



2021-2022 Program of Studies

Updates

We offer students (and faculty) a wide range of resources, classes, and shared spaces to explore, collaborate, and create. The Learning Innovations faculty offer classes in **Global Business**, and **Video-Media Communications**, **Research and Design/Engineering**, and **Digital Information Systems/Computer Science**. Our work is housed in the AHS library which includes thousands of print and digital texts, along with our IDEASstudio (fabrication space), the Robotics club, the advanced research CAPStone projects, and the Global Pathways Scholars program.

DL110

Intro to Business

Unleveled

.5 Credit

(formerly known as Marketing pg. 13)

This introductory course explores the dynamic world of business. Students will develop an understanding of a variety of business functions and of the importance of ethics and corporate social responsibility. This course builds a foundation for further studies in business and helps students develop the business knowledge and skills they will need in their everyday lives.

Overview of Topics Include:

- Accounting and Finance
- Social Media Marketing
- Human Resources
- Production, Products, Pricing
- Entrepreneurship
- Business Law

Students will engage in creative collaboration through project-based learning experiences.

DL400

User Experience (UX) Design

Unleveled

.5 Credit

(formerly known as Web Design pg, 14

Think about your favorite app or video game - what makes it successful? Is it how easy it is to navigate? How does it make you feel? Or maybe you just love how the layout of the information? All of these questions and more are explored through User Experience (UX) Design.

UX design is the process used to create products and services, including apps and games, that provide meaningful and positive experiences to users. "User experience" encompasses all aspects of the user's interaction with the company, its services, and its products.

Topics will include:

- Cognitive Psychology of Human-Computer Interaction (HCI)
- User-Centered Research Methods and Business Strategy
- 5 Elements of UX including Interaction Design, Information Architecture and Visual Design
- The User Experience of Virtual Reality and Virtual Worlds
- Prototyping with collaborative design apps

DL100

Social Entrepreneurship

Unleveled

.5 Credit

(formerly known as Entrepreneurship pg.14)

Social Entrepreneurship is all about developing ideas and launching organizations that strive to advance social change through innovative solutions. It is the business of making the world a better place!

Topics will include:

- A Design Thinking Approach to developing social innovations
- A comprehensive research approach including interviews, surveys and secondary research
- Speech outlines for visually appealing persuasive presentations and communication strategies
- Interactive business planning and project management with data-driven, collaborative apps and documents

SC810

G Lab Green Energy Engineering

Unleveled

.5 Credit SC or DL

(formally Exploring Engineering II: Energy and Electronics pg. 16)

The AHS Green Energy Engineering Lab (G-lab) enables students to dig into our world's need for electricity and provides an introduction to cutting edge green engineering and design with a focus on the development of green energy sources and their usage for meeting society's growing energy needs. A series of topic-specific workshops provide a balance between weekly, guided seminars on 'green' topics and hands-on design challenges utilizing the Engineering and Design Process (EDP). Students will become familiar with the Global Goals for Sustainable Development through hands-on, design driven projects, will explore how various energy sources (wind, solar, hydro-electric, geothermal, biomass) are used to create electricity, and how that electricity is stored and transmitted.

G Lab is an introductory course designed for 9th and 10th grade students but open to any student with an interest.

SC820

R Lab - Robotics

Unleveled

.5 Credit SC or DL

(formally Exploring Engineering - Robotics pg. 16)

The R Lab offers students the opportunity to explore the growing field of robotics. Students will apply the engineering design process while designing, constructing, and programming VEX robots that have the capacity to manipulate a variety of objects and perform various functions. Can your robot pick up a grape without crushing it? Can your robot carry either a lightweight container or a heavy football without toppling over? Can your robot perform these tasks faster than the robots of other teams without burning out your battery? In the RLab, students will investigate these questions and many others. Along the way, students will learn the basic components and building blocks of robots including motors, gears, drive trains, manipulators, controllers, and sensors. In addition to building robots to perform specific tasks and functions, students will explore the broad scope of robotic applications in the world today. Design challenges are a regular component of the course.

R Lab is an introductory course designed for 9th and 10th grade students but is open to any student with an interest.

SC801	Exploring Civil & Mechanical Engineering	Honors	.5 Credit SC or DL
SC802	Exploring Civil & Mechanical Engineering	College Prep	

(formally Exploring Engineering I: Mechanical and Civil pg.17)

This course is a research and project-based exploration of the critically important fields of mechanical and civil engineering. The course begins with the development of a deeper understanding of the engineering process as used in all related fields and its use in solving problems and improving both products and processes that benefit us. Similarities and differences between the work of mechanical and civil engineers is explored as are the types of challenges addressed by each engineering field. Students working in small groups will employ design thinking principles to brainstorm, plan, build, test, and redesign each solution developed in response to a variety of design challenges. Projects may include the construction of a Rube-Goldberg device, mechanical and civil engineering design challenges, and other related projects. Collaboration and communication skills will be enhanced as students conduct independent research, engineer and present their projects, and work successfully in teams. Project development and construction may include the use of our digital fabrication tools such as 3-D printers and CNC machines, as part of our IDEASudio.

English Language Arts

- Removed the college prep/level 3 academic level
- Removed Dominant Ideas
- Removed Journalism Literary Non-Fiction
- **New Course Offering *** Graphic Novel**

EN281	Graphic Novel	Honors	1 Credit
EN282	Graphic Novel	College Prep	1 Credit

Seniors in The Graphic Novel will continue to develop their reading, writing, speaking and listening, and critical thinking skills through a deep exploration of the unique form of comics. They will explore the essential questions specific to the course as well as those that frame all courses. Students will learn about the history and evolution of comics and will read criticism of both the form and of specific works. This context will frame their understanding of the emergence of this form as a dominant mode of storytelling in the 21st century. In addition, the course will look at the popularity of various genres within the form. Students will trace significant great ideas across multiple influential works and will focus on the relationship between form and content as a significant way to understand comics. Students will develop their collaboration skills by working with peers on multiple assignments and projects. Students will apply their learning in the second half of the year in an independently-lead synthesis project.

Fine Arts

- **Removed Survey of Music**
- **Removed Recycled Instruments**
- **Removed Exploring Percussion**
- **New Course Offering*** Beginning Instruments**
pg. 33
- **New Course Offering ***Rock and Pop Ensembles**
pg. 33
- **New Course Offering*** Gold N'Blues A Cappella**
pg. 36

FA510

Beginning Instruments

Unleveled

.5 Credit

This course is designed to allow high school students (9-12) with minimal or limited training to begin playing an instrument. This course allows students who wish to learn *any* instrument with personalized instruction: wind, brass, percussion, guitar, strings, ukulele, and keyboard. Students will learn some basic theory and performance skills. If you previously played a concert band or string instruments in earlier grades, this is an opportunity to relearn or get reacquainted. Open to Grades 9-12.

FA520**Rock and Pop Ensembles****Unleveled****.5 Credit**

For students with at least one year of instrumental experience, this course is designed to help students gain proficiency in playing in small groups. Students may enroll in this course if they have experience playing guitar, piano, ukulele, drums, bass, or any non-traditional concert or stringed instruments. Students will be assigned an ensemble based on experience and instrumentation and work towards performing in concerts and community events. Students will have the freedom to explore musical styles, genres, and repertoire. Open to Grades 9-12.

FA290

Gold N'Blues A Cappella

Unleveled

.5 Credit

Gold n'Blues is Andover High's audition-only A Cappella group. Students develop their skills as musicians and vocal techniques through A Cappella and pop repertoire. A Cappella students rehearse weekly and perform in yearly competitions and festivals. Attendance and participation in all rehearsals and performances will be required to receive a passing grade. **Students should not request this course on their Course Selection Sheet; they will be assigned after group selection. It is strongly encouraged that students be enrolled in Concert or Chamber Choir.**

Math Department

- Removed ~ College Review Math
- **New Course Offering*** Intro to Data Science** pg. 48

MA981	Intro to Data Science	Honors	1 Credit
MA982	Intro to Data Science	College Prep	1 Credit

Introduction to Data Science (IDS) is a new course designed to teach students to reason with, and think critically about data. The Common Core State Standards (CCSS) for High School Statistics and Probability relevant to data science are taught along with the data demands of good citizenship in the 21st century. Additionally, IDS provides access to rigorous learning that fuses mathematics with computer science through the use of R/RStudio, an open-source programming language/environment that has long been the standard for academic statisticians and analysts in industry. **Prerequisite: Minimum grade of B in CP Algebra II**

Science and Engineering Department

- **New Course Offering*** AP Physic C Mechanics** pg. 66
- **Revamped Engineering Course Offers**
pgs. 67
 - Exploring Civil & Mechanical Engineering
 - G Lab - Green Energy Engineering
 - R Lab - Robotics
- **Removed Engineering Externship**

SC441**AP Physics C - Mechanics****AP****1 Credit**

AP Physics C - Mechanics is a full-year, calculus-based, college-level physics course, especially appropriate for students planning to specialize or major in one of the physical sciences or engineering. Students cultivate their understanding of physics through classroom study and activities as well as hands-on laboratory work as they explore concepts like change, force interactions, fields, and conservation. All enrolled students are expected to pick up a textbook and the summer assignment before leaving school in June. Enrolled students will take the AP Physics C – Mechanics exam in May.

6-12 Engineering/Design Sequence

Grade 6 - Introduction to Engineering and Engineering Design Process

Grade 7 - Design and Construction of Smart, Green Houses

Grade 8 - Designing Solutions and Coding with Lego Mindstorms

Grades 9/10 - G Lab - Green Energy Engineering

I Lab - Innovation Lab

R Lab - Robotics Lab

Grades 11/12 - Exploring Mechanical and Civil Engineering

Senior Capstone Project (in area of engineering or design)

Social Studies Department

- **New Course Offering*** AP Psychology** pg. 78

SS057**AP Psychology****AP****1 Credit**

The AP Psychology course introduces students to the systematic and scientific study of human behavior and mental process. While considering the psychologists and studies that have shaped the field, students explore and apply psychological theories, key concepts, and phenomena associated with such topics as the biological bases of behavior, sensation and perception, learning and cognition, motivation, developmental psychology, testing and individual differences, treatments of psychological disorders, and social psychology. Throughout the course, students employ psychological research methods, including ethical considerations, as they use the scientific method, evaluate claims and evidence, and effectively communicate ideas.