

## JoVE Book

The multimedia super textbook for undergraduate courses. The scientific concepts and practices are conveyed through video demonstrations, and supplemented with in-depth text explanations and practice quizzes.

## JoVE Core

Video textbooks for introductory courses which can serve as effective primary or supplementary teaching resources. Key concepts are brought to life through high-impact animations and scientist-in-action videos of experiments conducted in laboratory settings.

## JoVE Lab Manual

Curriculum-focused video resources that support teaching and learning of commonly taught introductory labs. Three separate videos with step-by-step instructions for each lab experiment illustrate lab preparation for instructors, key theoretical concepts, and a protocol for students.

## JoVE Science Education

A revolutionary video library dedicated to teaching scientific and clinical fundamentals through easy-to-understand video demonstrations. With text translations and subtitles in over 10 languages, 500+ videos capture key conceptual and methodological details that are difficult to visualize using text alone.

## JoVE Book

### CHEMISTRY ISSN 2832-0530

Makes teaching and learning undergraduate chemistry easier and better through visual media supplemented with text and quizzes. It replaces the traditional textbook increasing learning outcomes for students and saving time and effort for teaching professors.

## JoVE Core

### BIOLOGY ISSN 2644-0369

Explains key biological concepts in animations accompanied by scientist-in-action videos from real laboratories. It covers various branches in Biology, such as Genetics, Cell Biology, Ecology and more.

### CELL BIOLOGY ISSN 2832-2568

Illustrates complex cellular processes in easy-to-understand yet comprehensive animated video lessons. This collection focuses on the essential components and functions of cells, including organelles and membranes, cellular transport, and cell energetics. It is complemented by scientist-in-action videos that demonstrate the application of cell biology in real-world research experiments.

### CHEMISTRY ISSN 2694-1031

Explains key concepts in Chemistry through animations accompanied by scientist-in-action videos from real laboratories. Covers topics ranging from atoms and elements to thermochemistry and beyond.

### MOLECULAR BIOLOGY ISSN 2767-1461

Provides an in-depth look at the cellular and extracellular processes of life. Explains key concepts and theory through 2-3 minute videos featuring high-impact animations and scientist-in-action experiment demonstrations.

### ORGANIC CHEMISTRY ISSN 2769-4496

Explains basic concepts of thermodynamics, stereochemistry, mechanisms & kinetics of a reaction and more, through concise and easy-to-understand animated video lessons. Additionally, the scientist-in-action videos demonstrate related concepts in experiments performed in laboratories globally.

### PHYSICS ISSN 2832-0557

Introduces the theory and application of fundamental physics topics, including kinematics, dynamics, fluid mechanics, statics, waves, and acoustics, with concise and easy-to-understand animated videos. Additionally, the scientist-in-action videos demonstrate the application of related concepts in classical and original research experiments performed in today's laboratories worldwide.

### SOCIAL PSYCHOLOGY ISSN 2690-778X

Covers key topics in Social Psychology, such as attribution, stereotypes, conformity and more, as well as research methods in Social Psychology. This textbook keeps both major and non-major students engaged and excited to learn.

### STATISTICS ISSN 2771-6244

Introduces the concepts and application of the collection, analysis, presentation, and interpretation of data to students. These animated lessons provide an understanding of statistics beneficial to students from a wide range of disciplines. Additionally, the scientist-in-action videos demonstrate the application of related concepts in classical and original research experiments performed in today's laboratories worldwide.

## JoVE Lab Manual

### **BIOLOGY**

ISSN 2644-0369

Curriculum-focused video resources, which provide faculty and students with step-by-step instructions for commonly taught lab classes in Biological Sciences. There are three separate videos for each lab experiment: preparation for instructors, key theoretical concepts, and a protocol for students.

### **CHEMISTRY**

ISSN 2691-3356

Curriculum-focused video resources, which provide faculty and students with step-by-step instructions for commonly taught lab classes in Chemistry. There are three separate videos for each lab experiment: preparation for instructors, key theoretical concepts, and a protocol for students.

## JoVE Science Education

### **ADVANCED BIOLOGY**

Contains 6 collections capturing key conceptual and methodological details that are difficult to visualize using text alone.

#### **Neuroscience**

ISSN 2578-790X

Provides an introduction to the field of neuroscience, exploring five major branches of study: neurophysiology, neuroanatomy, cell and molecular neuroscience, behavioral neuroscience and developmental neuroscience.

#### **Developmental Biology**

ISSN 2578-2746

This collection introduces the field of developmental biology and covers five areas: developmental genetics, molecular developmental biology, stem cell biology, organogenesis, and aging and regeneration.

#### **Genetics**

ISSN 2578-6326

This collection focuses on genetics and incorporates five broad subdisciplines: the genetics of individuals and populations, genetics and disease, gene expression, epigenetics and genetic engineering.

#### **Microbiology**

ISSN 2689-3657

Demonstrates the key tools of microbiological investigation, such as proper sterile technique and plating, using selective media and enriching samples, culturing methods for mixed or pure samples, and more.

#### **Immunology**

ISSN 2689-3649

Covers many staple techniques of immunology labs, demonstrates proliferation methods for immune cells and antibodies, as well as common assays for immune activity including ELISA. Finally, it demonstrates staining and imaging of immune tissue and cell samples.

#### **Cell Biology**

ISSN 2578-2754

This collection provides a glimpse into the field of cell biology and profiles five important cellular phenomena: cell division, motility, endocytosis and exocytosis, metabolism and cell death.



## JoVE Science Education

### **BASIC BIOLOGY**

Contains 6 collections focused on lab equipment, safety and animal research, as well as basic biology techniques and fundamentals.

#### **General Laboratory Techniques**

ISSN 2578-630X

Exhibits how to use standard pieces of laboratory equipment essential in many experiments.

#### **Basic Methods in Cellular and Molecular Biology**

ISSN 2578-1952

Demonstrates how to execute basic techniques commonly used in cellular and molecular biology.

#### **Biology I: yeast, Drosophila and C. elegans**

ISSN 2578-2649

Features three model organisms commonly used in life sciences research, includes methodology to maintain them in the laboratory.

#### **Biology II: Mouse, Zebrafish, and Chick**

ISSN 2578-2657

Features three vertebrate species commonly used in life sciences research, includes methodology on how they are maintained in the laboratory.

#### **Lab Safety**

ISSN 2578-7756

Provides safety guidelines for working with hazardous materials and equipment. It covers universal topics such as PPE, electrical safety, general emergency guidelines, and more.

#### **Lab Animal Research**

ISSN 2578-7756

A comprehensive video guide for appropriate lab animal care and use. Since a majority of biomedical research is focused on studies involving rodents, it is critical that every scientist learns the essential procedures demonstrated in these videos.

## JoVE Science Education

### CHEMISTRY

Features 6 collections focused on key laboratory fundamentals, concepts and techniques across organic chemistry, inorganic chemistry, biochemistry, general and analytical chemistry.

#### General Chemistry

ISSN 2578-6067

This collection helps provide a solid foundation in general chemistry by showcasing basic lab techniques, demonstrating commonly used equipment and exploring the theory behind fundamental methodology in Chemistry.

#### Organic Chemistry

ISSN 2578-7918

Features techniques routinely used in the organic chemistry lab, focussing on regulating temperature and atmosphere during chemical reactions and post-reaction refinement.

#### Organic Chemistry II

ISSN 2578-7896

Covers the theory and reactions necessary to carry out syntheses on a more advanced level. In addition, a few videos introduce methods commonly used to analyze the reaction products such as infrared spectroscopy and polarimetry.

#### Analytical Chemistry

ISSN 2578-126X

This collection takes a broad look at quantitative analysis and instrumentation including electrochemistry, spectroscopy, chromatography, and mass spectrometry.

#### Biochemistry

ISSN 2578-2037

Presents commonly used purification methods, such as affinity chromatography, and analytical methods, like MALDI-TOF. In addition, the videos showcase methods for assessing biomolecule interaction and function, such as co-immunoprecipitation and metabolic labeling.

#### Inorganic Chemistry

ISSN 2578-6318

Covers a range of inorganic chemistry protocols and concepts including air-free techniques, syntheses of transition metal based compounds, core inorganic chemistry concepts like Lewis Acid and Bases, and advanced analysis techniques including EPR spectroscopy.



## JoVE Science Education

### CLINICAL SKILLS

Features 6 collections devoted to physical examinations, clinical care, nursing skills, emergency medicine and critical care techniques, and COVID-19 procedures.

#### Physical Examinations I

ISSN 2578-823X

This collection provides a foundation for performing physical exams - techniques ranging from measuring blood pressure or vital signs, to key pulmonary and cardiovascular physical examinations.

#### Physical Examinations II

ISSN 2578-8264

This collection is a specialized edition featuring methodologies and procedures associated with more sensitive and comprehensive physical exams such as HEENT exams, abdominal exams, and pelvic exams.

#### Physical Examinations III

ISSN 2578-9090

This collection covers physical examination of two major systems in our body: neurological and musculoskeletal, with videos explaining relevant anatomy, the rationale behind the steps, and the interpretation of the exam findings.

#### Emergency Medicine and Critical Care

ISSN 2578-4935

Delves into a wide range of procedures employed in emergency and intensive care settings, ranging from basic life support methods such as CPR and rescue breathing to other common procedures performed during emergency situations.

#### Nursing Skills

ISSN 2689-3649

This collection delves into a wide range of procedures employed in emergency and intensive care settings, ranging from basic life support methods such as CPR and rescue breathing to other common procedures performed during emergency situations.

#### Coronavirus / COVID-19 Procedures

ISSN 2692-5605

This collection demonstrates procedures for healthcare workers who are screening and treating patients for COVID-19 Coronavirus.

#### Physical Examination IV

This collection includes tutorials for using point of care ultrasound techniques to augment physical exams, and a guide to conducting comprehensive mental status exams. It also details modifications to physical exams for patients of different ages, or those who use a wheelchair.

## JoVE Science Education

### ENGINEERING

Features 8 collections devoted to mechanical, chemical, electrical, structural, materials, biomedical, bioengineering, and aeronautical engineering.

#### Bioengineering

ISSN 2578-2614

This collection covers core bioengineering concepts, which include production of biomaterials, histotypic and whole organ tissue cultures, bioprocessing techniques, and the complex system-level fields of bioMEMs and biosensing.

#### Electrical Engineering

ISSN 2578-370X

Demonstrates electrical safety techniques for commonly used equipment in an electrical laboratory, introduces elements such as inductors, transformers, convertors, rectifiers, and inverters.

#### Mechanical Engineering

ISSN 2578-7829

Introduces a range of concepts that are essential for understanding and designing mechanical systems. Each video examines a specific topic and describes fundamental analytical methods commonly employed to understand physical behaviors.

#### Chemical Engineering

ISSN 2578-3610

This collection explains fundamental concepts in chemical engineering using an experimental approach and it presents necessary operating procedures of various apparatuses such as the tray dryer and the viscometer.

#### Structural Engineering

ISSN 2578-2037

Introduces students to fundamental concepts and protocols for material characterization, with specific emphasis on common construction materials such as steel, wood, and concrete.

#### Biomedical Engineering

ISSN 2578-3610

This collection describes the central concepts in biomedical engineering with a focus on imaging techniques to visualize and detect medical conditions, methods to quantify biomechanical strain, and computational modeling to simulate blood flow.

#### Aeronautical Engineering

ISSN 2689-3665

Introduces fundamental concepts in aeronautical engineering with a focus on methods to evaluate aerodynamic performance, techniques to visualize subsonic and supersonic flow patterns, and procedures to calibrate measurement systems for real-time flight control.

#### Materials Engineering

ISSN 2640-0464

This collection features cutting-edge methods for analysis and characterization of materials, and introduces a range of advanced materials and processes for new technologies and applications.

### ENVIRONMENTAL SCIENCES

3 collections focused on environmental microbiology, earth science, environmental science key concepts and techniques.

#### Environmental Science

ISSN 2578-5966

Utilizes an interdisciplinary approach to explore and evaluate environmental systems with topics ranging from soil and water contaminants, invasive species, alternative energy and forestry.

#### Environmental Microbiology

ISSN 2578-4943

Provides an introduction to microbial communities in the environment and their roles in ecosystems and also explores common methods used to study environmental microbiology.

#### Earth Science

ISSN 2578-367X

With a variety of demonstrations including physical and chemical properties of minerals and the analysis of rock formations, this collection features topics ranging from geology to geochemistry.



## JoVE Science Education

### PHYSICS

Contains 2 collections devoted to fundamental concepts and laboratory techniques in physics.

#### Physics I

ISSN 2578-6067

This collection covers classical mechanics and thermodynamics discussing relevant laws and equations. Every topic is presented with experiments validating theoretical hypothesis, and real world contextual examples.

#### Physics II

ISSN 2578-7918

Explaining underlying principles behind physical phenomena that have changed our world, this collection explores topics including electrostatics, magnetism, optics, wave-based oscillations, and electrical circuits.

### PSYCHOLOGY

Contains 7 collections focused on experimental, cognitive developmental, social and neuropsychology concepts and techniques, behavioral science, and sensation and perception.

#### Behavioral Science

ISSN 2578-1375

This collection presents the fundamentals of behavior neuroscience and focuses on the concepts of learning, memory, cognition, movement, addiction and behavioral disorders.

#### Experimental Psychology

ISSN 2578-6237

Provides a framework for observing how psychological experiments are embedded in the actual research process, starting from the initial research design to arriving at conclusions in a study.

#### Cognitive Psychology

ISSN 2578-3602

Introduces a range of concepts that are essential for understanding and designing mechanical systems, examines topics and describes fundamental analytical methods commonly employed to understand physical behaviors.

#### Developmental Psychology

ISSN 2578-3645

This collection explores the experimental domains of attention and perception, reasoning, social learning and memory processes - highlighting the dynamic changes that emerge throughout infancy and childhood.

#### Neuropsychology

ISSN 2578-7845

This collection presents multidisciplinary techniques in behavior, neurophysiology, anatomy, and functional imaging to help diagnose brain damage and mental disorders.

#### Sensation and Perception

ISSN 2578-9104

Delves into a variety of procedures to study how the brain processes our complex sensory world and solves problems confronting conscious awareness and visual, tactile, and auditory perception.

#### Social Psychology

ISSN 2578-9112

Features classical methods used to investigate how social contexts influence people's actions, thoughts, and attitudes and provides a transparent look into social experiments.