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**KEY=COURSE - SAWYER ANASTASIA**

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### A First Course in Continuum Mechanics

*Cambridge University Press* **A concise account of classic theories of fluids and solids, for graduate and advanced undergraduate courses in continuum mechanics.**

### A First Course in Continuum Mechanics

*Prentice Hall*

### A First Course in Rational Continuum Mechanics: General concepts

### A First Course in Continuum Mechanics

### For Physical and Biological Engineers and Scientists

*Pearson College Division* **Revision of a classic text by a distinguished author. Emphasis is on problem formulation and derivation of governing equations. New edition features increased emphasis on applications. New chapter covers long-term changes in materials under stress.**

### Continuum Mechanics

### Concise Theory and Problems

*Courier Corporation* **Comprehensive treatment offers 115 solved problems and exercises to promote understanding of vector and tensor theory, basic kinematics, balance laws, field equations, jump conditions, and constitutive equations.**

### Continuum Mechanics

*Courier Corporation* **Undergraduate text offers an analysis of deformation and stress, covers laws of conservation of mass, momentum, and energy, and surveys the formulation of mechanical constitutive equations. 1992 edition.**

### An Introduction to Continuum Mechanics

*Cambridge University Press* **This best-selling textbook presents the concepts of continuum mechanics, and the second edition includes additional explanations, examples and exercises.**

### Continuum Mechanics and Thermodynamics

### From Fundamental Concepts to Governing Equations

*Cambridge University Press* **Treats subjects directly related to nonlinear materials modeling for graduate students and researchers in physics, materials science, chemistry and engineering.**

# A First Course in Rational Continuum Mechanics

*Academic Press* A First Course in Rational Continuum Mechanics V1

## A First Course in Rational Continuum Mechanics

### General Concepts

*Elsevier* A First Course in Rational Continuum Mechanics, Volume 1: General Concepts describes general concepts in rational continuum mechanics and covers topics ranging from bodies and forces to motions and energies, kinematics, and the stress tensor. Constitutive relations are also discussed, and some definitions and theorems of algebra, geometry, and calculus are included. Exercises and their solutions are given as well. Comprised of four chapters, this volume begins with an introduction to rational mechanics by focusing on the mathematical concepts of bodies, forces, motions, and energies. Systems that provide possible universes for mechanics are described. The next chapter explores kinematics, with emphasis on bodies, placements, and motions as well as other relevant concepts like local deformation and homogeneous transplacement. The book also considers the stress tensor and Cauchy's fundamental theorem before concluding with a discussion on constitutive relations. This monograph is designed for students taking a course in mathematics or physics.

### Continuum Mechanics for Engineers

*CRC Press* A bestselling textbook in its first three editions, Continuum Mechanics for Engineers, Fourth Edition provides engineering students with a complete, concise, and accessible introduction to advanced engineering mechanics. It provides information that is useful in emerging engineering areas, such as micro-mechanics and biomechanics. Through a mastery of this volume's contents and additional rigorous finite element training, readers will develop the mechanics foundation necessary to skillfully use modern, advanced design tools. Features: Provides a basic, understandable approach to the concepts, mathematics, and engineering applications of continuum mechanics Updated throughout, and adds a new chapter on plasticity Features an expanded coverage of fluids Includes numerous all new end-of-chapter problems With an abundance of worked examples and chapter problems, it carefully explains necessary mathematics and presents numerous illustrations, giving students and practicing professionals an excellent self-study guide to enhance their skills.

### A First Course in Continuum Mechanics

"A concise account of various classic theories of fluids and solids, this book is for courses in continuum mechanics for graduate students and advanced undergraduates. Thoroughly class-tested in courses at Stanford University and the University of Warwick, it is suitable for both applied mathematicians and engineers. The only prerequisites are an introductory undergraduate knowledge of basic linear algebra and differential equations. Unlike most existing works at this level, this book covers both isothermal and thermal theories. The theories are derived in a unified manner from the fundamental balance laws of continuum mechanics. Intended both for classroom use and for self-study, each chapter contains a wealth of exercises, with fully worked solutions to odd-numbered questions. A complete solutions manual is available to instructors upon request. Short bibliographies appear at the end of each chapter, pointing to material which underpins or expands upon the material discussed"--Provided by publisher

### Continuum Mechanics and Plasticity

*CRC Press* Tremendous advances in computer technologies and methods have precipitated a great demand for refinements in the constitutive models of plasticity. Such refinements include the development of a model that would account for material anisotropy and produces results that compare well with experimental data. Key to developing such models-and to meeting many other challenges in the field- is a firm grasp of the principles of continuum mechanics and how they apply to the formulation of plasticity theory. Also critical is understanding the experimental aspects of plasticity and material anisotropy. Integrating the traditionally separate subjects of continuum mechanics and plasticity, this book builds understanding in all of those areas. Part I provides systematic, comprehensive coverage of continuum mechanics, from a review of Cartesian tensors to the relevant conservation laws and constitutive equation. Part II offers an exhaustive presentation of the continuum theory of plasticity. This includes a unique treatment of the experimental aspects of plasticity, covers anisotropic plasticity, and incorporates recent research results related to the endochronic theory of plasticity obtained by the author and his colleagues. By bringing all of these together in one book, Continuum Mechanics and Plasticity facilitates the learning of solid mechanics. Its readers will be well prepared for pursuing either research related to the mechanical behavior of engineering materials or developmental work in engineering analysis and design.

## The Linearized Theory of Elasticity

*Springer Science & Business Media* This book is derived from notes used in teaching a first-year graduate-level course in elasticity in the Department of Mechanical Engineering at the University of Pittsburgh. This is a modern treatment of the linearized theory of elasticity, which is presented as a specialization of the general theory of continuum mechanics. It includes a comprehensive introduction to tensor analysis, a rigorous development of the governing field equations with an emphasis on recognizing the assumptions and approximations inherent in the linearized theory, specification of boundary conditions, and a survey of solution methods for important classes of problems. Two- and three-dimensional problems, torsion of noncircular cylinders, variational methods, and complex variable methods are covered. This book is intended as the text for a first-year graduate course in mechanical or civil engineering. Sufficient depth is provided such that the text can be used without a prerequisite course in continuum mechanics, and the material is presented in such a way as to prepare students for subsequent courses in nonlinear elasticity, inelasticity, and fracture mechanics. Alternatively, for a course that is preceded by a course in continuum mechanics, there is enough additional content for a full semester of linearized elasticity.

## A First Course in Continuum Mechanics

"A concise account of various classic theories of fluids and solids, this book is for courses in continuum mechanics for graduate students and advanced undergraduates. Thoroughly class-tested in courses at Stanford University and the University of Warwick, it is suitable for both applied mathematicians and engineers. The only prerequisites are an introductory undergraduate knowledge of basic linear algebra and differential equations. Unlike most existing works at this level, this book covers both isothermal and thermal theories. The theories are derived in a unified manner from the fundamental balance laws of continuum mechanics. Intended both for classroom use and for self-study, each chapter contains a wealth of exercises, with fully worked solutions to odd-numbered questions. A complete solutions manual is available to instructors upon request. Short bibliographies appear at the end of each chapter, pointing to material which underpins or expands upon the material discussed"--Provided by publisher.

## Fundamentals of Continuum Mechanics

*John Wiley & Sons* A concise introductory course text on continuum mechanics Fundamentals of Continuum Mechanics focuses on the fundamentals of the subject and provides the background for formulation of numerical methods for large deformations and a wide range of material behaviours. It aims to provide the foundations for further study, not just of these subjects, but also the formulations for much more complex material behaviour and their implementation computationally. This book is divided into 5 parts, covering mathematical preliminaries, stress, motion and deformation, balance of mass, momentum and energy, and ideal constitutive relations and is a suitable textbook for introductory graduate courses for students in mechanical and civil engineering, as well as those studying material science, geology and geophysics and biomechanics. A concise introductory course text on continuum mechanics Covers the fundamentals of continuum mechanics Uses modern tensor notation Contains problems and accompanied by a companion website hosting solutions Suitable as a textbook for introductory graduate courses for students in mechanical and civil engineering

## Introduction to Continuum Mechanics for Engineers

This self-contained graduate-level text introduces classical continuum models within a modern framework. Its numerous exercises illustrate the governing principles, linearizations, and other approximations that constitute classical continuum models. Starting with an overview of one-dimensional continuum mechanics, the text advances to examinations of the kinematics of motion, the governing equations of balance, and the entropy inequality for a continuum. The main portion of the book involves models of material behavior and presents complete formulations of various general continuum models. The final chapter contains an introductory discussion of materials with internal state variables. Two substantial appendixes cover all of the mathematical background necessary to understand the text as well as results of representation theorems. Suitable for independent study, this volume features 280 exercises and 170 references.

## Principles of Continuum Mechanics

## A Study of Conservation Principles with Applications

*Cambridge University Press* As most modern technologies are no longer discipline-specific but involve multidisciplinary approaches, undergraduate engineering students should be introduced to the principles of mechanics so that they have a strong background in the basic principles common to all disciplines and are able to work at the interface of science and engineering disciplines. This textbook is designed for a first course on principles of mechanics and provides an introduction to the basic concepts of stress and strain and conservation principles. It prepares engineers for advanced courses in traditional as well as emerging fields such as biotechnology, nanotechnology, energy systems, and computational mechanics. This simple book presents the subjects of mechanics of materials, fluid

mechanics, and heat transfer in a unified form using the conservation principles of mechanics.

## Fluid Dynamics and Linear Elasticity

### A First Course in Continuum Mechanics

*Springer* This book provides a concise introduction to continuum mechanics, with a particular emphasis on fluid dynamics, suitable for upper undergraduate students in applied mathematics and related subjects. Starting with a preliminary chapter on tensors, the main topic of the book begins in earnest with the chapters on continuum kinematics and dynamics. Following chapters cover linear elasticity and both incompressible and compressible fluids. Special topics of note include nonlinear acoustics and the theory of motion of viscous thermal conducting compressible fluids. Based on an undergraduate course taught for over a decade, this textbook assumes only familiarity with multivariate calculus and linear algebra. It includes many exercises with solutions and can serve as textbook for lecture courses at the undergraduate and masters level.

## Nonlinear Continuum Mechanics for Finite Element Analysis

*Cambridge University Press* Designing engineering components that make optimal use of materials requires consideration of the nonlinear characteristics associated with both manufacturing and working environments. The modeling of these characteristics can only be done through numerical formulation and simulation, and this requires an understanding of both the theoretical background and associated computer solution techniques. By presenting both nonlinear continuum analysis and associated finite element techniques under one roof, Bonet and Wood provide, in this edition of this successful text, a complete, clear, and unified treatment of these important subjects. New chapters dealing with hyperelastic plastic behavior are included, and the authors have thoroughly updated the FLaGSHyP program, freely accessible at [www.flagshyp.com](http://www.flagshyp.com). Worked examples and exercises complete each chapter, making the text an essential resource for postgraduates studying nonlinear continuum mechanics. It is also ideal for those in industry requiring an appreciation of the way in which their computer simulation programs work.

### A First Course in Continuum Mechanics

*Cambridge University Press* A concise account of various classic theories of fluids and solids, this book is for courses in continuum mechanics for graduate students and advanced undergraduates. Thoroughly class-tested in courses at Stanford University and the University of Warwick, it is suitable for both applied mathematicians and engineers. The only prerequisites are an introductory undergraduate knowledge of basic linear algebra and differential equations. Unlike most existing works at this level, this book covers both isothermal and thermal theories. The theories are derived in a unified manner from the fundamental balance laws of continuum mechanics. Intended both for classroom use and for self-study, each chapter contains a wealth of exercises, with fully worked solutions to odd-numbered questions. A complete solutions manual is available to instructors upon request. Short bibliographies appear at the end of each chapter, pointing to material which underpins or expands upon the material discussed.

## An Introduction to Continuum Mechanics

*Cambridge University Press* This textbook on continuum mechanics reflects the modern view that scientists and engineers should be trained to think and work in multidisciplinary environments. A course on continuum mechanics introduces the basic principles of mechanics and prepares students for advanced courses in traditional and emerging fields such as biomechanics and nanomechanics. This text introduces the main concepts of continuum mechanics simply with rich supporting examples but does not compromise mathematically in providing the invariant form as well as component form of the basic equations and their applications to problems in elasticity, fluid mechanics, and heat transfer. The book is ideal for advanced undergraduate and beginning graduate students. The book features: derivations of the basic equations of mechanics in invariant (vector and tensor) form and specializations of the governing equations to various coordinate systems; numerous illustrative examples; chapter-end summaries; and exercise problems to test and extend the understanding of concepts presented.

## Elementary Continuum Mechanics for Everyone With Applications to Structural Mechanics

*Springer Science & Business Media* The book opens with a derivation of kinematically nonlinear 3-D continuum mechanics for solids. Then the principle of virtual work is utilized to derive the simpler, kinematically linear 3-D theory and to provide the foundation for developing consistent theories of kinematic nonlinearity and linearity for specialized continua, such as beams and plates, and finite element methods for these structures. A formulation in terms of the versatile Bui-Diary-Hutchinson notation is used as basis for the theories for these structures and structural elements,

as well as for an in-depth treatment of structural instability.

## Introduction to Continuum Mechanics

*Newnes* Continuum mechanics studies the response of materials to different loading conditions. The concept of tensors is introduced through the idea of linear transformation in a self-contained chapter, and the interrelation of direct notation, indicial notation and matrix operations is clearly presented. A wide range of idealized materials are considered through simple static and dynamic problems, and the book contains an abundance of illustrative examples and problems, many with solutions. Through the addition of more advanced material (solution of classical elasticity problems, constitutive equations for viscoelastic fluids, and finite deformation theory), this popular introduction to modern continuum mechanics has been fully revised to serve a dual purpose: for introductory courses in undergraduate engineering curricula, and for beginning graduate courses.

## Introduction to the Mechanics of a Continuous Medium

### Biomechanics

## Mechanical Properties of Living Tissues

*Springer Science & Business Media* The motivation for writing a series of books on biomechanics is to bring this rapidly developing subject to students of bioengineering, physiology, and mechanics. In the last decade biomechanics has become a recognized discipline offered in virtually all universities. Yet there is no adequate textbook for instruction; neither is there a treatise with sufficiently broad coverage. A few books bearing the title of biomechanics are too elementary, others are too specialized. I have long felt a need for a set of books that will inform students of the physiological and medical applications of biomechanics, and at the same time develop their training in mechanics. We cannot assume that all students come to biomechanics already fully trained in fluid and solid mechanics; their knowledge in these subjects has to be developed as the course proceeds. The scheme adopted in the present series is as follows. First, some basic training in mechanics, to a level about equivalent to the first seven chapters of the author's *A First Course in Continuum Mechanics* (Prentice-Hall, Inc. 1977), is assumed. We then present some essential parts of biomechanics from the point of view of bioengineering, physiology, and medical applications. In the meantime, mechanics is developed through a sequence of problems and examples. The main text reads like physiology, while the exercises are planned like a mechanics textbook. The instructor may fill a dual role: teaching an essential branch of life science, and gradually developing the student's knowledge in mechanics.

## Applied Mechanics of Solids

*CRC Press* Modern computer simulations make stress analysis easy. As they continue to replace classical mathematical methods of analysis, these software programs require users to have a solid understanding of the fundamental principles on which they are based. Develop Intuitive Ability to Identify and Avoid Physically Meaningless Predictions Applied Mechanics o

## The Elements of Continuum Mechanics

## Lectures given in August - September 1965 for the Department of Mechanical and Aerospace Engineering Syracuse University Syracuse, New York

*Springer Science & Business Media* The lectures here reported were first delivered in August and September, 1965, for the Department of Mechanical and Aerospace Engineering at Syracuse University, New York under the sponsorship of the New York State Science and Technology Foundation. Lectures 1-6 and 22-23 are revised from a version prepared by Professor Kin N. Tong on the basis of a transcription of the lectures, kindly provided by Professor S. Eskinazi. The remainder of the text has been written out afresh from my own notes. Much of the same ground was covered in my lectures to the Australian Mathematical Society's Summer Research Institute at Melbourne in January and February, 1966, and for the parts affected the text conforms to this latter presentation. I am grateful to Professors C.-C. Wang and K. N. Tong for criticism of the manuscript. These lectures constitute a course, not a treatise. Names are attached to theorems justly, to the best of my knowledge, but are not intended to replace a history of the subject or references to the sources.

# Introduction to Solid Mechanics

## An Integrated Approach

*Springer* This expanded second edition presents in one text the concepts and processes covered in statics and mechanics of materials curricula following a systematic, topically integrated approach. Building on the novel pedagogy of fusing concepts covered in traditional undergraduate courses in rigid-body statics and deformable body mechanics, rather than simply grafting them together, this new edition develops further the authors' very original treatment of solid mechanics with additional figures, an elaboration on selected solved problems, and additional text as well as a new subsection on viscoelasticity in response to students' feedback. *Introduction to Solid Mechanics: An Integrated Approach, Second Edition*, offers a holistic treatment of the depth and breadth of solid mechanics and the inter-relationships of its underlying concepts. Proceeding from first principles to applications, the book stands as a whole greater than the sum of its parts.

## A Course in Elasticity

*Springer Science & Business Media* This book is based on lecture notes of the late Professor de Veubeke. The subject is presented at a level suitable for graduate students in engineering, physics, or mathematics. Some exposure to linear algebra, complex analysis, variational calculus, or basic continuum mechanics would be helpful. The first third of the book contains the fundamentals of the theory of elasticity. Kinematics of continuous media, the notions of stress and equilibrium, conservation of energy, and the elastic constitutive law are each treated first in a nonlinear context, then specialized to the linear case. The remainder of the book is given to three classic applications of the theory, each supplemented by original results based on the use of complex variables. Each one of the three topics - Saint-Venant's theory of prismatic beams, plane deformations, and the bending of plates - is first presented and analyzed in general, then rounded out with numerous specific and sometimes novel examples. The following notational conventions are generally in force, except where noted to the contrary: lower case boldface letters denote vectors or triples of Cartesian coordinates, upper case boldface letters denote  $3 \times 3$  matrices, repeated lower case Latin subscripts are summed over (1,2,3), and non-repeated lower case Latin subscripts are assumed to range over (1,2,3).

## Worked Examples in Nonlinear Continuum Mechanics for Finite Element Analysis

*Cambridge University Press* Many processes in materials science and engineering, such as the load deformation behaviour of certain structures, exhibit nonlinear characteristics. The computer simulation of such processes therefore requires a deep understanding of both the theoretical aspects of nonlinearity and the associated computational techniques. This book provides a complete set of exercises and solutions in the field of theoretical and computational nonlinear continuum mechanics and is the perfect companion to *Nonlinear Continuum Mechanics for Finite Element Analysis*, where the authors set out the theoretical foundations of the subject. It employs notation consistent with the theory book and serves as a great resource to students, researchers and those in industry interested in gaining confidence by practising through examples. Instructors of the subject will also find the book indispensable in aiding student learning.

## Continuum Mechanics of Solids

*Oxford University Press* *Continuum Mechanics of Solids* is an introductory text for graduate students in the many branches of engineering, covering the basics of kinematics, equilibrium, and material response. As an introductory book, most of the emphasis is upon the kinematically linear theories of elasticity, plasticity, and viscoelasticity, with two additional chapters devoted to topics in finite elasticity. Further chapters cover topics in fracture and fatigue and coupled field problems, such as thermoelasticity, chemoelasticity, poroelasticity, and piezoelectricity. There is ample material for a two semester course, or by selecting only topics of interest for a one-semester offering. The text includes numerous examples to aid the student. A companion text with over 180 fully worked problems is also available.

## Continuum Mechanics

## Constitutive Modeling of Structural and Biological Materials

*Cambridge University Press* This is a modern textbook for courses in continuum mechanics. It provides both the theoretical framework and the numerical methods required to model the behaviour of continuous materials. This self-contained textbook is tailored for advanced undergraduate or first-year graduate students with numerous step-by-step derivations and worked-out examples. The author presents both the general continuum theory and the mathematics

needed to apply it in practice. The derivation of constitutive models for ideal gases, fluids, solids and biological materials, and the numerical methods required to solve the resulting differential equations, are also detailed. Specifically, the text presents the theory and numerical implementation for the finite difference and the finite element methods in the Matlab® programming language. It includes thirteen detailed Matlab® programs illustrating how constitutive models are used in practice.

## Foundations of Solid Mechanics

*Prentice Hall*

## Vectors, Tensors and the Basic Equations of Fluid Mechanics

*Courier Corporation* **Introductory text, geared toward advanced undergraduate and graduate students, applies mathematics of Cartesian and general tensors to physical field theories and demonstrates them in terms of the theory of fluid mechanics. 1962 edition.**

## Circuits, Signals and Systems for Bioengineers

### A MATLAB-Based Introduction

*Academic Press* **Circuits, Signals and Systems for Bioengineers: A MATLAB-Based Introduction, Third Edition, guides the reader through the electrical engineering principles that can be applied to biological systems. It details the basic engineering concepts that underlie biomedical systems, medical devices, biocontrol and biomedical signal analysis, providing a solid foundation for students in important bioengineering concepts. Fully revised and updated to better meet the needs of instructors and students, the third edition introduces and develops concepts through computational methods that allow students to explore operations, such as correlations, convolution, the Fourier transform and the transfer function. New chapters have been added on image analysis, noise, stochastic processes and ergodicity, and new medical examples and applications are included throughout the text. Covers current applications in biocontrol, with examples from physiological systems modeling, such as the respiratory system Includes revised material throughout, with improved clarity of presentation and more biological, physiological and medical examples and applications Includes a new chapter on noise, stochastic processes, non-stationary and ergodicity Includes a separate new chapter featuring expanded coverage of image analysis Includes support materials, such as solutions, lecture slides, MATLAB data and functions needed to solve the problems**

## An Introduction to Mathematical Modeling

### A Course in Mechanics

*John Wiley & Sons* **A modern approach to mathematical modeling, featuring unique applications from the field of mechanics An Introduction to Mathematical Modeling: A Course in Mechanics is designed to survey the mathematical models that form the foundations of modern science and incorporates examples that illustrate how the most successful models arise from basic principles in modern and classical mathematical physics. Written by a world authority on mathematical theory and computational mechanics, the book presents an account of continuum mechanics, electromagnetic field theory, quantum mechanics, and statistical mechanics for readers with varied backgrounds in engineering, computer science, mathematics, and physics. The author streamlines a comprehensive understanding of the topic in three clearly organized sections: Nonlinear Continuum Mechanics introduces kinematics as well as force and stress in deformable bodies; mass and momentum; balance of linear and angular momentum; conservation of energy; and constitutive equations Electromagnetic Field Theory and Quantum Mechanics contains a brief account of electromagnetic wave theory and Maxwell's equations as well as an introductory account of quantum mechanics with related topics including ab initio methods and Spin and Pauli's principles Statistical Mechanics presents an introduction to statistical mechanics of systems in thermodynamic equilibrium as well as continuum mechanics, quantum mechanics, and molecular dynamics Each part of the book concludes with exercise sets that allow readers to test their understanding of the presented material. Key theorems and fundamental equations are highlighted throughout, and an extensive bibliography outlines resources for further study. Extensively class-tested to ensure an accessible presentation, An Introduction to Mathematical Modeling is an excellent book for courses on introductory mathematical modeling and statistical mechanics at the upper-undergraduate and graduate levels. The book also serves as a valuable reference for professionals working in the areas of modeling and simulation, physics, and computational engineering.**

# Tensor Algebra and Tensor Analysis for Engineers

## With Applications to Continuum Mechanics

*Springer Science & Business Media* There is a large gap between engineering courses in tensor algebra on one hand, and the treatment of linear transformations within classical linear algebra on the other. This book addresses primarily engineering students with some initial knowledge of matrix algebra. Thereby, mathematical formalism is applied as far as it is absolutely necessary. Numerous exercises provided in the book are accompanied by solutions enabling autonomous study. The last chapters deal with modern developments in the theory of isotropic and anisotropic tensor functions and their applications to continuum mechanics and might therefore be of high interest for PhD-students and scientists working in this area.

## Continuum Mechanics in the Earth Sciences

*Cambridge University Press* Continuum mechanics underlies many geological and geophysical phenomena, from earthquakes and faults to the fluid dynamics of the Earth. This interdisciplinary book provides geoscientists, physicists and applied mathematicians with a class-tested, accessible overview of continuum mechanics. Starting from thermodynamic principles and geometrical insights, the book surveys solid, fluid and gas dynamics. In later review chapters, it explores new aspects of the field emerging from nonlinearity and dynamical complexity and provides a brief introduction to computational modeling. Simple, yet rigorous, derivations are used to review the essential mathematics. The author emphasizes the full three-dimensional geometries of real-world examples, enabling students to apply this in deconstructing solid earth and planet-related problems. Problem sets and worked examples are provided, making this a practical resource for graduate students in geophysics, planetary physics and geology and a beneficial tool for professional scientists seeking a better understanding of the mathematics and physics within Earth sciences.

## Basics of Continuum Plasticity

*Springer* This book describes the basic principles of plasticity for students and engineers who wish to perform plasticity analyses in their professional lives, and provides an introduction to the application of plasticity theories and basic continuum mechanics in metal forming processes. This book consists of three parts. The first part deals with the characteristics of plasticity and instability under simple tension or compression and plasticity in beam bending and torsion. The second part is designed to provide the basic principles of continuum mechanics, and the last part presents an extension of one-dimensional plasticity to general three-dimensional laws based on the fundamentals of continuum mechanics. Though most parts of the book are written in the context of general plasticity, the last two chapters are specifically devoted to sheet metal forming applications. The homework problems included are designed to reinforce understanding of the concepts involved. This book may be used as a textbook for a one semester course lasting fourteen weeks or longer. This book is intended to be self-sufficient such that readers can study it independently without taking another formal course. However, there are some prerequisites before starting this book, which include a course on engineering mathematics and an introductory course on solid mechanics.