

# 2019-2020 Course Guide

## Core Academics and Required Electives

Sci High students enroll in core academic subjects for all four years. Below is the typical course progression in each of the core subject areas. Courses marked with an asterisk (\*) are described in more detail on the following pages. Students pursuing a JumpStart Career Diploma should make an individual plan with their Academic Guidance Advisor.

### What's your next course in English, Math, Social Studies, and Science?

	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
English	English I	English II OR English II Pre-AP*	English III OR AP Language and Composition	English IV OR AP English Literature and Composition
Math	Math Essentials AND Algebra I	Geometry AND Algebra II	Algebra III or Pre-Calculus	Calculus OR Dual Enrollment: College Algebra
Science	Physical Science	Chemistry	Biology	Environmental Science OR Science Advanced Course*
Social Studies	World Geography	World History OR AP World History*	US History OR AP US History*	Civics OR AP Government*
Required Electives	Freshman Seminar		Junior Seminar	

**Foreign Language:** All students seeking the TOPS University Diploma are required to complete two years of foreign language.

LANGUAGES	Spanish I	Spanish II	Advanced Spanish*
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All students seeking the TOPS University Diploma are also required to complete the following general education electives:

- Health – .5 credit
- PE – 1.5 credits
- Digital Photo (Art) – 1.0 credit

## Advanced Courses and Academic Electives

### English Advanced Coursework

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#### English II Pre-AP

Pre-AP is a class that offers integrated reading and writing instruction to increase independence in anticipation of the level of rigor required for AP Language and Literature. Students engage with a wide variety of high-quality texts—fiction, nonfiction, poetry, drama, visuals, and film—and learn techniques and strategies for understanding them. (Prerequisite: English I, summer reading)

#### English III AP (AP English Language and Composition)

The AP English Language and Composition course aligns to introductory college-level rhetoric and writing curriculum, which requires students to develop evidence-based analytic and argumentative essays and analyze rhetorical elements and their effects in non-fiction texts. (Prerequisite: English II or English II Pre-AP, summer reading)

#### English IV AP (AP English Literature and Composition)

The AP English Literature and Composition course aligns to an introductory college-level literary analysis course. The course engages students in the close reading and critical analysis of literature to deepen their understanding of the ways writers use language to build meaning in their work. (Prerequisite: English III or English III AP, summer reading)

### Math Advanced Course

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#### Calculus

The purpose of this course is to give students an overview of Calculus topics such as limits and continuity, derivatives, anti-derivatives, integrals and differential equations.

### Science Electives

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#### Principles of Biomedical Science

In the introductory course of the PLTW Biomedical Science program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person. While investigating the case, students

examine autopsy reports, investigate medical history, and explore medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, basic biology, medicine, and research processes while allowing them to design their own experiments to solve problems. (Prerequisite: Algebra I enrollment or higher)

#### Medical Interventions

Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics. (Prerequisite: Principles of Biomedical Science)

#### Human Body Systems

A challenging and comprehensive course in the composition and workings of the human body. Ideal for anyone fascinated by health and how our bodies work, whether it's from the perspective of a future researcher or health care worker. (Prerequisite: Medical Interventions or Biology)

### Science Advanced Course

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#### AP Biology

AP Biology is an introductory college-level biology course. Students will improve their understanding of biology through inquiry-based investigations as they explore the following topics: evolution, cellular processes — energy and communication, genetics, information transfer, ecology, and interactions. A minimum of 25% of class time is dedicated to labs, including growing plants to create class Punnett Squares, genetic manipulation of bacteria, and investigating animal behaviors through fruit flies. (Prerequisite: Biology)

## **Social Studies Advanced Courses**

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### **AP World History**

A college-level course in World History requiring intensive homework including on weekends and holidays. Focus is on reading primary documents, writing historical essays, and discussing deep historical questions. The course covers 12,000 years of history on every continent. Maps, food tastings, and Socratic seminars included.

### **AP US History**

The AP U.S. History course is a college level history course that focuses on developing students' understanding of American history from approximately 1491 to the present. The course has students investigate the content of U.S. history for significant events, individuals, developments, and processes in nine historical periods, and develop and use the same thinking skills and methods employed by historians when they study the past.

### **AP Government**

AP Government is a college level course can be taken as an elective after Civics or instead of it, for graduation. Students can expect complicated reading texts which they must learn and analyze course material. Students will learn about the day to day operations of the American government, the influence of the media, interest groups, and political parties on the governing process, and the history and modern application of civil liberties and civil rights (and of course, how to vote).

## **Foreign Language**

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### **Advanced Spanish**

Advanced Spanish is a course designed for heritage speakers or longtime students of Spanish. The course is conducted largely in Spanish and consists of intensive study of the language and literature of the Spanish speaking world. (Prerequisite: Administrator approval)

## **Career and Technical Education (CTE) Electives**

### **Advanced Manufacturing**

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#### **Makerspace**

It's a class in making things - both physical and virtual. It a hands-on, project-based course where students try out a wide variety of creative and practical pursuits, including carpentry, 3D modeling, web-design, and robotics. Priority given to 9<sup>th</sup> and 10<sup>th</sup> grade students.

#### **Engineering I**

Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3D modeling software, and use an engineering notebook to document their work. (Prerequisite: Algebra I enrollment or higher)

#### **Engineering II**

Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and

robotics/automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation. Students will also have the opportunity to investigate engineering & high tech careers. (Prerequisite: Engineering I)

#### **Introduction to Programming (Robotics)**

In this course, students will learn the fundamentals of building & programming multiple robots through the design process and hands-on activities. During this process, they will learn key STEM principles and robotics concepts. At the culmination of this class, they will compete head-to-head against their peers in the classroom, and have the opportunity to participate in local competitions. (Prerequisite: Engineering II, Makerspace)

#### **3D-Modeling**

3D modeling intensive course where students use professional software to tackle real-world design problems. Culminates in an industry-

based certification in Autodesk Inventor.  
(Prerequisite: Engineering I or Makerspace)

### **Construction I and II**

The Construction Program is aimed at preparing students for a high-earning career in the fast-paced construction industry. The course is an introduction to the construction industry and other skilled trades. The class covers Math for the Trades and Carpentry Projects, all while learning work-site safety. Students receive OSHA 10 certification, Core, and Level 1 credentials. (Prerequisite: Makerspace or permission of the CTE Coordinator)

## **Digital Media**

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### **Introduction to Computer Science**

Using Python as a primary tool, students explore and become inspired by career paths that utilize computing, discover tools that foster creativity and collaboration, and use what they've learned to tackle challenges like app development and simulation.

### **Digital Media I**

Digital Media I introduces students to video capture and editing techniques, including an opportunity to earn an industry based credential in Adobe PremierPro.

### **Digital Media II**

Digital Media II is a course where students master advanced techniques in video and audio capture and editing. (Prerequisite: Digital Photography)

### **Digital Photography**

This course is designed to give students an understanding of how to apply Adobe Photoshop to perform many different image-processing techniques used for graphic design, digital photography, web design, digital video editing, and creating animations. Through projects, students will learn how to use several tools for selecting parts of images, retouching, layers, special filters, digital photography scanning techniques, and animation. Culminates in industry-based credential in Adobe Photoshop.

## **Health Sciences**

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### **Medical Terminology**

An introduction to medical terminology through the lens of nursing practices. Includes hands-on training in skills essential to nursing.

### **Nursing Assistant**

Through this hands-on course, students will become Certified Nursing Assistants. The course includes lectures in patient care, lab experiences, and extensive field experiences in a health care setting. Participating students must meet age and background check requirements to participate. (Prerequisite: Medical Terminology and Biology)