

# Teaching Core Academics with zSpace in Community Colleges

## Teaching Chemistry with zSpace



**MEL Chemistry** for review and visualization. Includes electron configuration, gas laws and isomers. Especially valuable for students who struggle with the abstract nature of chemistry.



**VIVED Chemistry** for independent review and self-assessment. Covers key concepts in Introductory Chemistry.



**VIVED Science** for 3D models of common molecules. Can be used to explore the 3D nature of compounds and the atoms that comprise them.

## Teaching Physics with zSpace



**Newton's Park** for building physics simulations. Can be used to gather data and deepen understanding of Newtonian mechanics. Includes the ability to change gravity, stop and reverse time, and replay and evaluate experiments.

### Forces

- Dropping Objects on Other Planets
- Gravitational Force Calculations
- Vectors

### Motion in a Straight Line

- Speeding Ticket
- Graphing Motion

### Energy

- Conservation of Energy
- Chain Reaction Advanced
- Shuffleboard
- Basketball Dribble

### Momentum

- Conservation of Momentum
- Accident Investigator

### Projectile Motion

- Motion in Two Directions
- Motorcycle Stunts
- Pro Golfer

## Teaching Biology with zSpace



**VIVED Science** for botany, human anatomy, microbiology, and zoology models. VIVED Science can be used to teach dissections, learn the names of parts, compare anatomy of different species, and introduce structure and function.

**Tip:**

Sessions can be authored within VIVED Science.

**Pre-built sessions in VIVED Science for Classification include:**

- Kingdom Eubacteria
- Kingdom Protista
- Kingdom Fungi
- Kingdom Plantae: Fern
- Kingdom Plantae: Ginkgo
- Kingdom Plantae: Ginkgo Leaf
- Kingdom Plantae: Dicot Flower



**zSpace Studio** for anatomy, biochemistry, cells and viruses, evolution, and genetics includes pre-built activities to introduce, review, and reinforce content.

**Tip:**

Activities can be created and modified within zSpace Studio.

**Anatomy** (more in-depth content is available with **Human Anatomy Atlas** and **VIVED Anatomy**):

- Human Anatomy: Circulatory System
- Human Anatomy: Respiratory System
- Human Anatomy: Digestive System
- Human Anatomy: Nervous System
- Human Anatomy: The Brain

### Biochemistry

- Monosaccharides and Disaccharides
- Hormones and Neurotransmitters
- Proteins
- Lipids
- Macromolecules
- Plants and Photosynthesis
- Glucose and Cellular Respiration

### Cells and Viruses

- Chloroplasts and Mitochondria
- Mitosis
- Meiosis
- Mitosis vs. Meiosis
- Testing for the Flu (Experience)
- Human Response to the Flu (Experience)



## (Continued) Teaching Biology with zSpace Studio

### Evolution

- Embryology
- Evolution of Horses
- Evolution of Whales
- Comparative Anatomy
- Taung Child Skull Examination and Mystery

### Genetics

- DNA: Genetic Mutations
- Mendel's Pea Plants
- Mendel's Pea Plants Assessment
- Probability and Genetics
- Crossing Two Traits
- Fruit Flies
- Variation of Traits in Fruit Flies
- Fruit Fly Research
- Mendelian Inheritance and Exceptions
- Non-Mendelian Genetics
- Are You a Carrier?
- Sickle Cell Disease



**Visible Biology** is a visual guide to biological concepts and processes. Visible Biology includes over 24 interactive models and animations that help instructors teach and students learn.

### Cellular Functions

- Animations that explain active and passive transport
- Various types of cells in the human body

### Cell Types

- Bacterial cells
- Animal cells
- Plant cells
- Human blood cells
  - Red blood cells
  - White blood cells

### Genetics

- 3D simulation that coils DNA strands into nucleosomes
- 3D simulation that coils DNA into chromatin to fit inside a chromosome
- Animations about mitosis, transcription and translation



### (Continued) Teaching Biology with Visible Biology

#### Energy

- 3D simulations showing photosynthesis in the plant and inside a chloroplast
- Plant leaf
- Plant cell
- Structures that carry out photosynthesis
- Animation about cellular respiration

**Courseware** is Visible Body's web-based teaching and learning platform. Use Visible Biology with Courseware to assign interactive assignments and quizzes, and track student learning. Build your own biology course or customize one of the premade courses to suit your needs.

## Possible implementations

#### For All Students:

- Out of class assignment in a zSpace lab
- Remote assignment with zSpace laptops
- In-class presentation by teacher
- Recorded presentation by teacher
- Remote live presentation by teacher (AIO)

#### For students with demonstrated need

- zSpaces in a Student Support Setting or Media Center