About These Integrated Curriculum Units

Successful Linked Learning pathways depend on curricula and instruction that challenge students to reach high academic standards through relevant and engaging content. These pathways offer an “integrated curriculum” that connects challenging, college-preparatory material to career-based technical concepts and applications.

We invite teachers in health and biomedical science programs of study to create this kind of curriculum by using the 10 integrated curriculum units in this compendium. Each unit is multidisciplinary, blending lessons from at least four subjects and focusing on a single, broad topic related to health and biomedical science. Every unit includes health science lessons and is linked to core concepts addressed in health science courses.

The units were produced and beta tested during a two-year collaborative project involving curriculum designers from ConnectEd: The California Center for College and Career, health science educators and healthcare industry representatives from the National Consortium on Health Science and Technology Education (NCHSTE), and teams of academic and health science teachers from 12 high schools in nine states. Complete curriculum units, including lessons and teacher resources, can be found on ConnectEd’s website at www.ConnectEdCalifornia.org.

Purposes

The curriculum units are intended to serve several purposes:

• Improve students’ academic achievement by integrating exciting health and biomedical science applications into the core academic curriculum.
• Increase interest in health and biomedical science careers by introducing students to the wide variety of employment opportunities.
• Provide career-related knowledge and enhance decision-making skills to help students make wise education and career choices.
• Open the doors to rewarding professional careers in healthcare and biomedical science to a broader diversity of America’s youth.

For complete curriculum units and extended summaries, visit www.ConnectEdCalifornia.org.
Students investigate the varied career opportunities available within the health and biomedical sciences, conduct research on possible career paths, and explore the skills needed for each one. This unit also gives students an opportunity to learn about typical activities in various jobs and helps them identify potential careers that match their interests, strengths, and goals. In addition, students explore the broader social and economic impact of their career choices, while reviewing the historical origins of various health-related careers and their significance to the welfare of humankind.

**Subunit 1: A Growth Industry**
Lesson 1.1 Health Science
*The Hidden Infrastructure: Jobs in Health Science*
Lesson 1.2 Algebra I
*Demand: Our Growing and Aging Population*
Lesson 1.3 Algebra I
*Supply: The Problem in the Pipeline*
Lesson 1.4 English Language Arts
*Writing a Research Paper: Overview*

**Subunit 2: Taking a Closer Look**
Lesson 2.1 Health Science
*Know Yourself*
Lesson 2.2 English Language Arts
*Writing a Research Paper: Introduction to Research*
Lesson 2.3 English Language Arts
*Writing a Research Paper: Organizing Information*
Lesson 2.4 World History or English Language Arts
*Biomedical Visionaries and Advances in Health Science*

**Subunit 3: Finding a Good Match**
Lesson 3.1 Algebra I
*Comparing Salary and Education*
Lesson 3.2 English Language Arts
*Writing a Research Paper: Writing Process*
Lesson 3.3 English Language Arts
*Writing a Research Paper: Citations*

In this unit, students explore the emergence and impact of communicable diseases on society. Students investigate the role of microorganisms in causing disease. They also study the impact of a public health infrastructure, along with medical and pharmaceutical advances, on the evolution of microorganisms.

**Subunit 1: Emergence of Disease**
Lesson 1.1 Health Science
*Chain of Infection*
Lesson 1.2 Biology
*Viruses vs. Bacteria*
Lesson 1.3 Health Science
*Fun With Fomites*
Lesson 1.4 Biology
*Evolutionary Arms Race*
Lesson 1.5 Algebra I
*Measure of Success*

**Subunit 2: Dealing With Disease**
Lesson 2.1 Health Science
*Clinical Epidemiology*
Lesson 2.2 Algebra I
*Calculating Medication Dosage*
Lesson 2.3 Biology
*Herd Immunity*
Lesson 2.4 Algebra I or II
*How Much of Each Vaccine?*
Lesson 2.5 Spanish I
*Alternative Medical Practices in Hispanic Culture*

**Subunit 3: Epidemic**
Lesson 3.1 English Language Arts
*Reading a Virus: How Science and Politics Treat the Flu*
Lesson 3.2 English Language Arts
*The Hot Zone*
Lesson 3.3 World History
*Macro Societies, Micro Invaders*
Lesson 3.4 English Language Arts
*Infectious Disease Research Presentations*
Crime Scene Investigation
Integrated Curriculum Unit on Forensics

As students take on the role of crime scene investigators to solve a murder that has occurred at the school, they integrate math, science, and language arts into the study of forensic science and associated health science careers such as pathology, forensic science, and medical examination.

Subunit 1: Murder Most Foul
Lesson 1.1 Health Science
Introduction to Forensic Investigations

Lesson 1.2 English Language Arts
You Be the Detective: Sherlock Holmes and Deductive Reasoning

Lesson 1.3 Health Science
Murder in the Classroom

Subunit 2: Crime Scene Investigations
Lesson 2.1 Algebra I
Lengthy Relationships

Lesson 2.2 Algebra II
Time of Death: The Law of Cooling

Lesson 2.3 Geometry
Suspect Radius

Lesson 2.4 Biology/Health Science
Blood Typing

Lesson 2.5 Biology
DNA Fingerprinting

Subunit 3: Convincing the Jury
Lesson 3.1 World History
Gathering Evidence, Bringing Justice

Lesson 3.2 English Language Arts
On the Case: Interviews With Professionals

Lesson 3.3 English Language Arts
The Closing Argument

Do No Harm
Integrated Curriculum Unit on Bioethics

Students learn about the roles government plays in setting policy and supporting and regulating various aspects of the healthcare industry, and about the impact these activities have on the lives of ordinary citizens.

Subunit 1: Biomedical Research
Lesson 1.1 Health Science
Introduction to Bioethics

Lesson 1.2 Biology
Cell Division and Differentiation

Lesson 1.3 Biology
Cells Gone Wild

Lesson 1.4 Biology and English Language Arts
Stem Cell Research Report

Lesson 1.5 U.S. History or Health Science
Shaping the Research Agenda

Lesson 1.6 U.S. History
Bad Blood

Subunit 2: Pharmaceutical Advertising
Lesson 2.1 English Language Arts
The Art of Persuasion

Lesson 2.2 English Language Arts
Vintage and Modern Pharmaceutical Ads

Lesson 2.3 U.S. History or U.S. Government
Regulating Direct-to-Consumer Drug Advertising

Subunit 3: Medical Decisions
Lesson 3.1 Biology
Viruses

Lesson 3.2 Biology
Vaccines

Lesson 3.3 English Language Arts
Mandatory Immunization

Lesson 3.4 Algebra I
Accuracy in Medical Testing

Lesson 3.5 U.S. History or U.S. Government
Government Intervention

Lesson 3.6 Algebra I
Decision by the Numbers
Global Health Summit
Integrated Curriculum Unit on HIV/AIDS

While focusing on the impact that HIV/AIDS continues to have around the world, students look at the biology of the disease and then delve into the social and personal implications of addressing a deadly pandemic.

Subunit 1: A Serious Situation
Lesson 1.1 English Language Arts
The Personal Toll
Lesson 1.2 Biology
HIV and the Immune System
Lesson 1.3 World Geography
The Global Impact of HIV/AIDS

Subunit 2: Treating the Problem
Lesson 2.1 Health Science
Paths of Transmission
Lesson 2.2 Biology or Health Science
HIV Treatments
Lesson 2.3 English Language Arts or Health Science
Vaccine Trials and Ethics

Subunit 3: Finding the Right Solution
Lesson 3.1 English Language Arts
Rich Countries, Poor Victims: The Global Response to AIDS
Lesson 3.2 World Geography
Existing HIV/AIDS Programs
Lesson 3.3 English Language Arts
Summit Presentations

Good Eats
Integrated Curriculum Unit on Nutrition and Health

This unit examines the issue of adequate nutrition at both the individual and societal levels. Students reflect on their own diet and health status, and connect the impact of nutrition and food production to the welfare of the global community.

Subunit 1: Nutrition and You
Lesson 1.1 Biology, Chemistry, or Health Science
Food Fundamentals
Lesson 1.2 Biology, Chemistry, or Health Science
Nutrition and Growth
Lesson 1.3 Health Science
Obesity: An Expanding Problem
Lesson 1.4 Algebra I or Statistics
Biometrics Lab
Lesson 1.5 Biology and Statistics
Effects of Diet on Rat Weight and Activity Lab
Lesson 1.6 English Language Arts
Writing a Lab Report
Lesson 1.7 Algebra I
Am I Gaining or Losing Weight?

Subunit 2: Nutrition and Society
Lesson 2.1 Health Science, Interpersonal Relations, or English Language Arts
Developing a Healthy Body Image
Lesson 2.2 Spanish I
Alphabet of Healthy Foods
Lesson 2.3 English Language Arts and U.S. Government
Fast Food Nation
Lesson 2.4 English Language Arts
You Are What You Eat Speech Assignment

Subunit 3: Nutrition in the World
Lesson 3.1 English Language Arts
Arithmetic of Hunger
Lesson 3.2 World History or World Geography
World Hunger
Lesson 3.3 Biology
Genetically Modified Foods
Lesson 3.4 Algebra I
The Power of Two
Students explore the various factors that can affect an individual’s likelihood for future health problems and how that information influences decisions made by health insurance providers. Students in this unit take on the role of insurers and evaluate the risk of potential clients.

**Subunit 1: A Risky Business**
Lesson 1.1 Health Science
*Insurance Is a Risky Business*
Lesson 1.2 U.S. History
*An Unhealthy History*
Lesson 1.3 Health Science
*Alphabet Soup*
Lesson 1.4 English Language Arts
*Starting an Insurance Company Part 1: The Vision*

**Subunit 2: Knowing the Risks**
Lesson 2.1 Biology
*Investigating Inherited Traits*
Lesson 2.2 Biology
*Predicting With Punnett Squares*
Lesson 2.3 Biology
*Pedigree Charts*
Lesson 2.4 Health Science
*High-Risk Behaviors*
Lesson 2.5 English Language Arts
*High-Risk Behaviors Workplace Brochure*
Lesson 2.6 Spanish I
*Impact of Environment and Society on Health and Wellness*

**Subunit 3: Making Decisions**
Lesson 3.1 Health Science
*Starting an Insurance Company Part 2: The Policies*
Lesson 3.2 Algebra I
*Dice With Death: Probability in Mortality Tables*
Lesson 3.3 Algebra I
*Medical Coverage Choices*
Lesson 3.4 Physical Education
*Designing a Wellness Program*
Lesson 3.5 English Language Arts
*Starting an Insurance Company Part 3: Choosing Clients*

This unit focuses on the causes of workplace injuries and the consequences for workers, employers, and society as a whole. Students will investigate the biological and physical basis for injury on the job, regulations governing the work environment in the United States, and how public and government perception of who is responsible for work-related injuries has changed through history.

**Subunit 1: Personal Injury**
Lesson 1.1 Health Science
*Introduction to Workplace Injuries*
Lesson 1.2 Biology
*Stressed Out*
Lesson 1.3 Physics
*Lift Right*
Lesson 1.4 Health Science
*Prevention of Workplace Injuries*

**Subunit 2: Workplace Safety**
Lesson 2.1 Algebra I
*Injury Trends*
Lesson 2.2 English Language Arts
*Understanding the Law*
Lesson 2.3 Algebra II
*Sound Safety*
Lesson 2.4 English Language Arts
*Persuasion, Propaganda, and the Public Image*
Lesson 2.5 Health Science
*Treatment, Rehabilitation, and Related Occupations*

**Subunit 3: Taking Responsibility**
Lesson 3.1 World History
*Workplace Safety During the Industrial Revolution*
Lesson 3.2 U.S. History or U.S. Government
*Burden of Responsibility: Past*
Lesson 3.3 U.S. History or U.S. Government
*Burden of Responsibility: Present*
Lesson 3.4 English Language Arts
*Workplace Injury Presentation*
Second Opinion
Integrated Curriculum Unit on Complementary and Alternative Medicine

In this unit, students explore the variety of medical practices that exist outside of conventional Western medicine. Complementary and alternative medicine, known as CAM, is becoming more widely accepted in the United States as our population becomes more diverse. At the same time, scrutiny of these practices, some of which are not subject to any regulatory oversight, is an issue that has become increasingly pressing for the healthcare industry, healthcare workers, and the general public.

Subunit 1: Old Medicine, New Places
Lesson 1.1 Health Science
Introduction to Complementary and Alternative Medicine
Lesson 1.2 World Geography
Local Cultures and Their Healing Practices
Lesson 1.3 Spanish
Curanderismo: Hispanic Folk Healing Practices
Lesson 1.4 World Geography
Medicine in Motion: Native Healing in New Societies
Lesson 1.5 English Language Arts
CAM Research Paper
Lesson 1.6 English Language Arts
Cultural Competence and Refugee Health

Subunit 2: Merging Two Traditions
Lesson 2.1 Chemistry
Introduction to Herbs and Supplements
Lesson 2.2 Chemistry
Herbal Medicine Lab
Lesson 2.3 Geometry
Pill Design
Lesson 2.4 Algebra I
Hypothesis Testing
Lesson 2.5 Social Studies
Government Regulation of CAM
Lesson 2.6 English Language Arts
CAM Debate

Waiting to Inhale
Integrated Curriculum Unit on Tobacco and Smoking

Although smoking is perceived with increasing disfavor in the United States, it is a habit that continues to flourish around the world and is taken up by thousands of young people every day. In this unit, students explore the past and present influence of tobacco on social, political, and economic life in the United States and around the world and its impact on individual and public health.

Subunit 1: Smoking and Society
Lesson 1.1 English Language Arts
Smoking: Up Close and Personal
Lesson 1.2 World History
Tobacco Timeline
Lesson 1.3 U.S. Government
Tobacco Legislation and Litigation
Lesson 1.4 Algebra I or II
An Expensive Habit
Lesson 1.5 Algebra I
It Won’t Happen to Me

Subunit 2: Smoke and Fire
Lesson 2.1 Biology
Nicotine Action Pathway
Lesson 2.2 Health Science
Effects of Tobacco Use
Lesson 2.3 Biology
The Respiratory System
Lesson 2.4 English Language Arts
Secondhand Smoke: Whom Do You Trust?
Lesson 2.5 Health Science
Smoked Out: Strategies for Stopping

Subunit 3: Smoke and Mirrors
Lesson 3.1 English Language Arts
The Power of Advertising
Lesson 3.2 English Language Arts or Visual Arts
Truth in Advertising
Lesson 3.3 English Language Arts
Niche Marketing

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ConnectEd’s mission is to support the development of Linked Learning and the pathways by which California’s young people can complete high school, enroll in postsecondary education, attain a formal credential, and embark on lasting success in the world of work, civic affairs, and family life.

Summary of Curriculum Units:
Health and Biomedical Science Program of Study Integrated Curriculum Units
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