North Carolina School of Science and Mathematics

NCSSM connect

Introduction

This guide tells you about the NCSSM Connect Program and our course offerings. NCSSM Connect courses are different from other video conference courses you may have taken. You'll collaborate and make friends with like-minded students across the state. We do our best to make class sessions engaging, interactive, and fun.

We encourage you to review the course schedule on the following page. Then, click on the course title links to see the course description, prerequisites, meeting time, course requirements, PowerSchool code, and course introduction video.

Contact your school counselor if you are interested in registering for one or more of these courses during the 2024-2025 school year!

About NCSSM Connect

NCSSM Connect courses are live, synchronous courses taught by NCSSM faculty to students in their home schools. During class, teachers use group activities and cutting-edge instructional technology to facilitate your active participation, with project-based learning and cross-site collaboration among peers around the state. You will be able to interact with students from the mountains to the coast, allowing you to personalize your learning by sharing real-life experiences and perspectives. All NCSSM Connect courses are tuition-free.

Registration is open to North Carolina Public Schools. Courses are open to students in grades 9-12.

Students/Parents should contact their school's counselor for more information. Only school personnel can register students for classes.

FALL SEMESTER – SYNCHRONOUS COURSES

Block 1	Block 2	Block 3	Block 4
~~Honors Aerospace Engineering~~ ~~8:00AM - 9:10AM~~ ~~Monday - Friday~~	Honors Genetics & Biotechnology 9:50AM - 11:00AM Monday - Friday	Honors Scientific Programming 11:40AM - 12:50PM Monday - Friday	~~Honors Anatomy and Physiology~~ ~~1:30PM - 2:40PM~~ ~~Monday - Friday~~
Honors Global Public Health and Infectious Disease 8:15AM - 9:25AM Monday - Friday	Honors Forensic Science 9:50AM - 11:00AM Monday - Thursday	~~Honors Connected Computing: Solving Problems with Technology~~ ~~11:40 AM - 12:50PM~~ ~~Monday, Wednesday & Thursday~~	Honors Creative Design for the Web 1:30PM - 2:40PM Monday - Thursday
Honors Forensic Science 8:15AM - 9:25AM Monday - Thursday	Honors Creative Design for the Web 10:00AM - 11:10AM Monday - Thursday	Honors Tech Art: Intro to Art, Technology, and World-Building in Video Games 12:05PM - 1:15PM Monday, Wednesday & Friday	AP Calculus BC (Yearlong) 1:45PM - 2:55PM Monday - Friday
Honors Intro to Cybersecurity 8:10AM - 9:20AM Monday, Wednesday & Friday	Honors Diseases: Dynamics of Epidemics 10:00AM - 11:10AM Monday - Friday	Honors Physics 11:40 AM - 12:50PM Monday - Friday	Honors Intro to Neuroscience 1:30PM - 2:40PM Monday - Friday
Honors Biomedical Engineering 8:00AM - 9:10AM Monday - Thursday	Honors Intro to Artificial Intelligence 9:50AM - 11:00AM Monday - Friday	Honors 21st Century Media Studies 12:05PM - 1:15PM Monday - Friday	

SPRING SEMESTER – SYNCHRONOUS COURSES

Block 1	Block 2	Block 3	Block 4
AP Computer Science Principles 8:10AM - 9:20AM Monday - Friday	Honors 21st Century Media Studies 10:00AM - 11:10AM Monday - Friday	Honors Anatomy and Physiology 12:05PM - 1:15PM Monday - Friday	~~Honors Global Public Health & Infectious Disease~~ ~~1:45PM - 2:55PM~~ ~~Monday - Friday~~
Honors Forensic Science 8:15AM - 9:25AM Monday - Thursday	Honors Aerospace Engineering 9:50AM - 11:00AM Monday - Friday	Honors Intro to Neuroscience 12:05PM - 1:15PM Monday - Friday	Honors Connected Computing: Solving Problems with Technology 1:30PM - 2:40PM Monday, Wednesday & Thursday
Honors Genetics & Biotechnology 8:15AM - 9:25AM Monday - Friday	AP Psychology 9:50AM - 11:00AM Monday - Friday	Honors Intro to Artificial Intelligence 11:40 AM - 12:50PM Monday - Friday	Honors Physics 1:30PM - 2:40PM Monday - Friday
Honors Intro to Computer Science & Computational Thinking (Grade 9 ONLY) 8:15AM - 9:25AM Monday - Friday	Honors Intro to Computer Science & Computational Thinking (Grade 9 ONLY) 9:50AM - 11:00AM Monday - Friday	~~Honors Forensic Detectives: The Science of Solving Accidents~~ ~~11:40AM - 12:50PM~~ ~~Monday - Thursday~~	AP Calculus BC (Yearlong) 1:45PM - 2:55PM Monday - Friday
Honors Cryptography: Computer Programming & Secret Messages 8:10AM - 9:20AM Monday - Friday	Honors Biomedical Engineering 10:00AM - 11:10AM Monday - Thursday	~~Honors Civil Engineering~~ ~~12:05PM - 1:15PM~~ ~~Monday - Friday~~	AP African American Studies 1:30PM - 2:40PM Monday - Thursday

AP African American Studies

Grade Level: 10-12

Prerequisite(s): N/A

AP African American Studies Course Introduction Video

Join this course to be one of the first students to take the AP African American Studies course and the associated Advanced Placement exam.

AP African American Studies is an interdisciplinary course that examines the diversity of African American experiences through direct encounters with authentic and varied sources. Students explore key topics that extend from early African kingdoms to the ongoing challenges and achievements of the contemporary moment. Given the interdisciplinary character of African American studies, students in the course will develop skills across multiple fields, with an emphasis on developing historical, literary, visual, and data analysis skills. This course foregrounds a study of the diversity of Black communities in the United States within the broader context of Africa and the African diaspora.

Taking an AP course in a single semester will require you to have great study habits, time management skills, and reading and writing skills. A willingness to learn content, read and analyze sources, and write short essays at a fast pace is important.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students are expected to take the AP African American Studies exam at their public high school in the spring of 2025.

Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 4A107X0

AP Calculus BC

Grade Level: 10-12

Prerequisite(s): Completion of Precalculus with a grade of B+ or higher through your local high school or NCVPS.

AP Calculus BC Course Introduction Video

AP Calculus BC covers the material typically covered in the second semester college-level courses in calculus. The course covers all the topics in College Board's AP Calculus BC curriculum not already covered in the AP Calculus AB curriculum. You should be comfortable with derivative and integration techniques, as you will use these fundamentals to build an understanding of the calculus of polynomial approximations and series, vectors, polar functions, and parametric functions. During the semester, you will explore concepts graphically, numerically, and analytically to foster a more complex understanding. You should have a willingness to learn calculus at a very rapid pace, and you will need exceptionally good study habits. This course will prepare you to take the Calculus BC Advanced Placement Exam in the spring by utilizing class time to complete AP review problem sets.

Requirements:
Materials/Textbook: Access to AP Classroom and an online OpenStax Calculus textbook will be provided to each student. Additional textbooks will be provided on loan from NCSSM.

Site Requirements: Each student must have a TI-84, TI-84 Plus, or equivalent graphing calculator that they may take home. Students should also have access to the Internet via smartphone, tablet, or personal computer to access additional instructional materials.

Pre-Assessment: Each student will take an online pre-assessment prior to the start of the semester. This assessment will help the instructor determine if there are any gaps in their mathematical understanding. If conceptual gaps are present, the instructor will contact the student and provide resources to help them close those instructional gaps.

PowerSchool Course Number:

2A007X0 (fall semester) and 2A017X0 (spring semester)

AP Computer Science Principles

Grade Level: 10-12

Prerequisite(s): N/A

AP Computer Science Principles Introduction Video

AP Computer Science Principles is an introductory college-level computing course that introduces students to the breadth of the field of computer science. Students learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs. They incorporate abstraction into programs and use data to discover new knowledge. Students also explain how computing innovations and computing systems—including the internet—work, explore their potential impacts, and contribute to a computing culture that is collaborative and ethical.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 0A027X0

AP Psychology

Grade Level: 10-12

Prerequisite(s): Completion of Biology with a grade of B or higher through your local high school or NCVPS.

AP Psychology Course Introduction Video

The purpose of AP Psychology is to introduce students to the study of the behavior and mental processes of humans and animals. The course will involve nightly reading assignments, critical thinking questions, vocabulary development, labs, projects, and research investigations and experiments. In addition, there will be frequent reading quizzes and unit exams involving both multiple-choice and free-response components. The course will cover topics generally discussed in a college-level introductory psychology course. These topics include social psychology, history, careers, theories, research methods, biological bases of behavior, sensation/perception, consciousness, learning, memory, cognition, development, personality, stress, disorders, and treatments. Students will learn about the methods and ethical approaches of professional psychology.

Requirements: Textbooks will be provided on loan from NCSSM.
Materials/Textbook: *Myers' Psychology for AP* by David G. Myers (3rd. Edition). ISBN:9781464113079
Barron's AP Psychology Study Guide. ISBN:9781438010694

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 4A057X0

Honors 21st Century Media Studies

Grade Level: 10-12

Prerequisite(s): N/A

Honors 21st Century Media Studies Introduction Video

21st Century Media Studies is an interdisciplinary cultural studies course in which students examine and interpret the ways various modes of media influence us. Students study media theory, analyze cultural and historical contexts, aesthetics of a variety of formats, examine how forms have shifted, and investigate the relationship between media and reality, ways that media influences and changes our culture, and how responses to media change over time. The course considers a variety of critical approaches that include: cultural, psychoanalytic, feminist, and others. Through these approaches, students contemplate issues and problems, considering such aspects as: technology, representations of reality, human meaning, identity politics, economics, self/other dynamics, gender/race/ethnicity, and community/belonging. This lens of analysis reverberates both within and outside of America.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 96105X0

Honors Aerospace Engineering

Grade Level: 10-12

Prerequisite(s): Completion of Math III or Integrated Math III with a B or higher through your local high school or NCVPS. Students should be able to relate the lengths of sides of a triangle to angles using trigonometry.

Honors Aerospace Engineering Course Introduction Video

This course introduces students to the field of aerospace engineering, engineering design, and the core math and science concepts needed to solve problems related to aerospace and other engineering disciplines. The course is presented with historical context, and topics include spatial reasoning, properties of fluids, descriptions of 3-dimensional motion, the mechanics of flight, and basic aero and thermodynamic principles applied to the design and control of aircraft and spacecraft. Students have opportunities to experiment, calculate, compute, design and build as they explore and solve problems associated with the mechanics of flight, and are encouraged to earn course credit through aerospace-themed projects of their own design.

Requirements:
Materials/Textbook: Materials will be provided on loan from NCSSM. The facilitator will need to receive the materials, distribute them to students, and collect them to return (or retain for future classes) at the end of the course.

Site requirements: Students must have computer access with stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Anatomy and Physiology

Grade Level: 10-12

Prerequisite(s): Completion of a general biology course with a grade of B or higher through your local high school or NCVPS.

Honors Anatomy and Physiology Course Introduction Video

This course provides an in-depth study of the structure and function of the human body. The structure of the body systems, including integumentary, skeletal, muscular, cardiovascular, respiratory, endocrine, digestive, urinary, and reproductive systems, is put into context of how the body grows, maintains homeostasis, and responds to the disease state. The laboratory component includes microscopic analysis and dissection of relevant animal models and physiological concepts via experimentation.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Biomedical Engineering

Grade Level: 10-12

Prerequisite(s): Completion of Math II Honors with a B or better, or in Math II with an A through your local high school or NCVPS.

Honors Biomedical Engineering Course Introduction Video

How are electrical signals from the heart measured outside the body? Is there a way to design high-heel shoes that don't hurt women's feet? How do engineers design heart valves that only allow blood to flow one way? This course introduces students to the different subspecialties of biomedical engineering including bioelectronics and instrumentation, biomaterials, biomechanics, and biochemical. Through written problems, hands-on and design activities, and reviewing literature in the field, students explore and experience biomedical engineering principles, the engineering design process, and problem-solving and troubleshooting.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Civil Engineering and Architecture

Grade Level: 10-12

Prerequisite(s): Completion of Math III or Integrated Math III with a B or higher through your local high school or NCVPS.

Course Introduction Video Coming Soon!

In Civil Engineering and Architecture, students are introduced to important aspects of building and site design and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3D architectural design software. Utilizing the activity-project-problem-based teaching and learning pedagogy, students will progress from completing structured activities to solving open-ended projects and problems that require them to develop planning, documentation, communication, and ethical skills. Additionally, they will acquire a broad education that enables them to comprehend the global, economic, environmental, and societal implications of engineering solutions.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Connected Computing: Solving Problems with Technology

Grade Level: 10-12

Prerequisite(s): N/A

Honors Connected Computing: Solving Problems with Technology Course Introduction Video

Explore the nexus of technology and society in our innovative Honors Connected Computing course. his course ventures beyond traditional tech topics to examine technology's broader implications, biases, and transformative potential in humanity’s natural living. Utilizing NCSSM's extensive library resources, students will delve into the early stages and evolution of technology, its societal impact, and ethical considerations surrounding artificial intelligence and machine learning. Through debates, research, and hands-on exploration, this course challenges students to think critically about technology's role in shaping our world and to envision responsible, ethical uses of technology for positive change.

Requirements:
Materials/Textbook: Materials will be provided on loan from NCSSM. The facilitator will need to receive the materials, distribute them to students, and collect them to return (or retain for future classes) at the end of the course.

Site Requirements: The instructor will provide a list of educational websites that students must be able to access during class, including but not limited to Google Drive. Students must also have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 96105X0

Honors Creative Design for the Web

Grade Level:10-12

Prerequisite(s): N/A

Honors Creative Design for the Web Course Introduction Video

Ever been captivated by the sleek design of your favorite websites? Welcome to Creative Web Design, where technology meets art, innovation, and real-world application. In this hands-on course, you'll dive into the essential tools of the trade—HTML, CSS, and Javascript—to craft websites that are not just visually stunning but responsive and accessible to all. Prepare to examine the core principles of web design, including layout, color theory, typography, and user experience. But that's just the beginning! With a strong focus on creativity, equity, and industry standards, we'll explore how design decisions shape online experiences. You'll collaborate with peers, engage with professionals through guest speakers, and even work on a project that could become part of your professional portfolio. Whether you aspire to be a web designer or simply want to unleash your creativity in the digital world, this course offers a unique blend of technical skills and thoughtful design practices. Get ready to innovate, learn, and create some really cool stuff in a fun and inclusive environment!

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 96105X0

Honors Cryptography: Computer Programming & Secret Messages

Grade Level: 10-12

Prerequisite(s): N/A

Honors Cryptography: Computer Programming & Secret Messaging Introduction Video

This course introduces students to cryptographic methods used to encipher and decipher secret messages with an emphasis on using computer programming to automate the process. Through class discussions, problem-solving, group activities, and programming assignments, students will learn a variety of encryption schemes ranging from the Caesar cipher to modern public key encryption used to secure digital communications online. Students will learn introductory number theory and statistics to describe these methods and identify weaknesses that allow secret messages to be cracked without knowledge of the key. Students will also learn programming topics such as variables, functions, conditional logic, looping, and file input/output in the Python language to implement each cryptographic method. This course will utilize a blended learning environment with some material taught online while some in-class time is used for working in groups.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Additionally, access to a platform such as Google Collaboratory that allows students to view and edit Python notebooks is essential. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 28005X0

Honors Diseases, the Dynamics of Epidemics

Grade Level:10-12

Prerequisite(s): N/A

Honors Diseases, the Dynamics of Epidemics Course Introduction Video

After covering the basics of immunology and pathogens, students will use a case study approach to study different epidemics. Students will look at the dynamics of childhood diseases, evolution of drug resistance, digital epidemiology, disease surveillance, vaccinations, and more. By looking at the history of epidemiological response to modern-day public health initiatives, students will analyze individual epidemics for their efficacy and in particular, the many equity issues surrounding those responses. This course will use case studies to promote a seminar-style course filled with discussion, research, and systems thinking.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 60195X0

Honors Forensic Detectives: The Science of Solving Accidents

Grade Level: 10-12

Prerequisite(s): Completion of Language Arts/English with a grade of B and completion of Biology I and Math III through your local high school or NCVPS.

Course Introduction Video Coming Soon!

Ever wondered how individuals solve mysteries behind building collapses, fiery accidents, or car crashes? This course is your ticket into the world of forensic accident investigation. You'll become a detective of disasters, learning how to uncover the secrets behind structural failures, fires, and vehicular mishaps using the principles of forensic engineering. Roll up your sleeves and dive into hands-on lab sessions and exciting project-based simulations where you'll use engineering and materials science skills to crack cases involving materials from actual crime and accident scenes. Think like a scientist and engineer, using chemistry, math, tech, and investigative skills to solve puzzles and prevent future accidents.

Note: *Honors Forensic Science* and *Honors Forensic Detectives: the Science of Solving Accidents* are two distinct forensic courses, each offering a unique learning experience. These courses can be taken independently and do not require sequential enrollment.

Requirements:
Materials: Materials will be provided on loan from NCSSM. The facilitator will need to receive the materials, distribute them to students, and collect them to return (or retain for future classes) at the end of the course.

Because of potential graphic material in some of the modules, parents are asked to sign a permission slip.

Site Requirements: Facilitator assistance will be required to set up labs and proctor assessments. The instructor will provide a list of educational websites that students must be able to access during class, including but not limited to Google Drive. Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones)

PowerSchool Course Number: 30205X0

Honors Forensic Science

Grade Level: 10-12

Prerequisite(s): Completion of Language Arts/ English with a grade of B, completion of Biology I and Math III through your local high school or NCVPS.

Honors Forensic Science Course Introduction Video

This course focuses on the application of basic biological, chemical, and physical science principles, and technological practices as they relate to judicial and civil issues. It includes the investigation of fingerprinting, fiber analysis, ballistics, arson, trace evidence analysis, poisons, drugs, blood spatters, and blood samples. In addition, students must incorporate technology, communication skills, language arts, art, family and consumer science, mathematics, and social sciences. Good writing skills are imperative. Through online lessons, virtual and hands-on labs, and analysis of fictional crime scenarios, students learn about forensic tools, technical resources, forming and testing hypotheses, proper data collection, and responsible conclusions.

Note: *Honors Forensic Science* and *Honors Forensic Detectives: the Science of Solving Accidents* are two distinct forensic courses, each offering a unique learning experience. These courses can be taken independently and do not require sequential enrollment.

Requirements:
Materials: Materials will be provided on loan from NCSSM. The facilitator will need to receive the materials, distribute them to students, and collect them to return (or retain for future classes) at the end of the course.

Because of potential graphic material in some of the modules, parents are asked to sign a permission slip.

Site Requirements: Facilitator assistance will be required to set up labs and proctor assessments. The instructor will provide a list of educational websites that students must be able to access during class, including but not limited to Google Drive. Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Genetics & Biotechnology

Grade Level: 10-12

Prerequisite(s): Completion of Biology I with a B or higher and completion of Math III through your local high school or NCVPS.

Honors Genetics & Biotechnology Course Introduction Video

What do crime scene investigations, agriculture, medicine, conservation biology, and manufacturing have in common? They have all been revolutionized by biotechnology! Almost every day, we read about new developments in the rapidly changing fields of genetics and DNA-based biotechnology. In this course, students will first explore classical genetics and then move on to examine the structure and function of DNA and proteins. With state-of-the-art laboratory experiments, students will analyze DNA fingerprints from a crime scene, genetically transform bacteria, and investigate their own DNA! Finally, they will survey the applications of biotechnology in many diverse fields and discuss in depth how biotechnology is changing our daily lives and our future. With the decline of traditional manufacturing in North Carolina, biotechnology is positioned to become a vital part of North Carolina's 21st-century economy.

Requirements:
Materials/Textbook: Textbooks will be provided on loan from NCSSM. *Concepts of Genetics*, 12th edition, by Klug and Cummings from Pearson Education. The instructor will assign general readings and problem sets from old and new books during the transition.

Site requirements: Facilitator assistance will be required to set up labs. Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Global Public Health and Infectious Disease

Grade Level: 10-12

Prerequisite(s): Completion of Language Arts/ English with a grade of "A" through your local high school or NCVPS.

Honors Global Public Health and Infectious Disease Course Introduction Video

This course introduces a range of topics and issues in public health, with an emphasis on global public health. Some possible topics of discussion include the health and welfare of women and children in low-income countries, the impact of emerging and re-emerging infectious diseases across the globe, food insecurity and malnutrition, demographic transition and immigration, global fertility and mortality, the stigma of mental health, and occupational health. This course will also address several impactful case studies and health and biomedical ethics controversies. As public health relies on a number of systems in order to serve diverse populations across the globe, this course will take a systems thinking and modeling approach, using authentic performance assessments with students working in teams to apply concepts learned throughout the term. This interdisciplinary course requires complex reasoning and critical thinking skills, extensive use of technology, communication, and problem-solving skills. Strong writing skills are imperative.

Requirements:
Materials/Textbook 1: *Public Health: What It Is and How It Works*, 6th edition by BJ Turnock, Jones and Bartlett Learning, 2015. ISBN 978-1-284-06941-9
Textbook 2: *Controversies in Public Health and Health Policy* by Jan K. Carney. Jones and Bartlett Learning, 2016. ISBN 978-1-284-04929-9
Materials: Some equipment will be provided on loan from NCSSM; schools are responsible for materials. A list of additional needed materials will be provided.

Site Requirements: Facilitator assistance will be required to set up labs and proctor assessments. The instructor will provide a list of educational websites that students must be able to access during class, including but not limited to Google Drive. Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number:60195X0

Honors Introduction to Artificial Intelligence

Grade Level: 10-12

Prerequisite(s): Completion of Math I or Integrated Math I with a B or higher through your local high school or NCVPS.

Honors Introduction to Artificial Intelligence Course Introduction Video

Artificial Intelligence, or AI, enables computer systems to perform tasks that usually require human intelligence, such as visual perception, speech recognition, and decision-making. In this class students will explore how and what types of data can be collected for AI systems, how computers can "learn" from this data and use what is learned to help interpret the world and make decisions. Students will identify and explore the implications of AI systems currently in everyday use in areas such as social media, mapping software, and financial institutions, and consider the emerging areas where AI will be applied. Topics also include how AI has been portrayed in popular culture, how AI systems interact with humans, and the ethical considerations surrounding potential societal harm from inappropriately designed, trained, and/or applied AI systems. Students will experiment and compute as they explore and solve AI-related problems.

Requirements:
Materials/Textbook: Some free software must be downloaded and installed on all student machines.

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 96105X0

Honors Introduction to Computer Science & Computational Thinking

Grade Level: 9th Grade ONLY

Prerequisite(s): N/A

Honors Introduction to Computer Science & Computational Thinking Course Introduction Video

Dive into the dynamic world of computer science with our Honors Introduction course, tailored for 9th-grade students with a keen interest in technology. This comprehensive survey course offers a hands-on approach to learning, covering key areas like algorithms, Artificial Intelligence, cybersecurity, and various programming languages including Python, HTML, CSS, Scratch, and JavaScript. Explore cutting-edge topics such as Large Language Models (LLMs) and delve into the ethical and social implications of technology. Through engaging projects and 'On This Day in Technology' segments, students will celebrate diversity in tech and connect computer science with real-world applications. Prepare for a future in STEM with a course that fosters creativity, critical thinking, and lifelong learning.

Requirements:

Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 96105X0

Honors Introduction to Cybersecurity

Grade Level: 9-12

Course Introduction Video Coming Soon!

Prerequisite(s): N/A

Cybersecurity affects every individual, organization, and nation. This course helps build student experience to become responsible digital citizens by focusing on evolving technological environments where students will learn different ways of securing information, including personal, organizational, and national data. Introductory cybersecurity topics such as digital citizenship, cryptography, software security, and networking will develop an understanding of the multifaceted career field in cybersecurity.

Requirements:
Materials/Textbook: N/A

Site Requirements: The instructor will provide a detailed list of educational websites that students must be able to access during class, including but not limited to Google Drive. Please note that students may be accessing *gaming sites* that may normally be blocked by school computers. The site document will specifically list sites and tools students will need to access.

Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 96105X0

Honors Introduction to Neuroscience

Grade Level: 10-12

Prerequisite(s): Completion of a general biology course with a grade of B or higher through your local high school or NCVPS.

Course Introduction Video Coming Soon!

This course is focused on the basic knowledge base surrounding modern neuroscience. With a focus on the physiology of neurons, neuroanatomy, and neuropsychology, students will complete this course with a basic understanding of how the brain works at cellular, systems, and organismal levels. After completing this course, students will be able to evaluate and interpret scientific journals and data, design and conduct laboratory experiments, write an effective lab report, communicate scientific concepts to an audience with diverse backgrounds, and evaluate their own performance. The course contains a research component as well as significant group work requirements. The instructor will provide students with encouragement to use their unique talents and perspectives to synthesize the course content.

Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Physics

Grade Level: 10-12

Prerequisite(s): Completion of Math III with a C or higher through your local high school or NCVPS.

Honors Physics Course Introduction Video

This course is a hands-on, inquiry-based introductory course that combines both conceptual and mathematical approaches to learning physics. The course covers mechanics (Newton's laws of motion and their applications) and other topics such as waves, electricity, and modern physics. Students will learn to solve real problems by investigating real systems. Investigations will cover physics topics that are fun and engaging for the students. Students will design experiments, use accurate measuring equipment, and construct and test conclusions based on accurate data. Some simple programming in Python will be taught.

Requirements:
Materials/Textbook: Textbook will be provided on loan from NCSSM.

Each student must have a graphing calculator (TI-83, TI-84, or TI-89) that they can take home.

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Scientific Programming

Grade Level: 10-12

Prerequisite(s): N/A

Course Introduction Video Coming Soon!

In this course, we will apply analytical tools involving computer programming to the practice of science. Each module of the course focuses on a different tool or programming environment. We will start with Google Sheets for data collection and analysis, including AppsScript programming. Then, we will move on to Scratch, a tool for understanding algorithms and for creating scientific animations. Next, we will utilize NetLogo for simulating ecology and epidemiology and other natural systems. After comes Arduino, which will give us a primer on electronics and a means to build new scientific instruments. Finally, 0we will examine R as well as Python, two programming languages used widely in statistics. As programming is a fast-moving field, other tools may be introduced. There are no prerequisites for this course– we will begin each module from first principles. You may find yourself an expert with some of these tools and a beginner in others. You are encouraged to share your expertise with classmates, and we will learn together. Come along on for an adventure applying computers to solving scientific problems and understanding the world!

Requirements:
Materials/Textbook: N/A

Site Requirements: Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Additionally, access to a platform such as Google Collaboratory that allows students to view and edit Python and other programs is essential. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 30205X0

Honors Tech Art: Introduction to Art, Technology, and World-Building in Video Games

Grade Level: 10-12

Prerequisite(s): N/A

Honors Tech Art: Introduction to Art, Technology, and World-Building in Video Games Course Introduction Video

In this semester-long course you'll learn a little something about artistic and technical elements used in the creation of video games. In this survey course, you'll explore the history of video games, video gaming engines, traditional art principles, fundamentals of visual and audio design, and elements of visual storytelling. You'll start by analyzing the artistic design process and by creating original artwork based on your personal interests. You'll also create original sounds, 2D and 3D models, and use elements of AI and machine learning to create new art. Each unit will have both technical and creative challenges. You will be encouraged to explore your personal interests and create something you are passionate about by identifying real-world issues that need solving, creating solutions to problems through the design process, and ultimately building the type of virtual world you want to see. This course is for anyone who wants to know more about what goes into creating video games and how to create art in 3D spaces.

Requirements:
Materials/Textbook: N/A

Site Requirements: Students must have computer access with a stable internet connection and appropriate permissions for web conferencing. Students in shared spaces should have individual audio devices (headphones with microphones).

PowerSchool Course Number: 96105X0