

Hibbeler Mechanics Of Materials 8th Edition Si Unit

Mechanics Of Materials 8th Edition, Si Units Engineering Mechanics Fox and McDonald's Introduction to Fluid Mechanics Engineer-In-Training Reference Manual Manufacturing Engineering and Technology in SI Units Engineering Mechanics Fluid Mechanics Advanced Engineering Mathematics, SI Edition Principles of Geotechnical Engineering Engineering Mechanics Engineering Mechanics Fundamentals of General, Organic and Biological Chemistry Mechanics of Materials Advanced Engineering Mathematics Structural Analysis Munson, Young and Okiishi's Fundamentals of Fluid Mechanics Fox and McDonald's Introduction to Fluid Mechanics Guide to Energy Management Introduction to Geotechnical Engineering Fundamentals of Heat and Mass Transfer Principles of Foundation Engineering Engineering Mechanics: Dynamics 7e Binder Ready Version + WileyPLUS Registration Card Mechanics of Materials Design of Machine Elements Thermodynamics Materials Science and Engineering Reinforced Concrete Statics Learning and Behavior Bird's Basic Engineering Mathematics Civil Engineering Solved Problems Print Component for Materials Science and Engineering Atomic Physics Solutions Manual to Accompany Fundamentals of Engineering Thermodynamics Thermodynamics The World Today: Concepts and Regions in Geography, 7th Edition Six: The Musical - Vocal Selections Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 8th edition Modern Physical Metallurgy Introduction to Chemical Engineering Thermodynamics

Thank you for reading Hibbeler Mechanics Of Materials 8th Edition Si Unit. Maybe you have knowledge that, people have search hundreds times for their favorite readings like this Hibbeler Mechanics Of Materials 8th Edition Si Unit, but end up in malicious downloads. Rather than enjoying a good book with a cup of coffee in the afternoon, instead they juggled with some infectious virus inside their laptop.

Hibbeler Mechanics Of Materials 8th Edition Si Unit is available in our digital library an online access to it is set as public so you can download it instantly.

Our digital library spans in multiple locations, allowing you to get the most less latency time to download any of our books like this one. Merely said, the Hibbeler Mechanics Of Materials 8th Edition Si Unit is universally compatible with any devices to read

Introduction to Geotechnical Engineering Apr 15 2021 Written in a concise, easy-to understand manner, *INTRODUCTION TO GEOTECHNICAL ENGINEERING, 2e*, presents intensive research and observation in the field and lab that have improved the science of foundation design. Now providing both U.S. and SI units, this non-calculus-based text is designed for courses in civil engineering technology programs where soil mechanics and foundation engineering are combined into one course. It is also a useful reference tool for civil engineering practitioners. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Modern Physical Metallurgy Jul 27 2019 *Modern Physical Metallurgy, Fourth Edition* discusses the fundamentals and applications of physical metallurgy. The book is comprised of 15 chapters that cover the experimental background of a metallurgical phenomenon. The text first talks about the structure of atoms and crystals, and then proceeds to dealing with the physical examination of metals and alloys. The third chapter tackles the phase diagrams and solidifications, while the fourth chapter covers the thermodynamics of crystals. Next, the book discusses the structure of alloys. The next four chapters deal with the deformations and defects of crystals, metals, and alloys. Chapter 10 discusses work hardening and annealing, while Chapters 11 and 12 cover phase transformations. The succeeding two chapters talk about creep, fatigue, and fracture, while the last chapter covers oxidation and corrosion. The text will be of great use to undergraduate students of materials engineering and other degrees that deal with metallurgical properties.

Manufacturing Engineering and Technology in SI Units Jun 29 2022

Six: The Musical - Vocal Selections Sep 28 2019 (*Vocal Selections*). *Six* has received rave reviews around the world for its modern take on the stories of the six wives of Henry VIII and it's finally opening on Broadway! From Tudor queens to pop princesses, the six wives take the mic to remix five hundred years of historical heartbreak into an exuberant celebration of 21st century girl power! Songs include: All You Wanna Do * Don't Lose Ur Head * Ex-Wives * Get Down * Haus of Holbein * Heart of Stone * I Don't Need Your Love * No Way * Six.

Statics Jul 07 2020 Over the past 50 years, Meriam & Kraige's *Engineering Mechanics: Statics* has established a highly respected tradition of excellence—a tradition that emphasizes accuracy, rigor, clarity, and applications. Now in a Sixth Edition, this classic text builds on these strengths, adding a comprehensive course management system, Wiley Plus, to the text, including an e-text, homework management, animations of concepts, and additional teaching and learning resources. New sample problems, new homework problems, and updates to content make the book more accessible. The Sixth Edition continues to provide a wide variety of high quality problems that are

known for their accuracy, realism, applications, and variety motivating students to learn and develop their problem solving skills. To build necessary visualization and problem-solving skills, the Sixth Edition continues to offer comprehensive coverage of drawing free body diagrams- the most important skill needed to solve mechanics problems.

Munson, Young and Okiishi's *Fundamentals of Fluid Mechanics* Jul 19 2021 *Fundamentals of Fluid Mechanics, 9th Edition* offers comprehensive topical coverage, with varied examples and problems, application of the visual component of fluid mechanics, and a strong focus on effective learning. The authors have designed their presentation to enable the gradual development of reader confidence in problem solving. Each important concept is introduced in easy-to-understand terms before more complicated examples are discussed. The 9th Edition includes new coverage of finite control volume analysis and compressible flow, as well as a selection of new problems. Continuing this important work's tradition of extensive real-world applications, each chapter includes *The Wide World of Fluids* case study boxes in each chapter. In addition, there are a wide variety of videos designed to enhance comprehension, support visualization skill building and engage students more deeply with the material and concepts.

Fundamentals of Heat and Mass Transfer Mar 15 2021 Completely updated, the seventh edition provides engineers with an in-depth look at the key concepts in the field. It incorporates new discussions on emerging areas of heat transfer, discussing technologies that are related to nanotechnology, biomedical engineering and alternative energy. The example problems are also updated to better show how to apply the material. And as engineers follow the rigorous and systematic problem-solving methodology, they'll gain an appreciation for the richness and beauty of the discipline.

Guide to Energy Management May 17 2021 Topics include distributed generation, energy auditing, rate structures, economic evaluation techniques, lighting efficiency improvement, HVAC optimization, combustion and use of industrial wastes, steam generation and distribution system performance, control systems and computers, energy systems maintenance, renewable energy, and industrial water management. "--BOOK JACKET.

Engineering Mechanics May 29 2022 Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's *Engineering Mechanics: Statics, 9th Edition* has provided a solid foundation of mechanics principles for more than 60 years. This text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text includes a number of helpful sample problems. To help students build necessary visualization and problem-solving skills, the text strongly emphasizes drawing free-body diagrams, one of the most important skills needed to

solve mechanics problems.

Thermodynamics Nov 30 2019 The 4th Edition of Cengel & Boles Thermodynamics: An Engineering Approach takes thermodynamics education to the next level through its intuitive and innovative approach. A long-time favorite among students and instructors alike because of its highly engaging, student-oriented conversational writing style, this book is now the most widely adopted thermodynamics text in the U.S. and in the world.

Engineering Mechanics Oct 02 2022 Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's *Engineering Mechanics: Statics* has provided a solid foundation of mechanics principles for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text includes a number of helpful sample problems. To help students build necessary visualization and problem-solving skills, the text strongly emphasizes drawing free-body diagrams— one of the most important skills needed to solve mechanics problems.

The World Today: Concepts and Regions in Geography, 7th Edition Oct 29 2019 The World Today is the number one bestselling brief World Regional Geography textbook. The seventh edition continues to bring readers geographic perspectives on a fast-changing world through the regional view. Restructured chapters provide a macro review of important physical, cultural, and political characteristics, drawing upon up-to-date significant world events and crises. The cartographically superior maps have been updated for the seventh edition to offer an accurate and vast picture of the world—multi-layer, interactive, GIA maps have been added to WileyPLUS Learning Space. To complement the extensive map program, the majority of the photos have been taken by our authors during their field research, allowing the student to experience an authentic geographical viewpoint of our world.

Mechanics Of Materials 8th Edition, Si Units Nov 03 2022

Mechanics of Materials Oct 22 2021

Bird's Basic Engineering Mathematics May 05 2020 Now in its eighth edition, *Bird's Basic Engineering Mathematics* has helped thousands of students to succeed in their exams. Mathematical theories are explained in a straightforward manner, supported by practical engineering examples and applications to ensure that readers can relate theory to practice. Some 1,000 engineering situations/problems have been 'flagged-up' to help demonstrate that engineering cannot be fully understood without a good knowledge of mathematics. The extensive and thorough coverage makes this a great text for introductory level engineering courses – such as for aeronautical, construction, electrical, electronic, mechanical, manufacturing

engineering and vehicle technology - including for BTEC First, National and Diploma syllabuses, City & Guilds Technician Certificate and Diploma syllabuses, and even for GCSE revision. Its companion website provides extra materials for students and lecturers, including full solutions for all 1,700 further questions, lists of essential formulae, multiple choice tests, and illustrations, as well as full solutions to revision tests for course instructors.

Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 8th edition Aug 27 2019 The most widely used and highly regarded textbook and reference of emergency medicine -- Endorsed by the American College of Emergency Physicians The 8th edition of *Tintinalli's Emergency Medicine* provides the depth and breadth of coverage that reflects the complexity and expertise needed to practice emergency medicine successfully in today's fast-paced environments. It is an important contemporary clinical emergency care resource for physicians, NPs, and PAs who practice emergency medicine and for emergency medicine and pediatric emergency medicine fellows. It remains the preferred study guide for in-training and board examinations and recertification. NEW to this edition: • Full-color design with more tables than ever to succinctly present key information • Extensive updates to all sections, incorporating the latest guidelines, evidence-based protocols, and relevant research • Expanded pediatric section, with complete clinical information for general and pediatric emergency physicians • Expanded coverage of common emergency department procedures, with improved illustrations • Online access to more than 30 videos, covering a wide range of procedural and diagnostic topics and focusing on the latest ultrasound-guided techniques From the reviews of the seventh edition:

"Collectively, they have once again produced an excellent text that manages to cover the broad scope of emergency medicine while remaining an easily readable and practical resource....Last, for the inevitable comparison of this current edition of *Tintinalli's Emergency Medicine* with other available emergency medicine textbooks available: in my opinion, *Tintinalli's* still comes out on top. It is more concise and easier to read than some, yet it covers the breadth of emergency medicine practice more comprehensively than others....Just as previous editions did, the seventh presents all of the most pertinent and up-to-date information in a well-organized format that is comprehensive yet easy to read. That and many of the attractive new features in this current edition will ensure its place on my bookshelf for years to come."—JAMA

Atomic Physics Jan 31 2020 Nobel Laureate's lucid treatment of kinetic theory of gases, elementary particles, nuclear atom, wave-corpuscles, atomic structure and spectral lines, much more. Over 40 appendices, bibliography.

Engineering Mechanics Jan 25 2022 Known for its accuracy, clarity,

and dependability, Meriam, Kraige, and Bolton's *Engineering Mechanics: Dynamics 8th Edition* has provided a solid foundation of mechanics principles for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text includes a number of helpful sample problems. To help students build necessary visualization and problem-solving skills, the text strongly emphasizes drawing free-body diagrams- one of the most important skills needed to solve mechanics problems.

Reinforced Concrete Aug 08 2020 Based on the 1995 edition of the American Concrete Institute Building Code, this text explains the theory and practice of reinforced concrete design in a systematic and clear fashion, with an abundance of step-by-step worked examples, illustrations, and photographs. The focus is on preparing students to make the many judgment decisions required in reinforced concrete design, and reflects the author's experience as both a teacher of reinforced concrete design and as a member of various code committees. This edition provides new, revised and expanded coverage of the following topics: core testing and durability; shrinkage and creep; bases the maximum steel ratio and the value of the factor on Appendix B of ACI318-95; composite concrete beams; strut-and-tie models; dapped ends and T-beam flanges. It also expands the discussion of STMs and adds new examples in SI units.

Advanced Engineering Mathematics, SI Edition Mar 27 2022 O'Neil's *ADVANCED ENGINEERING MATHEMATICS, 8E* makes rigorous mathematical topics accessible to today's learners by emphasizing visuals, numerous examples, and interesting mathematical models. *New Math in Context* broadens the engineering connections by demonstrating how mathematical concepts are applied to current engineering problems. The reader has the flexibility to select from a variety of topics to study from additional posted web modules. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Introduction to Chemical Engineering Thermodynamics Jun 25 2019 *Introduction to Chemical Engineering Thermodynamics* presents comprehensive coverage of the subject of thermodynamics from a chemical engineering viewpoint. The text provides a thorough exposition of the principles of thermodynamics, and details their application to chemical processes. The content is structured to alternate between the development of thermodynamic principles and the correlation and use of thermodynamic properties as well as between theory and applications. The chapters are written in a clear, logically organized manner, and contain an abundance of realistic problems, examples, and illustrations to help students understand complex concepts. New ideas, terms, and symbols constantly challenge

the readers to think and encourage them to apply this fundamental body of knowledge to the solution of practical problems. McGraw-Hill Education's Connect, is also available as an optional, add on item. Connect is the only integrated learning system that empowers students by continuously adapting to deliver precisely what they need, when they need it, how they need it, so that class time is more effective. Connect allows the professor to assign homework, quizzes, and tests easily and automatically grades and records the scores of the student's work. Problems are randomized to prevent sharing of answers an may also have a "multi-step solution" which helps move the students' learning along if they experience difficulty.

Learning and Behavior Jun 05 2020 LEARNING AND BEHAVIOR, Seventh Edition, is stimulating and filled with high-interest queries and examples. Based on the theme that learning is a biological mechanism that aids survival, this book embraces a scientific approach to behavior but is written in clear, engaging, and easy-to-understand language. Available with InfoTrac Student Collections <http://gocengage.com/infotrac>. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Principles of Geotechnical Engineering Feb 23 2022 Intended as an introductory text in soil mechanics, the eighth edition of Das, PRINCIPLES OF GEOTECHNICAL ENGINEERING offers an overview of soil properties and mechanics together with coverage of field practices and basic engineering procedure. Background information needed to support study in later design-oriented courses or in professional practice is provided through a wealth of comprehensive discussions, detailed explanations, and more figures and worked out problems than any other text in the market. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Civil Engineering Solved Problems Apr 03 2020

Fluid Mechanics Apr 27 2022 The eighth edition of Fluid Mechanics offers students a clear and comprehensive presentation of the material that demonstrates the progression from physical concepts to engineering applications. The book helps students to see the practical importance of fluid mechanics fundamentals. The wide variety of topics gives instructors many options for their course and is a useful resource to students long after graduation. The problem-solving approach is presented at the start of the book and carefully integrated in all examples. Students can progress from general examples to those involving design, multiple steps, and computer usage. New To The Eighth Edition Over 20 new problems per chapter; more than 500 in total New subsection on laminar-flow minor losses, appropriate for micro- and nano-tube flows Additional discussion of the Kline-Fogelman airfoil, extremely popular now for model aircraft New

supersonic wave photographs added New subsection on the water-channel compressible flow analogy New problems assigned to find the oblique wave angle for supercritical water flow past a wedge An expanded discussion of wind turbines, with examples and problems taken from the author's own experience Supplements The following supplements are related to users of this SI edition. Solutions Manual The Solutions Manual that accompanies this book offers typeset, one-per-page solutions with detail explanations, to end-of-chapter problems. Powerpoint Slides PowerPoint presentation slides for all chapters in the text are available for use in lectures.

Fox and McDonald's Introduction to Fluid Mechanics Sep 01 2022 Fox & McDonald's Introduction to Fluid Mechanics 9th Edition has been one of the most widely adopted textbooks in the field. This highly-regarded text continues to provide readers with a balanced and comprehensive approach to mastering critical concepts, incorporating a proven problem-solving methodology that helps readers develop an orderly plan to finding the right solution and relating results to expected physical behavior. The ninth edition features a wealth of example problems integrated throughout the text as well as a variety of new end of chapter problems.

Engineering Mechanics Dec 24 2021 This volume presents the theory and applications of engineering mechanics. Discussion of the subject areas of statics and dynamics covers such topics as engineering applications of the principles of static equilibrium of force systems acting on particles and rigid bodies; structural analysis of trusses, frames, and machines; forces in beams; dry friction; centroids and moments of inertia, in addition to kinematics and kinetics of particles and rigid bodies. Newtonian laws of motion, work and energy; and linear and angular momentum are also presented.

Principles of Foundation Engineering Feb 11 2021 Master the core concepts and applications of foundation analysis and design with Das/Sivakugan's best-selling PRINCIPLES OF FOUNDATION ENGINEERING, 9th Edition. Written specifically for those studying undergraduate civil engineering, this invaluable resource by renowned authors in the field of geotechnical engineering provides an ideal balance of today's most current research and practical field applications. A wealth of worked-out examples and figures clearly illustrate the work of today's civil engineer, while timely information and insights help readers develop the critical skills needed to properly apply theories and analysis while evaluating soils and foundation design. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Fox and McDonald's Introduction to Fluid Mechanics Jun 17 2021 Through ten editions, Fox and McDonald's Introduction to Fluid Mechanics has helped students understand the physical concepts, basic principles, and analysis methods of fluid mechanics. This market-

leading textbook provides a balanced, systematic approach to mastering critical concepts with the proven Fox-McDonald solution methodology. In-depth yet accessible chapters present governing equations, clearly state assumptions, and relate mathematical results to corresponding physical behavior. Emphasis is placed on the use of control volumes to support a practical, theoretically-inclusive problem-solving approach to the subject. Each comprehensive chapter includes numerous, easy-to-follow examples that illustrate good solution technique and explain challenging points. A broad range of carefully selected topics describe how to apply the governing equations to various problems, and explain physical concepts to enable students to model real-world fluid flow situations. Topics include flow measurement, dimensional analysis and similitude, flow in pipes, ducts, and open channels, fluid machinery, and more. To enhance student learning, the book incorporates numerous pedagogical features including chapter summaries and learning objectives, end-of-chapter problems, useful equations, and design and open-ended problems that encourage students to apply fluid mechanics principles to the design of devices and systems.

Materials Science and Engineering Sep 08 2020

Mechanics of Materials Dec 12 2020 Publisher description

Engineering Mechanics: Dynamics 7e Binder Ready Version + WileyPLUS Registration Card Jan 13 2021 This package includes a three-hole punched, loose-leaf edition of ISBN 9781118393635 and a registration code for the WileyPLUS course associated with the text. Before you purchase, check with your instructor or review your course syllabus to ensure that your instructor requires WileyPLUS. For customer technical support, please visit <http://www.wileyplus.com/support>. WileyPLUS registration cards are only included with new products. Used and rental products may not include WileyPLUS registration cards. Known for its accuracy, clarity, and dependability, Meriam and Kraige's Engineering Mechanics: Dynamics has provided a solid foundation of mechanics principles for more than 60 years. Now in its seventh edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. More than 50% of the homework problems are new, and there are also a number of new sample problems. To help students build necessary visualization and problem-solving skills, the text strongly emphasizes drawing free-body diagrams—the most important skill needed to solve mechanics problems.

Print Component for Materials Science and Engineering Mar 03 2020

Design of Machine Elements Nov 10 2020 CD-ROM contains 54 Microsoft Excel spreadsheet modules to assist with the implementation of complex designs tasks.

Structural Analysis Aug 20 2021 Structural Analysis, 8e, provides readers with a clear and thorough presentation of the theory and application of structural analysis as it applies to trusses, beams,

and frames. Emphasis is placed on teaching readers to both model and analyze a structure. Procedures for Analysis, Hibbeler's problem solving methodologies, provides readers with a logical, orderly method to follow when applying theory.

Advanced Engineering Mathematics Sep 20 2021 Accompanying CD-ROM contains ... "a chapter on engineering statistics and probability / by N. Bali, M. Goyal, and C. Watkins."--CD-ROM label.

Fundamentals of General, Organic and Biological Chemistry Nov 22 2021 For courses in General, Organic, and Biological Chemistry (2 - Semester) A Clear, Flexible Approach to Chemistry for the Modern Classroom Active learning, an increased focus on clinical examples, updates based on current teaching and research findings, and digital innovations designed to engage and personalize students' experience make *Fundamentals of General, Organic, and Biological Chemistry* simply the best choice for students with a future in allied health. With the Eighth Edition, the authors make learning chemistry a more active experience through features designed to get students doing chemistry. Every chapter features Hands on Chemistry sections that deepen students' understanding of chemistry by having them perform elementary experiments with everyday household items. Group Problems at the end of every chapter are designed for in-class use and motivate students toward higher level thinking, such as how concepts fit together and how to apply these concepts in a clinical application. All of the chapter openers, including many of the Chemistry in Action boxes and end-of-chapter problems, have been rewritten for a stronger clinical focus that provides more relevance to allied health majors. All content has been updated for the modern classroom with special attention to the biochemistry chapters, making the Eighth Edition of *Fundamentals of General, Organic and Biological Chemistry* the best choice for future allied health students. MasteringChemistry™ not included. Students, if MasteringChemistry is a recommended/mandatory component of the course, please ask your instructor for the correct ISBN and course ID. MasteringChemistry should only be purchased when required by an instructor. Instructors, contact your Pearson representative for more information. MasteringChemistry is an online homework, tutorial, and assessment system, designed to improve results by engaging students before, during, and after class with powerful content. Instructors ensure students arrive ready to learn by assigning educationally effective content before class, and they encourage critical thinking and retention with in-class resources such as Learning Catalytics™.

Engineer-In-Training Reference Manual Jul 31 2022 More than 300,000 engineers have relied on the *Engineer-In-Training Reference Manual* to prepare for the FE/EIT exam. The Reference Manual provides a broad review of engineering fundamentals, emphasizing subjects typically found in four- and five-year engineering degree programs. Each chapter

covers one subject with solved example problems illustrating key points. Practice problems at the end of every chapter use both SI and English units. Solutions are in the companion Solutions Manual. Comprehensive review of thousands of engineering topics, including FE exam topics Over 980 practice problems More than 590 figures Over 400 solved sample problems Hundreds of tables and conversion formulas More than 2,000 equations and formulas A detailed 7,000-item index for quick reference For additional discipline-specific FE study tools, please visit feprep.com. _____ Since 1975, more than 2 million people have entrusted their exam prep to PPI. For more information, visit us at ppi2pass.com.

Thermodynamics Oct 10 2020 "Thermodynamics, An Engineering Approach," eighth edition, covers the basic principles of thermodynamics while presenting a wealth of real-world engineering examples so students get a feel for how thermodynamics is applied in engineering practice. This text helps students develop an intuitive understanding by emphasizing the physics and physical arguments. Cengel and Boles explore the various facets of thermodynamics through careful explanations of concepts and use of numerous practical examples and figures, having students develop necessary skills to bridge the gap between knowledge and the confidence to properly apply their knowledge. McGraw-Hill is proud to offer "Connect" with the eighth edition of Cengel/Boles, "Thermodynamics, An Engineering Approach." This innovative and powerful new system helps your students learn more efficiently and gives you the ability to assign homework problems simply and easily. Problems are graded automatically, and the results are recorded immediately. Track individual student performance - bt question, assignment, or in reallion to the class overall with detailed grade reports. ConnectPlus provides students with all the advantages of Connect, plus 24/7 access to an eBook. Cengel's "Thermodynamics," eighth edition, includes the power of McGraw-Hill's "LearnSmart" a proven adaptive learning system that helps students learn faster, study more efficiently, and retain more knowledge through a series of adaptive questions. This innovative study tool pinpoints concepts the student does not understand and maps out a personalized plan for success.

Solutions Manual to Accompany Fundamentals of Engineering Thermodynamics Jan 01 2020