the Space Technology Library. Dr. Wiley Larson of the US Air Force Academy and University of Colorado, Colorado Springs, will serve as Managing Editor for the Space Technology Series. This series is a cooperative effort of the Department of Defense, National Aeronautics and Space Administration, Department of Energy, and European Space Agency, coordinated by the US Air Force Academy. The sponsors intend to bring a number of books into the series to improve the literature base in the fundamentals of space technology, beginning with the current volume. Books which are not a part of the Space Technology Series, but which also represent a substantial contribution to the space technology literature, will still be published in the Space Technology Library. As always, we welcome suggestions and contributions from the aerospace community.* **Autonomy Requirements Engineering for Space Missions Springer** *Advanced space exploration is performed by unmanned missions with integrated autonomy in both flight and ground systems. Risk and feasibility are major factors supporting the use of unmanned craft and the use of automation and robotic technologies where possible. Autonomy in space helps to increase the amount of science data returned from missions, perform new science, and reduce mission costs. Elicitation and expression of autonomy requirements is one of the most significant challenges the autonomous spacecraft engineers need to overcome today. This book discusses the Autonomy Requirements Engineering (ARE) approach, intended to help software engineers properly elicit, express, verify, and validate autonomy requirements. Moreover, a comprehensive state-of-the-art of software engineering for aerospace is presented to outline the problems handled by ARE along with a proof-of-concept case study on the ESA's BepiColombo Mission demonstrating the ARE's ability to handle autonomy requirements.* **Small Spacecraft Development Project-Based Learning Implementation and Assessment of an Academic Program Springer** *This book provides the information that is required to start a small spacecraft program for educational purposes. This will include a discussion of multiple approaches to program formation and build / buy / hybrid decision considerations. The book also discusses how a CubeSat (or other small spacecraft program) can be integrated into course and/or program curriculum and the ancillary benefits that such a program can provide. The assessment of small spacecraft programs and participatory project-based learning programs is also discussed extensively. The book presents prior work related to program assessment (both for a single program and internationally) and discusses how similar techniques can be utilized for both formative and summative assessment of a new program. The utility of these metrics (and past assessment of other programs) in gaining buy-in for program formation and funding is also considered.* **Space Vehicle Design AIAA Advances in Small Satellite Technologies Proceedings of 1st International Conference on Small Satellites Springer Nature** *This volume contains select papers presented during the 1st International Conference on Small Satellites, discussing the latest research and developments relating to small satellite technology. The papers cover various issues relating to design and engineering, ranging from the control, mechanical and thermal systems to the sensors, antennas and RF systems used. The volume will be of interest to scientists and engineers working on or utilizing satellite and space technologies.* **Optimal Control with Aerospace Applications Springer Science & Business Media** *Want to know not just what makes rockets go up but how to do it optimally? Optimal control theory has become such an important field in aerospace engineering that no graduate student or practicing engineer can afford to be without a working knowledge of it. This is the first book that begins from scratch to teach the reader the basic principles of the calculus of variations, develop the necessary conditions step-by-step, and introduce the elementary computational techniques of optimal control. This book, with problems and an online solution manual, provides the graduate-level reader with enough introductory knowledge so that he or she can not only read the literature and study the next level textbook but can also apply the theory to find optimal solutions in practice. No more is needed than the usual background of an undergraduate engineering, science, or mathematics program: namely calculus, differential equations, and numerical integration. Although finding optimal solutions for these problems is a complex process involving the calculus of variations, the authors carefully lay out step-by-step the most important theorems and concepts. Numerous examples are worked to demonstrate how to apply the theories to everything from classical problems (e.g., crossing a river in minimum time) to engineering problems (e.g., minimum-fuel launch of a satellite). Throughout the book use is made of the time-optimal launch of a satellite into orbit as an important case study with detailed analysis of two examples: launch from the Moon and launch from Earth. For launching into the field of optimal solutions, look no further!* **Proceedings of the 12th Reinventing Space Conference Springer** *The proceedings of the 2014 Reinventing Space*

conference present a number of questions in the context of a constantly innovating space industry, from addressing the future of global cooperation, investigating the impact of cuts in US government spending on the private space sector, and probing the overall future of the commercial launch sector. Space tourism and new technology promise the revival of interest in space development (the Apollo Era was the first period of intense space activity and growth). The need to create dramatically lower cost, responsive and reliable launch systems and spacecraft has never been more vital. Advances in technology are allowing smaller and cheaper satellites to be orbited - from cubesats to nanosatellites to femtosatellites. Thanks to more efficient new launch possibilities, low cost access to space is becoming ever more achievable. Commercial companies and countries are targeting the industry with new funding. Organised by the British Interplanetary Society, the presentations at this conference thoroughly address these challenges and opportunities. **The International Handbook of Space Technology Springer** This comprehensive handbook provides an overview of space technology and a holistic understanding of the system-of-systems that is a modern spacecraft. With a foreword by Elon Musk, CEO and CTO of SpaceX, and contributions from globally leading agency experts from NASA, ESA, JAXA, and CNES, as well as European and North American academics and industrialists, this handbook, as well as giving an interdisciplinary overview, offers, through individual self-contained chapters, more detailed understanding of specific fields, ranging through: · Launch systems, structures, power, thermal, communications, propulsion, and software, to · entry, descent and landing, ground segment, robotics, and data systems, to · technology management, legal and regulatory issues, and project management. This handbook is an equally invaluable asset to those on a career path towards the space industry as it is to those already within the industry. **From Astronautics to Cosmonautics Mike Gruntman** Two pioneers of space exploration, Robert Esnault-Pelterie and Ary Sternfeld, introduced the words 'astronautics' and 'cosmonautics,' respectively, into the scientific language. The origin of the term 'astronautics' is well documented. In contrast, the history of the word 'cosmonautics' remains poorly known. Ary Sternfeld is also largely forgotten. The fiftieth anniversary of the breakthrough to space, celebrated in 2007, makes it especially appropriate to remember those visionaries who paved the way to cosmos. The book tells the stories of 'astronautics' and 'cosmonautics' and describes a most unusual life journey of Ary Sternfeld **Building Habitats on the Moon Engineering Approaches to Lunar Settlements Springer** Designing a habitat for the lunar surface? You will need to know more than structural engineering. There are the effects of meteoroids, radiation, and low gravity. Then there are the psychological and psychosocial aspects of living in close quarters, in a dangerous environment, far away from home. All these must be considered when the habitat is sized, materials specified, and structure designed. This book provides an overview of various concepts for lunar habitats and structural designs and characterizes the lunar environment - the technical and the nontechnical. The designs take into consideration psychological comfort, structural strength against seismic and thermal activity, as well as internal pressurization and 1/6 g. Also discussed are micrometeoroid modeling, risk and redundancy as well as probability and reliability, with an introduction to analytical tools that can be useful in modeling uncertainties. **Proceedings of the 4th International Conference on Electrical Engineering and Control Applications ICEECA 2019, 17-19 December 2019, Constantine, Algeria Springer Nature** This book gathers papers presented during the 4th International Conference on Electrical Engineering and Control Applications. It covers new control system models, troubleshooting tips and complex system requirements, such as increased speed, precision and remote capabilities. Additionally, the papers discuss not only the engineering aspects of signal processing and various practical issues in the broad field of information transmission, but also novel technologies for communication networks and modern antenna design. This book is intended for researchers, engineers and advanced postgraduate students in the fields of control and electrical engineering, computer science and signal processing, as well as mechanical and chemical engineering. **Reducing Space Mission Cost Springer** Reducing Space Mission Cost is the first complete treatment of the technology, process, and problems in the most critical areas of modern spaceflight. The demand to reduce cost is unrelenting. This pioneering book addresses all aspects of this problem, including: Technology and processes for reducing cost Cost reduction in mission engineering, spacecraft design, manufacture, launch, and operations Implementation methods and problems The price of reducing cost 10 detailed case studies of what works in practice in: Science missions Interplanetary probes Communications spacecraft Test and Applications missions Beginning on the inside front cover, this book provides real cost data on a variety of missions, systems, and subsystems. According to the authors: 'Reducing mission cost is hard enough if you know what the real costs are, and virtually impossible if you don't.' This book challenges traditional methods, yet recognizes that all space programs are run to minimize cost within the rules under which they are built and flown. It provides practical recipes for reducing cost in both new and ongoing missions and discusses what works, what government can do to help, and what methods intended to reduce cost may be counterproductive and unintentionally increase cost. As shown on the inside rear cover, the case studies described in the book have reduced total mission cost by 80% to more than 90% with respect to projections by traditional cost methods. This book is a follow-on to the now standard text and reference, *Space Mission Analysis and Design*, also edited by Drs. Wertz and Larson. It is required reading for professionals, students, and managers in astronautics or space sciences and managers or scientists involved in space experiments. This book shows that reducing space mission cost, without reducing reliability, is as possible as it is important for the future of space exploration. **Product Lifecycle Management and the Industry of the Future 14th IFIP WG 5.1 International Conference, PLM 2017, Seville, Spain, July 10-12, 2017, Revised Selected Papers Springer** This book constitutes the refereed post-conference proceedings of the 14th IFIP WG 5.1 International Conference on Product Lifecycle Management, PLM 2017, held in Seville, Spain, in July 2017. The 64 revised full papers presented were carefully reviewed and selected from 78 submissions. The papers are organized in the following topical sections: PLM maturity, implementation and adoption; PLM for digital factories; PLM and process simulation; PLM, CAX and knowledge management; PLM and education; BIM; cyber-physical systems; modular design and products; new product development; ontologies, knowledge and data models; and Product, Service, Systems (PSS). **Human Spaceflight Mission Analysis and Design McGraw-Hill College** "Human spaceflight: mission analysis and design" is for you if you manage, design, or operate systems for human spaceflight! It provides end-to-end coverage of designing human space systems for Earth, Moon, and Mars. If you are like many others, this will become the dog-eared book that is always on your desk -and used. The book includes over 800 rules of thumb and sanity checks that will enable you to identify key issues and errors early in the design processes. This book was written by group of 67 professional engineers, managers, and educators from industry, government, and academia that

collectively share over 600 years of space-related experience! The team from the United States, Austria, Canada, France, Germany, Japan, and Russia worked for four-and-one-half years to capture industry and government best practices and lessons-learned from industry and government in an effort to baseline global conceptual design experience for human spaceflight. "Human spaceflight: mission analysis and design" provides a much-needed big-picture perspective that can be used by managers, engineers and students to integrate the myriad of elements associated with human spaceflight.

Orbital Mechanics and Astrodynamics Techniques and Tools for Space Missions Springer This textbook covers fundamental and advanced topics in orbital mechanics and astrodynamics to expose the student to the basic dynamics of space flight. The engineers and graduate students who read this class-tested text will be able to apply their knowledge to mission design and navigation of space missions. Through highlighting basic, analytic and computer-based methods for designing interplanetary and orbital trajectories, this text provides excellent insight into astronomical techniques and tools. This book is ideal for graduate students in Astronautical or Aerospace Engineering and related fields of study, researchers in space industrial and governmental research and development facilities, as well as researchers in astronautics. This book also: · Illustrates all key concepts with examples · Includes exercises for each chapter · Explains concepts and engineering tools a student or experienced engineer can apply to mission design and navigation of space missions · Covers fundamental principles to expose the student to the basic dynamics of space flight

Space Economics AIAA Advances in Structural and Multidisciplinary Optimization Proceedings of the 12th World Congress of Structural and Multidisciplinary Optimization (WCSMO12) Springer The volume includes papers from the WCSMO conference in Braunschweig 2017 presenting research of all aspects of the optimal design of structures as well as multidisciplinary design optimization where the involved disciplines deal with the analysis of solids, fluids or other field problems. Also presented are practical applications of optimization methods and the corresponding software development in all branches of technology.

Physical Principles of Remote Sensing Cambridge University Press A quantitative yet accessible introduction to remote sensing techniques, this new edition covers a broad spectrum of Earth science applications.

Computational Science - ICCS 2021 21st International Conference, Krakow, Poland, June 16-18, 2021, Proceedings, Part IV Springer Nature The six-volume set LNCS 12742, 12743, 12744, 12745, 12746, and 12747 constitutes the proceedings of the 21st International Conference on Computational Science, ICCS 2021, held in Krakow, Poland, in June 2021.* The total of 260 full papers and 57 short papers presented in this book set were carefully reviewed and selected from 635 submissions. 48 full and 14 short papers were accepted to the main track from 156 submissions; 212 full and 43 short papers were accepted to the workshops/ thematic tracks from 479 submissions. The papers were organized in topical sections named: Part I: ICCS Main Track Part II: Advances in High-Performance Computational Earth Sciences: Applications and Frameworks; Applications of Computational Methods in Artificial Intelligence and Machine Learning; Artificial Intelligence and High-Performance Computing for Advanced Simulations; Biomedical and Bioinformatics Challenges for Computer Science Part III: Classifier Learning from Difficult Data; Computational Analysis of Complex Social Systems; Computational Collective Intelligence; Computational Health Part IV: Computational Methods for Emerging Problems in (dis-)Information Analysis; Computational Methods in Smart Agriculture; Computational Optimization, Modelling and Simulation; Computational Science in IoT and Smart Systems Part V: Computer Graphics, Image Processing and Artificial Intelligence; Data-Driven Computational Sciences; Machine Learning and Data Assimilation for Dynamical Systems; MeshFree Methods and Radial Basis Functions in Computational Sciences; Multiscale Modelling and Simulation Part VI: Quantum Computing Workshop; Simulations of Flow and Transport: Modeling, Algorithms and Computation; Smart Systems: Bringing Together Computer Vision, Sensor Networks and Machine Learning; Software Engineering for Computational Science; Solving Problems with Uncertainty; Teaching Computational Science; Uncertainty Quantification for Computational Models *The conference was held virtually. Chapter "Intelligent Planning of Logistic Networks to Counteract Uncertainty Propagation" is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com. The six-volume set LNCS 12742, 12743, 12744, 12745, 12746, and 12747 constitutes the proceedings of the 21st International Conference on Computational Science, ICCS 2021, held in Krakow, Poland, in June 2021.* The total of 260 full papers and 57 short papers presented in this book set were carefully reviewed and selected from 635 submissions. 48 full and 14 short papers were accepted to the main track from 156 submissions; 212 full and 43 short papers were accepted to the workshops/ thematic tracks from 479 submissions. The papers were organized in topical sections named: Part I: ICCS Main Track Part II: Advances in High-Performance Computational Earth Sciences: Applications and Frameworks; Applications of Computational Methods in Artificial Intelligence and Machine Learning; Artificial Intelligence and High-Performance Computing for Advanced Simulations; Biomedical and Bioinformatics Challenges for Computer Science Part III: Classifier Learning from Difficult Data; Computational Analysis of Complex Social Systems; Computational Collective Intelligence; Computational Health Part IV: Computational Methods for Emerging Problems in (dis-)Information Analysis; Computational Methods in Smart Agriculture; Computational Optimization, Modelling and Simulation; Computational Science in IoT and Smart Systems Part V: Computer Graphics, Image Processing and Artificial Intelligence; Data-Driven Computational Sciences; Machine Learning and Data Assimilation for Dynamical Systems; MeshFree Methods and Radial Basis Functions in Computational Sciences; Multiscale Modelling and Simulation Part VI: Quantum Computing Workshop; Simulations of Flow and Transport: Modeling, Algorithms and Computation; Smart Systems: Bringing Together Computer Vision, Sensor Networks and Machine Learning; Software Engineering for Computational Science; Solving Problems with Uncertainty; Teaching Computational Science; Uncertainty Quantification for Computational Models *The conference was held virtually. Chapter "Intelligent Planning of Logistic Networks to Counteract Uncertainty Propagation" is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com. Chapter: Modelling and Forecasting Based on Recurrent Pseudoinverse Matrices" is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

Space Vehicle Dynamics and Control Amer Inst of Aeronautics & "Space Vehicle Dynamics and Control, Second Edition" continues to provide a solid foundation in dynamic modeling, analysis, and control of space vehicles featuring detailed sections covering the fundamentals of controlling orbital, attitude, and structural motions of space vehicles. A new Part 5 is a collection of advanced spacecraft control problems and their practical solutions obtained by applying the fundamental principles and techniques emphasized throughout the book.

Nanosatellites Space and Ground Technologies, Operations and Economics John Wiley & Sons Nanosatellites: Space and Ground Technologies, Operations and Economics Rogerio Atem de

Carvalho, Instituto Federal Fluminense, Brazil Jaime Estela, Spectrum Aerospace Group, Germany and Peru Martin Langer, Technical University of Munich, Germany Covering the latest research on nanosatellites *Nanosatellites: Space and Ground Technologies, Operations and Economics* comprehensively presents the latest research on the fast-developing area of nanosatellites. Divided into three distinct sections, the book begins with a brief history of nanosatellites and introduces nanosatellites technologies and payloads, also explaining how these are deployed into space. The second section provides an overview of the ground segment and operations, and the third section focuses on the regulations, policies, economics, and future trends. Key features: Payloads for nanosatellites Nanosatellites components design Examines the cost of development of nanosatellites. Covers the latest policies and regulations. Considers future trends for nanosatellites. *Nanosatellites: Space and Ground Technologies, Operations and Economics* is a comprehensive reference for researchers and practitioners working with nanosatellites in the aerospace industry. **Safety Design for Space Operations Butterworth-Heinemann** Endorsed by the International Association for the Advancement of Space Safety (IAASS) and drawing on the expertise of the world's leading experts in the field, *Safety Design for Space Operations* provides the practical how-to guidance and knowledge base needed to facilitate effective launch-site and operations safety in line with current regulations. With information on space operations safety design currently disparate and difficult to find in one place, this unique reference brings together essential material on: Best design practices relating to space operations, such as the design of spaceport facilities. Advanced analysis methods, such as those used to calculate launch and re-entry debris fall-out risk. Implementation of safe operation procedures, such as on-orbit space traffic management. Safety considerations relating to the general public and the environment in addition to personnel and asset protection. Taking in launch operations safety relating unmanned missions, such as the launch of probes and commercial satellites, as well as manned missions, *Safety Design for Space Operations* provides a comprehensive reference for engineers and technical managers within aerospace and high technology companies, space agencies, spaceport operators, satellite operators and consulting firms. Fully endorsed by the International Association for the Advancement of Space Safety (IAASS), with contributions from leading experts at NASA, the European Space Agency (EASA) and the US Federal Aviation Administration (FAA), amongst others Covers all aspects of space operations relating to safety of the general public, as well as the protection of valuable assets and the environment Focuses on launch operations safety relating to manned and unmanned missions, such as the launch of probes and commercial satellites **Safety Design for Space Operations Chapter 8. Orbital Operations Safety Elsevier Inc. Chapters** This chapter deals with some key topics of orbital safety. It starts with an overview of the issue of space traffic control and space situational awareness, and then proceeds to address conjunction analyses and collision avoidance maneuvers (CAM), including for the International Space Station. Another kind of collision risk discussed is the jettison of discarded hardware. The chapter then covers rendezvous and docking/berthing operations. Collision safety risks, their causes and consequences, and the measures for protection are discussed in detail. The chapter also covers the issues of space vehicles charging and contamination hazards, including the shock hazard for astronauts involved in extravehicular activities. Finally, the chapter presents end-of life mitigation measures and techniques for space debris removal, such as space tugs, drag devices and electrodynamic propulsion. **Atmospheric and Space Flight Dynamics Modeling and Simulation with MATLAB® and Simulink® Springer Science & Business Media** This book offers a unified presentation that does not discriminate between atmospheric and space flight. It demonstrates that the two disciplines have evolved from the same set of physical principles and introduces a broad range of critical concepts in an accessible, yet mathematically rigorous presentation. The book presents many MATLAB and Simulink-based numerical examples and real-world simulations. Replete with illustrations, end-of-chapter exercises, and selected solutions, the work is primarily useful as a textbook for advanced undergraduate and beginning graduate-level students. **Low Earth Orbit Satellite Design Springer** In recent decades, the number of satellites being built and launched into Earth's orbit has grown immensely, alongside the field of space engineering itself. This book offers an in-depth guide to engineers and professionals seeking to understand the technologies behind Low Earth Orbit satellites. With access to special spreadsheets that provide the key equations and relationships needed for mastering spacecraft design, this book gives the growing crop of space engineers and professionals the tools and resources they need to prepare their own LEO satellite designs, which is especially useful for designers of small satellites such as those launched by universities. Each chapter breaks down the various mathematics and principles underlying current spacecraft software and hardware designs. **Mission Geometry ; Orbit and Constellation Design and Management Fundamentals of Spacecraft Attitude Determination and Control Springer** This book explores topics that are central to the field of spacecraft attitude determination and control. The authors provide rigorous theoretical derivations of significant algorithms accompanied by a generous amount of qualitative discussions of the subject matter. The book documents the development of the important concepts and methods in a manner accessible to practicing engineers, graduate-level engineering students and applied mathematicians. It includes detailed examples from actual mission designs to help ease the transition from theory to practice and also provides prototype algorithms that are readily available on the author's website. Subject matter includes both theoretical derivations and practical implementation of spacecraft attitude determination and control systems. It provides detailed derivations for attitude kinematics and dynamics and provides detailed description of the most widely used attitude parameterization, the quaternion. This title also provides a thorough treatise of attitude dynamics including Jacobian elliptical functions. It is the first known book to provide detailed derivations and explanations of state attitude determination and gives readers real-world examples from actual working spacecraft missions. The subject matter is chosen to fill the void of existing textbooks and treatises, especially in state and dynamics attitude determination. MATLAB code of all examples will be provided through an external website. **Spacecraft Attitude Determination and Control Springer Science & Business Media** Roger D. Werking Head, Attitude Determination and Control Section National Aeronautics and Space Administration/ Goddard Space Flight Center Extensive work has been done for many years in the areas of attitude determination, attitude prediction, and attitude control. During this time, it has been difficult to obtain reference material that provided a comprehensive overview of attitude support activities. This lack of reference material has made it difficult for those not intimately involved in attitude functions to become acquainted with the ideas and activities which are essential to understanding the various aspects of spacecraft attitude support. As a result, I felt the need for a document which could be used by a variety of persons to obtain an understanding of the work which has been done in support of spacecraft

attitude objectives. It is believed that this book, prepared by the Computer Sciences Corporation under the able direction of Dr. James Wertz, provides this type of reference. This book can serve as a reference for individuals involved in mission planning, attitude determination, and attitude dynamics; an introductory textbook for students and professionals starting in this field; an information source for experimenters or others involved in spacecraft-related work who need information on spacecraft orientation and how it is determined, but who have neither the time nor the resources to pursue the varied literature on this subject; and a tool for encouraging those who could expand this discipline to do so, because much remains to be done to satisfy future needs.

Resilient Space Systems Design An Introduction CRC Press Presenting a fundamental definition of resilience, the book examines the concept of resilience as it relates to space system design. The book establishes the required definitions, relates its place to existing state-of-the-art systems engineering practices, and explains the process and mathematical tools used to achieve a resilient design. It discusses a variety of potential threats and their impact upon a space system. By providing multiple, real-world examples to illustrate the application of the design methodology, the book covers the necessary techniques and tools, while guiding the reader through the entirety of the process. The book begins with space systems basics to ensure the reader is versed in the functions and components of the system prior to diving into the details of resilience. However, the text does not assume that the reader has an extensive background in the subject matter of resilience. This book is aimed at engineers and architects in the areas of aerospace, space systems, and space communications.

Fundamentals of Aerospace Navigation and Guidance Cambridge University Press This text covers fundamentals in navigation of modern aerospace vehicles. It is an excellent resource for both graduate students and practicing engineers.

Applied Electromagnetic Engineering for Magnetic, Superconducting, Multifunctional and Nano Materials Trans Tech Publications Ltd Collection of selected, peer reviewed papers from the 8th Japanese-Mediterranean Workshop on Applied Electromagnetic Engineering for Magnetic, Superconducting, Multifunctional and Nano Materials, June 23-26, 2013, Athen, Greece. The 59 papers are grouped as follows: I. Advanced Materials and Magnetohydrodynamics, II. Advanced Applications, III. Magnetic Material Manufacturing and Characterization, IV. Computational Electromagnetics, V. Applications in Traction and Energy, VI. Electrical Machine Technology

Architecting Spacecraft With Sysml A Model-based Systems Engineering Approach Createspace Independent Publishing Platform A Guide to Apply a Model-based Systems Engineering Approach with SysML to Specify and Architect Systems. This book provides a straightforward guide to develop an architecture model of a Small Satellite using the Systems Modeling Language (SysML(r)). SysML is a general-purpose modeling language used to specify and architect systems. Model-based Systems Engineering (MBSE) is intended to produce an integrated system model using SysML which reflects multiple views of the system to specify the interaction and interconnection of its components, and their functions, states, interfaces, and performance and physical characteristics. The system model can enhance quality, reuse, and shared understanding of the system. This book can be used by instructors and students to learn how to apply MBSE with SysML, as well as practitioners of MBSE and organizations as a reference approach for their application.

Introduction to Rocket Science and Engineering CRC Press An overall view of the vast spectrum of knowledge needed by practicing rocket scientists and engineers, Introduction to Rocket Science and Engineering presents the history and basics of rocket theory, design, experimentation, testing, and applications. It covers an array of fields, from advanced mathematics, chemistry, and physics to logistics, systems engineering, and politics. The text begins with a discussion on the discovery and development of rockets as well as the basic principles governing rockets and rocket science. It explains why rockets are needed from economic, philosophical, and strategic standpoints and looks at why the physics of the universe forces us to use rockets to complete certain activities. Exploring how rockets work, the author covers the concepts of thrust, momentum, impulse, and the rocket equation, along with the rocket engine, its components, and the physics involved in the generation of the propulsive force. He also presents several different types of rocket engines and discusses the testing of rocket components, subsystems, systems, and complete products. The final chapter stresses the importance of rocket scientists and engineers to think of the unusual, unlikely, and unthinkable when dealing with the complexities of rocketry. Taking students through the process of becoming a rocket scientist or engineer, this text supplies a hands-on understanding of the many facets of rocketry. It provides the ideal foundation for students to continue on their journey in rocket science and engineering.

CubeSat Handbook From Mission Design to Operations Academic Press CubeSat Handbook: From Mission Design to Operations is the first book solely devoted to the design, manufacturing, and in-orbit operations of CubeSats. Beginning with an historical overview from CubeSat co-inventors Robert Twiggs and Jordi Puig-Suari, the book is divided into 6 parts with contributions from international experts in the area of small satellites and CubeSats. It covers topics such as standard interfaces, on-board & ground software, industry standards in terms of control algorithms and sub-systems, systems engineering, standards for AITV (assembly, integration, testing and validation) activities, and launch regulations. This comprehensive resource provides all the information needed for engineers and developers in industry and academia to successfully design and launch a CubeSat mission. Provides an overview on all aspects that a CubeSat developer needs to analyze during mission design and its realization Features practical examples on how to design and deal with possible issues during a CubeSat mission Covers new developments and technologies, including ThinSats and PocketQubeSats

Elements of Spacecraft Design AIAA Annotation This text discusses the conceptual stages of mission design, systems engineering, and orbital mechanics, providing a basis for understanding the design process for different components and functions of a spacecraft. Coverage includes propulsion and power systems, structures, attitude control, thermal control, command and data systems, and telecommunications. Worked examples and exercises are included, in addition to appendices on acronyms and abbreviations and spacecraft design data. The book can be used for self-study or for a course in spacecraft design. Brown directed the team that produced the Magellan spacecraft, and has taught spacecraft design at the University of Colorado.

Annotation c. Book News, Inc., Portland, OR (booknews.com).

The Logic of Microspace Springer Science & Business Media Changing the focus of the multibillion-dollar global aerospace business toward smaller, lower-cost spacecraft is not happening solely due to technical, managerial, financial or market motivations. Rick Fleeter's second book on the small, low-cost space programmes which are the fastest-growing segment of aerospace activity, gives the reader a keen understanding of the full spectrum of factors driving this profound change. The text then goes beyond engineering technologies and management techniques to envision the tantalizing prospects microspace has in store for the industry, its present markets and those of the future.

Aerospace Engineering on the Back of an

Envelope Springer Science & Business Media *Engineers need to acquire “Back-of-the-Envelope” survival skills to obtain rough quantitative answers to real-world problems, particularly when working on projects with enormous complexity and very limited resources. In the case studies treated in this book, we show step-by-step examples of the physical arguments and the resulting calculations obtained using the quick-fire method. We also demonstrate the estimation improvements that can be obtained through the use of more detailed physics-based Back-of-the-Envelope engineering models. These different methods are used to obtain the solutions to a number of design and performance estimation problems arising from two of the most complex real-world engineering projects: the Space Shuttle and the Hubble Space Telescope satellite.*