OCEANOGRAPHY JUST GOT REAL!

WITH AL TRUJILLO,
ESSENTIALS OF OCEANOGRAPHY
TWELFTH EDITION
DYNAMIC VISUALS AND INTEGRATED MEDIA
BRING OCEANOGRAPHY TO LIFE

Highly visual and interactive tools make oceanography approachable, enabling students to see oceanographic processes in action.

NEW! **SmartFigures** and **SmartTables** are 3- to 4-minute mini video lessons containing explanations of difficult-to-understand oceanographic concepts and numerical data directed by an oceanography teaching expert and NASA Science Communicator. By scanning the accompanying QR code, or typing in the short URL, students now have a multitude of ways to learn from art and data tables, all designed to teach.

NEW! **Squidtoons**, a comic-styled call-out created by a team of graduate students at Scripps Institution of Oceanography in California, are featured in each chapter. These infographics highlight an important marine organism related to each chapter’s content using graphical representation to display recent discoveries by researchers in an interesting and captivating manner. By scanning the associated QR code or typing in the short URL in the text, students will be taken to the digital space to view the full cartoon.

NEW! **Enhanced illustration program**, with new art incorporating the research-proven technique of strategically placing annotations and labels within the key figures, allows students to focus on the most relevant visual information and helps them interpret complex art. Overall, nearly 90% of the entire book’s artwork has been updated or is new, including new figures that provide visual summaries of essential processes and concepts.
ESSENTIAL ELEMENTS FORM A PATH TO SUCCESSFUL LEARNING

Each chapter is organized into easily digestible chunks, making studying easier and assisting student learning. Chapter material begins with learning goals and ends with assessment questions tied to those learning goals. The end-of-chapter material is also organized by the chapter's sections, helping students remain focused on the essential concepts throughout the chapter.

Concept Check questions at the end of each section are designed to let students check their understanding of the Essential Learning Concept. By stopping and answering questions, students ensure that they have a thorough understanding of key points before moving on to the next section.

RECAP
The Coriolis effect causes moving objects to curve to the right in the Northern Hemisphere and to the left in the Southern Hemisphere. It is at its maximum at the poles and is nonexistent at the equator.

NEW! A Recap feature now appears throughout each chapter, summarizing essential concepts. This is a great tool for directing students' study and review.

Each chapter ends with the Essential Concepts Review, which simplifies the study process. Also organized by section, this review highlights a key figure from the chapter and provides a summary of the chapter's key concepts. It also includes study resources, Critical Thinking Questions, and NEW! Active Learning Exercises.
TURNING INTEREST INTO ENGAGEMENT

Everyday topics in a real world context help students relate oceanography to their lives while engaging them in how oceanography is studied.

NEW! Climate Connection: This icon shows how various sections of the text relate to the overarching theme of the importance of Earth’s oceans to global climate change.

NEW! Interdisciplinary Relationship: This icon shows how various sections of the text relate to two or more sub-disciplines in oceanography: geological oceanography, biological oceanography, physical oceanography, and chemical oceanography.

The new edition includes a variety of Diving Deeper features, including Historical Features, Research Methods in Oceanography, Oceans and People, and Focus on the Environment. These features foster multi-dimensional understanding with captivating examples and stories. Each Diving Deeper feature now includes one or more “Give It Some Thought” assessment questions.

The popular Students Sometimes Ask features answer often entertaining questions posed by real students.

**STUDENTS SOMETIMES ASK . . .**

What happened to the recent Malaysian Airlines flight that vanished after takeoff?

It’s still a mystery. Malaysian Airlines flight MH370 went missing on March 8, 2014, while in route from Kuala Lumpur, Malaysia to Beijing, China. Satellite communications suggest that the flight veered south and ended up running out of fuel and crash-landing in the Indian Ocean west of Australia. Unfortunately, the suspected area of the crash is large, remote, and deep, and the region’s rugged sea floor is very poorly explored, all of which has hampered recovery efforts. In the days following the flight’s disappearance, various theories have been put forth...
CONTINUOUS LEARNING
BEFORE, DURING, AND AFTER CLASS
WITH MasteringOceanography™

MasteringOceanography delivers engaging, dynamic learning opportunities—focusing on course objectives and responsive to each student’s progress—that are proven to help students absorb oceanography course materials and understand challenging physical processes and oceanography concepts.

BEFORE CLASS

DYNAMIC STUDY MODULES AND ET TEXT 2.0 PROVIDE STUDENTS WITH A PREVIEW OF WHAT’S TO COME.

NEW! Dynamic Study Modules enable students to study effectively on their own in an adaptive format. Students receive an initial set of questions with a unique answer format asking them to indicate their confidence. Once completed, Dynamic Study Modules include explanations using material taken directly from the text.

NEW! Interactive eText 2.0 comes complete with embedded media and is both mobile friendly and ADA accessible.

• Now available on smartphones and tablets.
• Seamlessly integrated videos and other rich media.
• Fully accessible (screen-reader ready).
• Configurable reading settings, including resizable type and night reading mode.
• Facilitates instructor and student note-taking, highlighting, bookmarking, and search.
DURING CLASS  ENGAGE STUDENTS WITH LearningCatalytics

NEW! LearningCatalytics, a “bring your own device” student engagement, assessment, and classroom intelligence system (PRS), allows students to use their smartphone, tablet, or laptop to respond to questions in class without the need for a “clicker.”

AFTER CLASS  HELPING STUDENTS VISUALIZE OCEANOGRAPHY CONCEPTS THAT CAN BE EASILY ASSIGNABLE.

NEW! The following 7 geoscience animations have been specifically designed for this edition:
• Formation of Earth’s Oceans
• How Salt Dissolves in Water
• Three Types of Breakers
• Effects of Elliptical Orbits
• Osmosis
• Feeding in Baleen Whales
• Latitude and Longitude on Earth

More than 70 geoscience animations are associated with the text, and all include audio narration, a text transcript, and assignable multiple-choice questions with specific wrong-answer feedback in Mastering.

Select key animations have been refreshed and made compatible for Mastering and mobile devices.
NEW! **SmartFigures** bring key chapter illustrations to life! These videos are accessible on mobile devices via scannable Quick Response (QR) codes printed in the text and through the Study Area in MasteringOceanography. Paired with other assessments in Mastering, these videos become assignable and assessable learning objects that can either prepare students for lecture or assess what they have learned.

NEW! **SmartTables** are engaging tutorial videos that explain the relevance of the real data found in tables within the textbook. Paired with other assessments in Mastering, these become assignable and assessable learning objects that allow students to interpret real data sets.

**GeoTutor Coaching Activities** are based on data collected from educators across the country and address the topics most frequently ranked as tough for students to understand. These activities guide students towards mastery of these topics, using highly visual, kinesthetic, and interactive activities.
...AND MASTER THE SCIENCE OF OCEANOGRAPHY

Encounter Activities provide rich, interactive explorations of Oceanography concepts using the dynamic features of Google Earth™ to visualize and explore Earth’s Oceans. Dynamic assessment includes multiple-choice and short-answer questions related to core geology concepts. All explorations include corresponding media files, and questions include hints and specific wrong-answer feedback to help coach students towards mastery of the concepts.

Student Study Area Resources in MasteringOceanography include:
- Practice quizzes
- Interactive Animations
- Oceanography Videos—A series of studio demo and field segment videos created by author Al Trujillo; most of the studio demos were created as 2-part interactive videos and the field segments show real oceanographic processes in action.
- Web Video links
- RSS Feeds from ScienceDaily and Scientific American

Learning Outcomes: All of the MasteringOceanography assignable content is tagged to book content. Instructors also have the ability to add their own learning outcomes to assessments and keep track of student performance relative to those learning outcomes. Mastering offers a data-supported measure to quantify students’ learning gains and to share those results quickly and easily with colleagues and administrators.