



FIND 
YOUR DRIVE

ENGINEERING

Students who travel a path in Engineering can expect to create meaningful change in the world around them. It may take the form of biomedical engineering, where artificial organs and cutting-edge medicine emerge. Or it could look like civil engineering, which is the root of infrastructure design and public health development. The possibilities are virtually endless.



ENGINEERING

Career Pathway: Civil Engineer



Job Summary

Civil engineers develop, build, and maintain public and private infrastructure systems, such as roads, buildings, bridges, and water systems. They may design airports, repair tunnels, or rebuild dams. Civil engineers usually specialize in construction, geotechnical, structural, or transportation projects. Their jobs could include analyzing maps, estimating construction costs, and identifying potential environmental hazards. Civil engineers sometimes present information to the public, and many work in supervisory roles for government organizations or corporations.



Colleges & Universities to Consider

California Polytechnic State University - San Luis Obispo | Cooper Union | Georgia Institute of Technology
Massachusetts Institute of Technology | Purdue University | Rensselaer Polytechnic Institute
Rice University | University of California - Berkeley | University of California - Davis

\$86,640

MEDIAN ANNUAL SALARY

\$65,000

AVERAGE STARTING SALARY

+6%

GROWTH BY 2028



Salary & Industry Growth Sources: U.S. News & World Report | U.S. Bureau of Labor Statistics 2018 | Payscale.com
College & University Sources: Niche.com (2020) | U.S. News & World Report | CollegeFactual.com (2020)



ENGINEERING

Career Pathway: Biomedical Engineer



Job Summary

Biomedical engineers apply engineering principles and materials to medicine and healthcare to develop and build devices, software, and equipment. They work for manufacturing companies, colleges and universities, hospital systems, and research organizations. Projects could include artificial joints, surgical robots, dialysis machines, or new pharmaceutical drugs. The field of biomedical engineering is evolving rapidly, and successful biomedical engineers enjoy the combination of problem solving and technical expertise with a focus on helping others in innovative ways.



Colleges & Universities to Consider

Arizona State University | Duke University | Johns Hopkins University | Ohio State University
Pennsylvania State University | Rice University | University of South Carolina
University of California - Los Angeles | University of Wisconsin - Madison

\$88,550

MEDIAN ANNUAL SALARY

\$63,000

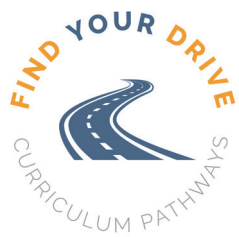
AVERAGE STARTING SALARY

+4%

GROWTH BY 2028



Salary & Industry Growth Sources: U.S. News & World Report | U.S. Bureau of Labor Statistics 2018 | Payscale.com
College & University Sources: Niche.com (2020) | U.S. News & World Report | FindingEngineeringSchools.com



ENGINEERING

Career Pathway: Environmental Engineer



Job Summary

Environmental engineers create solutions to environmental problems by applying principles from engineering, biology, and chemistry. They work on improving public health, recycling, and waste disposal systems, and try to control water and air pollution. Environmental engineering projects include cleaning up toxic waste sites, designing an environmentally sustainable building, or selecting the ideal site for a wind turbine farm. Individuals who are successful environmental engineers are able to acknowledge the needs of humanity with respect for what natural resources are available.



Colleges & Universities to Consider

Colorado School of Mines | Columbia University | Georgia Institute of Technology
Lehigh University | Stevens Institute of Technology | Texas A&M University
University of California - Irvine | University of Delaware | University of Florida

\$87,620

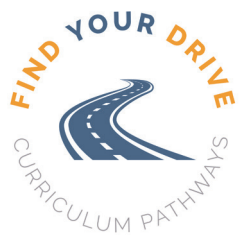
MEDIAN ANNUAL SALARY

\$60,000

AVERAGE STARTING SALARY

+5%

GROWTH BY 2028



ENGINEERING

Laurel Springs Core Course Offerings

AP Biology

During this course, students will engage in a wide variety of activities with substantial emphasis on interpreting and collecting data in virtual labs, writing analytical essays, and mastering Biology concepts and connections. The key themes of the AP Biology course are: the scientific processes, the effects of science on technology and society, the chemistry and make up of living organisms, genetics, diversity, and evolution. Throughout this course, students will be expected to answer questions, reflect on issues, and complete lab activities. The primary emphasis is to develop an understanding of concepts rather than memorizing terms and technical details.

Prerequisite: Successful completion of Biology, Chemistry, and Algebra 1

AP Calculus AB

AP Calculus AB is a comprehensive introduction to calculus that is comparable to one semester of college-level, introductory calculus. The material is challenging and helps students understand the concepts of calculus and applications to the study of science, business, and engineering. The course emphasizes problems that are expressed graphically, numerically, and algebraically. Students build foundational calculus knowledge by analyzing graphs and calculating limits of functions, determining rates of change, and finding derivatives using the sum rule, product rule, quotient rule, chain rule, and implicit differentiation. Students are introduced to the derivatives of all functions including power functions, exponential functions, logarithmic functions, trigonometric functions, and inverse trigonometric functions. Students then apply derivatives to solve real-world problems.

Prerequisite: Successful completion of Pre-Calculus or Trigonometry

AP Calculus BC

AP Calculus BC is a comprehensive introduction to calculus that is comparable to two semesters of college-level, introductory calculus. The material is challenging and the course moves at a faster pace as compared to AP Calculus AB. This course helps students understand the concepts of calculus and applications to the study of science, engineering, and advanced mathematics. Through the study of functions, limits, derivatives, integrals, and infinite series, students learn to evaluate the soundness of proposed solutions, apply mathematical reasoning to real-world models, and understand change geometrically, visually, analytically, numerically, and verbally.

Prerequisite: Successful completion of Pre-Calculus

AP Chemistry

In this course students will build their understanding of the nature and reactivity of matter. After studying chemical reactions and electrochemistry, students move on to understand how the chemical and physical properties of materials can be explained by the structure and arrangements of the molecules, as well as the forces between those molecules. Students will examine the laws of thermodynamics, molecular collisions, and the reorganization of matter in order to understand how changes in matter take place. Finally, students will explore chemical equilibria including acid-base equilibria.

Prerequisite: Successful completion of Biology, Chemistry, Algebra 1, Geometry, and Algebra 2

AP Environmental Science

This course provides students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. Additionally, students will learn to identify and analyze environmental problems that are natural and human-made. Students will evaluate the relative risks associated with these problems and examine alternative solutions for resolving or preventing problems.

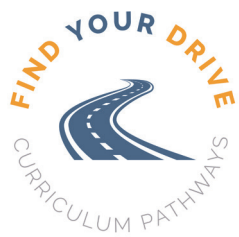
Prerequisite: Successful completion of Algebra 2 and Chemistry

AP Physics 1

AP Physics 1 is equivalent to the first semester of an algebra-based college level course in physics and prepares students to seek credit and/or appropriate placement in college physics courses. This course is structured around the six big ideas that are intended to encourage students to think about physics concepts as interconnected pieces of a puzzle. The solution to the puzzle is how the real world around them actually works. Students will participate in inquiry-based explorations to gain a more conceptual understanding of physics concepts. A special emphasis will be placed on capturing important aspects of the work that scientists engage in, with learning objectives that combine content with inquiry and reasoning skills.

Prerequisite: Successful completion of Algebra 2 and Trigonometry or concurrent enrollment in Pre-Calculus

Contact Your College Counselor to Learn More



ENGINEERING

Laurel Springs Core Course Offerings

AP Statistics

AP Statistics provides students with hands-on experience collecting, analyzing, graphing, and interpreting data. This course draws connections between all aspects of the statistical process, including design, analysis, and drawing conclusions. Students will use the vocabulary of statistics to communicate statistical methods, results and interpretations. They will also use graphing calculators and read computer output to further the development of their statistical skills. Students will learn to effectively design and analyze research studies by reviewing and evaluating real-world examples taken from an array of professional disciplines including meteorology, medicine, politics, and athletics.

Prerequisite: Successful completion of Algebra 2

Calculus

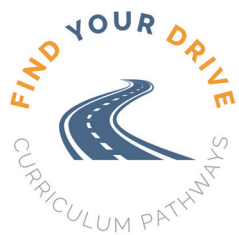
Calculus introduces students to universal concepts in the graphing of functions and optimizations. Students build foundational calculus knowledge by analyzing graphs and calculating limits of functions, determining rates of change, and finding derivatives using the sum rule, product rule, quotient rule, chain rule, and implicit differentiation. Students are introduced to the derivatives of all functions including power functions, exponential functions, logarithmic functions, trigonometric functions, and inverse trigonometric functions. Students then apply derivatives to solve real-world problems.

Prerequisite: Successful completion of Pre-Calculus or Trigonometry

Physics

This course stresses the importance of physics in day-to-day life and aims to help students understand the theoretical concepts of physics through practical applications. Students learn and experience the behavior of motion in one- and two-dimensions, force, work, energy, momentum and collisions, gravitation, heat, thermodynamics, waves, electricity, circuits, magnetism, and atomic physics. This helps the student understand its functions and observe the relationship between one another.

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ENGINEERING

Laurel Springs Elective Course Offerings

3D Modeling

Are you curious about working in fields like virtual reality, video game design, marketing, television and motion pictures, or digital imaging? In this course, you will gain a deeper understanding of graphic design and illustration as you use 3D animation software to create virtual three-dimensional design projects. Hone in on your drawing, photography, and 3D construction techniques and develop the skills needed to navigate within a 3D digital modeling workspace.

Concepts of Engineering and Technology

From our phones to the bridges we drive over, engineering and technology influence many parts of our lives. In Concepts of Engineering and Technology, you will learn more about engineering and technology careers and what skills and knowledge you'll need to succeed in these fields. You'll explore innovative and cutting-edge projects that are changing the world we live in and examine the design and prototype development process.

Great Minds in Science

Is there life on other planets? What extremes can the human body endure? Can we solve the problem of global warming? Today, scientists, explorers, and writers are working to answer all of these questions. Like Edison, Einstein, Curie, and Newton, the scientists of today are asking questions and working on problems that may revolutionize our lives and world. This course focuses on 10 of today's greatest scientific minds. Each unit takes an in-depth look at one of these individuals and shows how their ideas may help to shape tomorrow's world.

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