



EVERGREEN 2024 RELEASE NOTES

- New and Updated Content -

Nisbett, Shigley's Mechanical Engineering Design



Release Overview: Changes were motivated by advice from reviewers and users of the textbook. Added Application-Based Activities (ABAs) that target topics students struggle with. The text was reviewed and updated per the McGraw Hill Higher Education Inclusive Content Guidelines. The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards. To receive these updates, duplicate/copy your section on or after the upcoming release date.

DIGITAL CONTENT			
	Question Bank <i>NEW and UPDATED assessments have been tagged in Connect for easy filtering.</i>	Instructor Resources	Application-Based Activities (ABAs)
LOCATION OF UPDATED CONTENT IN CONNECT	Assignments tab > Add Assignment > Question Bank	Library tab > instructor resources	Assignments tab > Add Assignment > Application-Based Activity
Updates Made	Questions have been updated in the question bank, so problems adhere to our latest content guidelines. These are tagged as "Updated 2024" in the question bank filter. See Question Bank Content Map for more details.	Updates to lecture PowerPoints, the Solutions Manual and Image Bank have been made based on updates to the narrative.	Five new Application- Based Activities based on topics students struggle with. <ol style="list-style-type: none"> 1. Combined Loading (Chapter 3) 2. Ductile Coulomb-Mohr Failure Theory (Chapter 5) 3. MSST and DET Failure Criteria (Chapter 5) 4. Stress Life Fatigue: Stress Analysis (Chapter 6) 5. Stress Life Fatigue: Strength Analysis (Chapter 6)
GLOBAL INFORMATION FOR QUESTION BANKS	<ul style="list-style-type: none"> • New Accessibility Filter. Experience a simpler way to be mindful of accessibility as you create question bank assignments. New filter options make it easy to ensure all questions in your assignment work well with screen readers; can be used with keyboard only; have accessible audio, video, and images; and more. Use the "Screen Reader/Keyboard/CC" filter to find only accessible questions and the "Screen Reader/Keyboard/CC/AD-Vids described" filter to find accessible questions that also come with text descriptions of any videos that are included. • File Upload Questions. To improve user experience, manually graded File attachment questions have been removed from Section break question types and added as independent questions. This allows the manually graded File attachment items to be assigned separately from auto-graded parts. Instructors will need to delete the File attachment questions from each Section break and add each independent question as desired. Please refer to the Content Map for more details. 		

- **Note on Deleted Questions.** While we attempted to avoid deleting assessment questions so as not to disrupt existing users, at times it is unavoidable. In these cases, the deleted question will remain in your assignment if previously assigned but is no longer supported by McGraw Hill and won't receive future updates or corrections. We have called out the specific questions that have been deleted in these release notes, but the choice to remove the question from your existing assignments is yours.

READING/ADAPTIVE CONTENT – eBook, SmartBook, Print

LOCATION OF UPDATED CONTENT IN CONNECT	eBook on Connect home page AND Assignments tab > Add Assignment > Reading Assignment & SmartBook 2.0
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Chapter	Content Changes
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Chapter 1 – Introduction to Mechanical Engineering Design	<ul style="list-style-type: none"> • Section 1–3 Phases and Interactions of the Design Process: The presentation is freshened, slightly expanded, and B-headings added for clarity. • Section 1–5 The Design Engineer’s Professional Responsibilities: The presentation is updated, the role of the National Society of Professional Engineers is emphasized, the six fundamental canons of the NSPE Code of Ethics for Engineers replaces the Engineers’ Creed • Section 1–9 Stress and Strength: The characteristics and distinctions of stress and strength are elaborated. • Section 1–10 Uncertainty: This section is shortened to focus on the topic of uncertainty. • Section 1–11 Design Factor and Factor of Safety: This section is written fresh to provide foundational definitions, and clarity of application. A paragraph is added to discuss the considerations in selecting a design factor. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
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Chapter 2 - Materials	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
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Chapter 3 – Load and Stress Analysis	<ul style="list-style-type: none"> • Section 3–1 Equilibrium and Free-Body Diagrams: The presentation on free-body diagrams is rewritten for clarity and usefulness as a review. • Section 3–2 Shear Force and Bending Moments in Beams: This section is rewritten and expanded. The beam, transverse shear, and bending moment are clearly defined. A review of the integral relationship for transverse shear and bending moment diagrams is given, with tips for generating the plots, and a new example problem. An explanation is given for handling cases where forces do not lie in a single plane, along with an example problem (Example 3–3) to generate transverse shear and bending moment diagrams in two planes. • Section 3–3 Singularity Functions: The content of this section has been integrated into an expanded Section 4–6. • Section 3–4 Stress: The definition of <i>stress</i> is presented with imagery to emphasize the concept. • Section 3–5 Cartesian Stress Components: This section is rewritten to clarify the concept of the stress element. • Section 3–6 Mohr’s Circle for Plane Stress: This section is rewritten and expanded to clarify the purpose of the Mohr’s circle as a means to visualize a coordinate transformation of the stress element. An example problem is added to demonstrate coordinate transformation. Principal stresses and principal shear stresses are clearly defined and related to a coordinate transformation of the stress element. • Section 3–7 General Three-Dimensional Stress: A new subsection is included to clearly explain the three principal shear stresses, and how to determine the absolute maximum shear stress. New figures and an example problem are included. • Section 3–9 Uniformly Distributed Stresses: A paragraph at the end of the section discusses the use of the direct shear model for bolts and pins in shear loading.
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	<ul style="list-style-type: none"> • Section 3–11 Shear Stresses for Beams in Bending: A new example problem (Example 3–9) demonstrates the consideration of transverse shear in a short beam with round cross section. • Section 3–12 Torsion: A new subsection consolidates the coverage of torsional stress in noncircular cross sections. The previously unnamed tabular data for torsion of rectangular cross sections is given now in Table 3–2. A new subsection consolidates the relationships of torque and power. • Section 3–14 Stresses in Pressurized Cylinders: Explanation is added to determine the critical stress element and the maximum shear stress on that element. • Section 3–15 Stresses in Rotating Rings: Explanation is added to determine the critical stress element and the maximum shear stress on that element. The explanation for the change in diameter for a spinning disk is moved from its prior location, embedded in an example problem, to the body of the section. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
<p>Chapter 4 – Deflection and Stiffness</p>	<ul style="list-style-type: none"> • Section 4–3 Deflection Due to Bending: The Euler-Bernoulli beam theory is more clearly defined and explained, along with a more thorough demonstration in Example 4–1. • Section 4–6 Beam Deflections by Singularity Functions: The coverage of singularity functions is expanded to cover the method sufficiently without assuming prior exposure. The coverage from Section 3–3 is merged into an expanded consolidated coverage in Section 4–6. Macaulay functions are introduced and distinguished from singularity functions. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
<p>Chapter 5 – Failures Resulting from Static Loading</p>	<ul style="list-style-type: none"> • Section 5–3 Failure Theories: The purpose for failure theories is restated for greater clarity. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
<p>Chapter 6 – Fatigue Failure Resulting from Variable Loading</p>	<ul style="list-style-type: none"> • Section 6–3 Crack Nucleation and Propagation: Photos for two new fatigue failure examples are given (train wheel and jet engine turbine blade). • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
<p>Chapter 7 – Shafts and Shaft Components</p>	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
<p>Chapter 8 – Screws, Fasteners, and the Design of Nonpermanent Joints</p>	<ul style="list-style-type: none"> • Section 8–2 The Mechanics of Power Screws: The stresses in a power screw are clarified in Figure 8–8 and its accompanying equations. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
<p>Chapter 9 – Welding, Bonding, and the Design of</p>	<ul style="list-style-type: none"> • Made minor correction to Figures 9-8 • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards. • Removed use of gender binaries (he or she) based on McGraw Hill’s diversity and inclusion initiative.

Permanent Joints	
Chapter 10 – Mechanical Springs	<ul style="list-style-type: none"> • Section 10–4 Compression Springs: The explanation of set removal or presetting is expanded. • Section 10–9 Fatigue Loading of Helical Compression Springs: The Zimmerli experiments, and the recommendations based on them are better explained. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 11 – Rolling-Contact Bearings	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 12 – Lubrication and Journal Bearings	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 13 – Gears – General	<ul style="list-style-type: none"> • Section 13–7 Interference: New tables are included to summarize the conditions for specifying minimum number of teeth to avoid the interference problem. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 14 – Spur and Helical Gears	<ul style="list-style-type: none"> • Section 14–3 AGMA Stress Equations: An introductory paragraph regarding the AGMA method is added. • The subscript b is added to the variable for bending stress, to be consistent with the contact stress. • Section 14–4 AGMA Strength Equations: The subscript b is added to the variable for allowable bending stress, to be consistent with the contact stress. • Section 14–8 Overload Factor K_o: Recommended values for the Overload Factor are now given in Table 14–9. • Section 14–10 Size Factor K_s: The wording is modified slightly to clarify the AGMA recommendation for $K_s = 1$ versus using the size factor from Chapter 6 for larger gear teeth. • Section 14–17 Safety Factors SF and SH: The AGMA safety factors are now treated as design factors (as defined by AGMA) to account for unquantifiable aspects of the application. • Section 14–18 Analysis: New factors of safety are defined to represent the typical comparison of stress to allowable stress, reserving the AGMA safety factors for design factors. Also, new factors of safety are introduced to allow linear comparison of load-based failure. The example problems and the summary pages are updated. • Section 14–19 Design of a Gear Mesh: The example problem is updated for consistency with the changes made in the chapter. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 15 – Bevel and Worm Gears	<ul style="list-style-type: none"> • Figures 15-3 updated to a pair of hypoid gears providing input to a differential. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 16 – Clutches, Brakes, Couplings, and Flywheels	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 17 – Flexible	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.

Mechanical Elements	
Chapter 18 – Power Transmission Case Study	<ul style="list-style-type: none"> • Section 18–3 Gear Specification: Case Study Example 18–1, Part 3, is modified to be consistent with the updated notation for the AGMA stresses and factors of safety in Chapter 14. • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 19 – Finite – Element Analysis	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.
Chapter 20 – Geometric Dimensioning and Tolerancing	<ul style="list-style-type: none"> • The cyan has been made darker in the text, figures, and graphs in accordance with the WCAG AA standards.

GENERAL NOTES

Accessibility	<p>McGraw Hill is committed to aligning our digital solutions to WCAG AA standards. Our Voluntary Product Accessibility Templates (VPATs) are available upon request. Any additional questions related to the accessibility of a product can be directed to your Learning Technology Representative, or you may contact us at accessibility@mheducation.com</p>
Implementation and Training Support	<p>Your dedicated McGraw Hill Customer Success Teams can help you update your course and assignments and set policies. Need help with reports or adjusting your course to improve outcomes? No problem, they can help with that too! Have your rep introduce you to your Customer Success Representative or use the link below to schedule your personal 1-to-1 Course Consultation.</p> <p>https://mheimplementationteam2.as.me/schedule.php</p>
Tech Support	<p>Don't become tech support. Ask students to call McGraw Hill's CXG support team at 1-800-331-5094 or contact us by visiting http://mpss.mhhe.com/contact.php. They should only come to you with a CXG ticket # in hand so you may follow up. Always make assignments due during tech support hours so students are always able to get their issues resolved before the due date.</p>
LMS Integration	<p>We support LTI-compliant LMSes with Single Sign-On, Deep Linking, and Grade Syncing for the following LMS systems: Blackboard, Brightspace, Canvas, Moodle, Sakai.</p> <p>https://www.mheducation.com/highered/lms-integration.html</p>
Connect Support Tools and Best Practices	<p>Assign a variety of Connect assignments to your students and make their performance part of their final course grade (minimum of 10–15% to encourage student compliance). Visit this link below to see additional student engagement tips.</p> <p>https://www.mheducation.com/highered/support/connect.html</p>

New Connect Updates	<p>A new, streamlined instructor experience is available in Connect. It includes the ability to add additional instructors (and other roles!) to any section, an updated section dashboard with new data visualization, and mobile optimization, with automatic resizing and redistribution of screen space for tablets and smartphones. This experience continues to be improved based on your feedback so let us know how we're doing!</p> <p>Click here to see the most recent updates: https://www.mheducation.com/highered/connect/new-releases.html</p>
Connect Polling Tool	<p>Engage students with the Connect Polling tool, which allows you to discover where your students are in real time. Help them create connections with your course content while gaining valuable insight during lecture, then leverage polling data to deliver personalized instruction when and where it is needed most.</p>
Writing Assignments	<p>Help students improve their conceptual understanding and written communication skills with Writing Assignments. Integrate writing skill development into your course with ease and help your students gain the critical writing skills they need for success now and beyond. Assign, monitor, mark, and provide feedback all in one place. All Connect courses now have Writing Assignments with peer review, originality checker, and grammar checker.*</p> <p>*Engineering, music, and world languages will not have originality or grammar checker due to special characters.</p>