

**North Point High School  
for  
Science, Technology and Industry**



**Guide to Career Majors**

**For the Graduating Class of 2025**

**Supplement to the  
Charles County Public Schools  
Program of Studies**

**Entrance Fall 2021**

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**Mission Statement:** The mission of Charles County Public Schools is to provide an opportunity for all school-aged children to receive an academically challenging, quality education that builds character, equips for leadership and prepares for life, in an environment that is safe and conducive to learning.

**Nondiscrimination Statement:** The Charles County public school system does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, age or disability in its programs, activities or employment practices. For inquiries, please contact Kathy Kiessling, Title IX/ADA/Section 504 Coordinator (students) or Nikial M. Majors, Title IX/ADA/Section 504 Coordinator (employees/ adults), at Charles County Public Schools, Jesse L. Starkey Administration Building, P.O. Box 2770, La Plata, MD 20646; 301-932-6610/301-870-3814. For special accommodations call 301-934-7230 or TDD 1-800-735-2258 two weeks prior to the event.

CCPS provides nondiscriminatory equal access to school facilities in accordance with its Use of Facilities rules to designated youth groups (including, but not limited to, the Boy Scouts).



Career & Technical Education (CTE) provides high school and community college students an opportunity to pursue a sequential technical and academic program of study leading to advancement in a career field. High school CTE programs of study give students the opportunity to transition smoothly into further education or postsecondary education and to earn college credits and/or industry credentials in a career field of interest.

MSDE in partnership with statewide industry advisory groups, identified ten **Career Clusters** that represent core business functions across broad industry areas in Maryland. Business partners further identified **Career Pathways** based on the end-to-end business processes within career clusters. Career clusters allow students to explore a wide range of career options and to apply academic and technical skills in a career area. Career pathways are like road maps of learning that help students plan for and pursue further education and careers.

### Maryland's CTE Career Clusters are depicted below

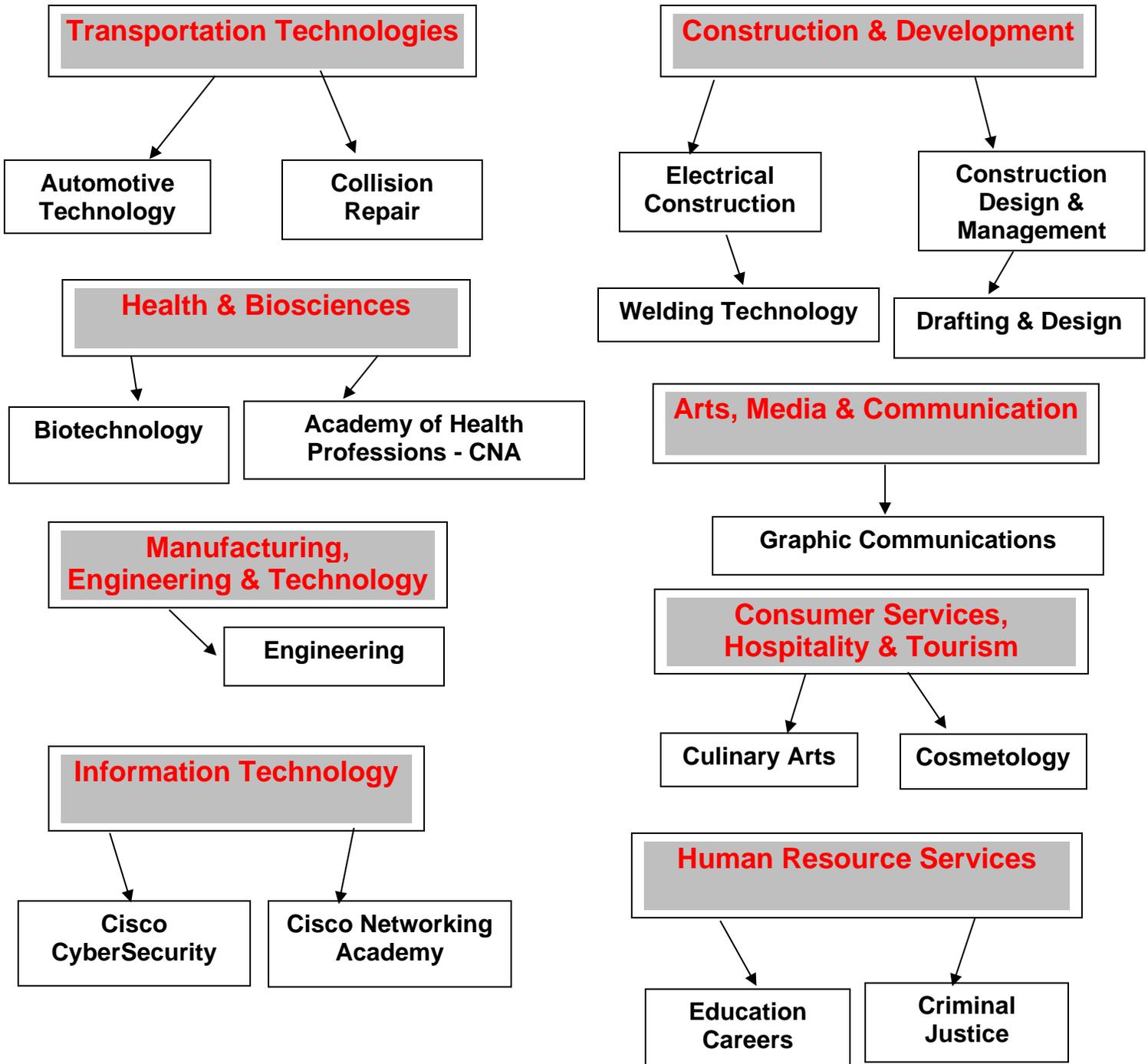
- Arts, Media, and Communication
- Business Management and Finance
- Construction and Development
- Consumer Services, Hospitality, and Tourism
- Environmental, Agricultural, and Natural Resources Systems
- Health and Biosciences
- Human Resource Services
- Information Technology
- Engineering and Technology
- Transportation Technologies

*“Our goal is to provide students with a foundation for what lies ahead, be it college or career. We need Maryland high school graduates to be prepared for the jobs of tomorrow.”*

-Dr. Karen Salmon, State Superintendent of Schools



# Career Technical Education Programs at North Point High School





***\*Important Information***

***\*Thank you for reading carefully***

## **Welcome to North Point High School!**

In order to provide a **focused and purposeful** high school experience, the North Point staff (in consultation with professionals currently working in each field as well as representatives from post secondary schools) has created the *Guide to Career Majors* to help students, parents and counselors design a focused four-year sequence of courses centered on the student's future plans. This guide is a supplement to the *Charles County Public Schools High School Program of Studies*. Please refer to the *Program of Studies* for detailed course descriptions of academic and elective courses offered. Graduation requirements, math requirements and other important school system information are also provided in the *Charles County Public Schools High School Program of Studies*.

Some definitions of terms used in this guide:

- **Cluster:** MSDE pathways that represent core business functions across broad industry areas in Maryland.
- **Pathway:** a specific, four-year course of study within a MSDE Cluster that prepares a student for his/her post-secondary goals
- **Program:** a group of courses within an MSDE Cluster

Each grade chart in this guide provides students with an outline of required and recommended courses to prepare them for success in their chosen field. **The courses are an example of a meaningful sequence of courses for students.** Although we encourage students to take the courses outlined in this booklet, selections listed as "recommended" may be customized based on student need and/or interest in related areas. Be sure to consult with a counselor when establishing a four-year path to ensure that it includes all Maryland graduation requirements.

Refer to the Mathematics section of the *Charles County Public Schools High School Program of Studies* for the most appropriate math course sequence. **Two CTE programs, Biotechnology and Engineering require successful completion of Algebra I by the end of 8<sup>th</sup> grade** and all students are required to take math for all four years of high school.

Upon graduation, students in a CTE program will earn their high school diplomas and possible college credit or industry certifications. Students who complete 4 years of math and 4 years of science at North Point High School will earn a special pin that signifies their commitment to a rigorous course of study.



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## Career Pathway: Academy of Health Professions: CNA

### Career Cluster: Health and Biosciences

The Academy of Health Professions is an exploratory and preparatory program for the secondary school student. The program incorporates and correlates instruction in the classroom and the laboratory with planned clinical experiences in multiple health care settings. Throughout the program, students are expected to enroll in multiple classes that will enhance their learning in this field and better prepare them for the rigor of postsecondary studies.

The program is designed to develop health care skills and practices that will enable the student to function effectively in a job situation at the entry level or to pursue further study at a college or university. The course requires three years for completion at which time the student is eligible to receive articulation credits and a certification as a Nursing Assistant. Uniform and fees are required.

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	Algebra 1 or Honors Geometry	Honors Geometry or Honors Algebra 2	*Honors Algebra 2, Pre-Calc. or Adv. Alg. w/Trig.	*AP Calculus, Pre-Calc. Adv. Alg./Trig. or AP Stat
3	Honors Biology	Honors Chemistry	*AP Biology	*AP Chemistry or Honors Organic Chemistry
4	*Local, State, National Gov't.	*US History	*World History	Advanced Skills Lab
5	Exploring Computer Science (TechEd Req. for Grad.)	Structure & Functions of Human Body	Foundations of Medical & Health Science	Certified Nursing Assistant Clinical Internship
6	Fine Art Credit (Req. for Grad.)	Financial Literacy (Req. for Grad.)	Intro. Skills Lab & Clinical Experiences	Specialized Clinical Internship
7	Fit for Life/Health	Elective	Honors Physics or Elective	Honors Principles of Anatomy & Physiology OR Science Elective
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	Speech or Elective	Elective



= CTE Courses



= Required



= Recommended



= Highly Recommended

### Suggested Science Electives:

Honors Physics  
AP Physics 1

Honors Principles of Anatomy & Physiology  
Honors Organic Chemistry

**PLEASE NOTE:** Required/recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's 4 years at NP.

- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Education Pathways:

- **College degree pathway:** Leads to careers such as physician, nurse, physical therapist, occupational therapist, sports medicine specialist, surgical technologist, physician assistant, veterinary medicine, pharmacist, public health, social work and dentistry.
- **2 yr. College, Technical school, apprenticeship or military pathway:** Leads to careers such as Licensed Practical Nurse (LPN), medical technician, radiology technician, medical secretary, dental assistant, pharmacy technician, paramedic, and phlebotomist

### Certification & Articulations:

Student with a minimum of a B average may earn up to 5 college credits through an articulation agreement with the College of Southern Maryland. (HTH 1100, HTH 1030, HTH 1410) and 4 credits from Stevenson University. Additionally, students earn the following certifications:

- Maryland Board of Nursing – Certified Nursing Assistant
- American Heart Association – Basic Life Support for Healthcare Providers
- American Heart Association – Standard First Aid.

### Academy of Health Professions Course Descriptions:

Course:	Course #	Credits	Grade	Codes
<b>Structure &amp; Functions of the Human Body:</b> Students in this course study the structure and functions of the human body, including cellular biology and histology. Systematic study involves homeostatic mechanisms of the integumentary, skeletal, muscular, nervous, lymphatic, respiratory, circulatory, digestive, urinary, endocrine, reproductive systems and special senses. Systematic study will also include basic pathological conditions. Students will investigate the body's responses to the external environment, maintenance of homeostasis, electrical interactions, transport systems, and energy processes. Students will conduct laboratory investigations related to the body systems, use scientific methods during investigations to solve problems and make informed decisions. Students will learn medical terminology and abbreviations related to the body systems. Students will study and apply professional safety and infection control guidelines.	17112N	1	10	CC W CTP
<b>Foundations of Medical &amp; Health Science:</b> This course is designed to provide students with an overview of the therapeutic, diagnostic, environmental and information systems of the healthcare industry. Student will begin to prepare for a medical or health science career by developing a broad understanding of the cluster and pathways in the Health and Biosciences Cluster. Students will learn about ethical and legal responsibilities, as well as the history and economics of healthcare. Students will continue to expand on their medical terminology base and integrate it into their studies and patient care. They will develop academic and technical skills necessary to function as a health professional. They will engage in processes	C1713N	1	11	CC W CTP

<p><b>Introductory Skills Lab &amp; Clinical Experience:</b> This course is designed to immerse students in introductory skills that are utilized in the healthcare industry. Students will be instructed on the basic principles and best practices of a multitude of procedures. They will be expected to master the skills used in the delivery of essential healthcare services while in the laboratory setting and will then have the opportunity to apply these skills in the clinical setting at an acute care facility on multiple units.</p>	17121N	1	11	CC W
<p><b>Specialized Clinical Internship:</b> This course is designed to provide students the opportunity to further develop their academic and technical skills necessary to function as a health professional. Students will continue to expand and integrate their knowledge base of medical terminology, anatomy, physiology, and pathophysiology into their studies and patient care. They will continue to engage in processes and procedures that are used in the delivery of essential healthcare services and perform them during their clinical rotations. Students will complete their requirements to sit for the Nursing Assistant Certification examination as specified by the Maryland State Department of Education and Maryland Board of Nursing (MBON). Once they have met these requirements, they will have the opportunity to tailor clinical experiences based on aspiring professional goals. Additional clinical experiences include but are not limited to the following settings: community health, veterinary medicine, private medical offices, private dental offices, private vision offices, community pharmacy, wellness therapy, and rehabilitation services.</p>	C1714N	1	12	CC W CTP CERT
<p><b>Certified Nursing Assistant Clinical Internship:</b> This course is designed to provide students the opportunity to further develop their academic and technical skills necessary to function as a health professional. Students will continue to expand and integrate their knowledge base of medical terminology, anatomy, physiology, and pathophysiology into their patient care. They will continue to engage in processes and procedures that are used in the delivery of essential healthcare services and perform them during their clinical rotations. Students must complete their clinical requirements to be eligible to become a Certified Nursing Assistant as specified by the Maryland State Department of Education and MBON.</p>	17122N	1	12	CC W CTC CERT
<p><b>Advanced Skills Lab:</b> This course is designed to immerse students in advanced skills that are utilized in the healthcare industry. Students will be instructed on the basic principles and best practices of a multitude of new procedures. They will be expected to master the skills used in the delivery of essential healthcare services while in the laboratory setting and will then have the opportunity to apply these skills in the clinical setting during their Nursing Assistant Clinical Internship and Specialized Clinical Internship. Students will be expected to consistently identify, demonstrate, and integrate knowledge base and basic principles for all instructed materials throughout the program curriculum.</p>	17123N	1	12	CC W CERT

These codes appear with course descriptions where appropriate: ATE = Advanced Technology Credit; CC = may be eligible for college credit; CTP = Maryland State Dept. of Education Approved Career Technology Program; CTC = CTP Concentrator Course; EOC = End-of-Course Assessment; FA = Fine Arts; TE = Technology Education; W = Weighted, CERT = End of course certification exam.

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## Career Pathway: Automotive Technology

### Career Cluster: Transportation Technologies

The Automotive Technology (Maintenance & Light repair) program emphasizes hands-on and theoretical experience using state-of-the-art diagnostic equipment and tools. The program incorporates the Automotive Service Excellence (ASE) program certification standards. The program prepares students for further education and careers in the automotive industry through industry certification and articulated credit at technical or community colleges. Students will supplement their study of automotive technology with courses such as CADD, Pre-Engineering and Principles of Business. Students who complete this program receive one year of work credit toward their ASE certification. Fees and uniform are required. **Please Note:** ASE requires an exit exam. A testing fee is required.

### Education Pathways:

- **Four year college degree pathway:** Leads to careers such as automotive or mechanical engineer, design specialist, dealership owner
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as ASE Certified Technician, parts manager, diesel mechanic, alignment specialist, small engine technician, tire specialist, transmission technician, tune-up technician, front-end mechanic

### Certification & Articulations:

College credits may be earned from: The Community College of Baltimore County (18 credits), Penn College (15 credits), Montgomery College (7 credits), Nashville Auto-Diesel College (NADAC), and Ohio Technical College. Students can earn ASE certifications in the following areas: Brakes, Electrical/Electronic Systems, Steering & Suspension, Engine Performance & Repair, Transmissions, HVAC. The NP program is a member of the elite Automotive Youth Educational System (AYES) which is a partnership with automotive manufacturers, dealerships and secondary automotive programs. AYES provides mentoring, internships and college scholarships for student interested in pursuing a career in the automotive industry.

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	*Physics OR CADD OR Elective
4	*Local, State, National Gov't.	*US History	*World History	<b>Automotive HVAC</b> (Semester 1) <b>Transmissions: Automatic &amp; Manual</b> (Semester 2)
5	Fit for Life/Health	Brakes	Engine Performance	<b>Electrical and Electronic Systems</b>
6	TechEd Credit (Req. for Grad.)	Steering & Suspension	Engine Repair	Financial Literacy (Grad. Req.)
7	Fine Art Credit (Req. for Grad.)	First Aid & Safety then Intro. to Wt.Trng.	Adv. Tech. Ed. Or Elective	Prin. Bus. Manage. OR Elective
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	World Language Or Elective	World Language Or Elective

= CTE Courses     
  = Required     
  = Recommended     
  = Highly Recommended

- **PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's four years at North Point.
- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Automotive Technology Course Descriptions:

Course:	Course #	Credits	Grade	Codes
<b>Brakes:</b> Brake units focus on: hydraulic and mechanical principles of a brake system; major parts of an automotive brake system; basic functions of the major parts; comparison of drum and disc brakes; operation of parking brake; operation of power brakes; ABS, Antilock and traction control. Pascal's Law, Bernoulli's Principle and Venturi Effect are taught. Students will learn to identify and safely use tools used in the automotive profession. Certification test.	<b>17042N</b>	1	10	CC CTP CERT
<b>Steering &amp; Suspension:</b> Suspension units focus on: Identifying the major parts of suspension system; the basic functions of each suspension system component; the operations of 4 common types of springs; comparing various types of suspension systems; understanding automatic suspension leveling systems. Steering units focus on: identifying the major parts of the steering system; the operating principles of steering systems; comparing differences between linkage steering and rack-and-pinion steering systems; understanding four-wheel steering systems. Certification test.	<b>17043N</b>	1	10	CC CTP CERT
<b>Engine Performance:</b> Units focus on: emissions systems, engine operation and performance; displacement, fuel system components & functions; and data stream reading (OBD II) Onboard Diagnostics; turbo charging, Drivability problems, trouble shooting and poor fuel economy. Certification test.	<b>17044N</b>	1	11	CC CTC CERT
<b>Engine Repair:</b> Units include: engine rotation, valve trains, timing, small engines, Bernoulli's Principle, Venturi Effect, micrometer, material safety, engine teardown, abnormal engine noise, evaluation of engine mechanical problems. Students will begin to work on customer's vehicles. Certification test.	<b>17045N</b>	1	11	CC CTP CERT
<b>Electrical Systems:</b> Units focus on: introduction to electricity, magnetism and electrical circuits; introduction to batteries; emission controls; and hybrids. Students will extend the skills learned in the previous two years, including electricity, battery and alternator functions. Students will prepare for the SkillsUSA competition. Students will work on customer's vehicles. They will also take mock ASE tests, to prepare for the ASE testing they may take after completing the course. Certification test.	<b>17046N</b>	1	12	CC CTP CERT
<b>Automotive HVAC:</b> Units focus on: principles of refrigeration, the high & low sides of an air conditioning system, and safety precautions for working on heating & air conditioning systems. Students will work on customer's vehicles. They will also take mock ASE tests, to prepare for the ASE testing they may take after completing the course. Certification test.	<b>17047N</b>	.5	12	CC CTP CERT
<b>Transmissions (Automatic &amp; Manual):</b> Students will learn to identify/define the major parts of both a manual and automatic transmission, explain the fundamental operations of both types of transmission, and trace power flow through transmission gears. Students will work on customer's vehicles. Students will also take a mock ASE tests, to prepare for the ASE certification test. Certification test.	<b>17048N</b>	.5	12	CC CTP CERT

**Career Pathway: Biotechnology**  
**Career Cluster: Health and Biosciences**

**PREREQUISITE: Successful completion of Algebra 1 by the end of eighth grade.**

Students in this program will need to earn two (2) World Languages or Advanced Technology Education credits to meet graduation requirements. Students will participate in scientific exploration with direct and indirect applications to the improvement of the quality of life. The program will include an introduction to techniques used in many biotechnology fields, such as DNA analysis, gene technology, and bioengineering in agriculture. Students in Biotechnology will supplement their study with multiple sciences.

Biotechnology students will be expected to take Advanced Placement science courses such as AP Chemistry, AP Biology, AP Physics, AP Environmental Science. Science and math classes are required all four years. Lab fees may be required.

**Education Pathways:**

- **Four year college degree pathway:** Leads to careers such as physician, scientist, research associate, chemist, microbiologist, quality control analyst

**Sample Schedule:**

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Honors Geometry	*Honors Algebra 2	*Adv. Alg. w/Trig or Pre-Calculus	* AP Calculus, PreCalc. or AP Stat
3	Honors Biology	Honors Chemistry	*AP Science or Honors Anatomy or Honors Organic Chemistry	AP Science or Honors Organic Chemistry
4	Exploring Computer Science (TechEd Req. for Grad.)	Honors Physics, AP Physics 1 or or AP Environmental Science	AP Physics 1 or AP Science	Pharmaceutical & Agricultural Biotechnology
5	*Local, State, National Gov't.	*US History	*World History	Pharmaceutical & Agricultural Biotechnology
6	Fit for Life /Health	Standard Operating Procedures Proficiencies	Production of a Recombinant Protein	Protein & DNA Diagnosis
7	Elective or Fine Art Credit (Req. for Grad.)	Fine Art Credit (Req. for Grad.) or Elective	Financial Literacy (Req. for Grad.)	AP Computer Science Principles or Elective
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	World Language Or Elective	World Language Or Elective

= CTE Courses    
  = Required    
  = Recommended    
  = Highly Recommended

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- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### **Biotechnology Course Descriptions:**

<b>Course:</b>	<b>Course #</b>	<b>Credits</b>	<b>Grade</b>	<b>Codes</b>
<b>Standard Operating Procedures Proficiencies:</b> Students will learn how to make serial dilutions for antibodies, make solutions, prepare media, make buffers to run a gel and conduct Gel Electrophoresis (making and running a gel of DNA). Students will also learn how to analyze DNA, digest DNA using restriction enzymes, amplify single and double stranded DNA by using PCR, conduct a plasmid DNA transfer, and sequence DNA. They will also learn how to collect protein, purify the protein and extract the specific protein by using several different techniques including column chromatography and spectrophotometry.	17184N	1	10	W
<b>Production of a Recombinant Protein:</b> Students will be able to learn how to analyze spectrophotometer readings, determine if a molecule is present, and determine the concentration of that molecule. Students will practice transforming cells and analyzing the transformed cells. They will also further investigate organisms by using chromatography techniques, protein/antibody engineering, PCR and DNA analysis.	17185N	1	11	W
<b>Pharmaceutical &amp; Agricultural Biotechnology:</b> Students will conduct several investigations using plants. They will clone plants by using tissue culturing, produce products using plants, and investigate how to use plants for medicine. Students will learn how to apply the techniques and procedures from previous courses to real-world situations. Students will explore applications that include the production of a bioinsecticide, bioremediation, phytoremediation, forensic analysis, hybridization analysis and enzymatic production and use. They will also expand their expertise in laboratory techniques related to biotechnology.	17186N	2	12	W
<b>Protein &amp; DNA Diagnosis:</b> Students will explore online biological databases in order to judge the quality and uses of the information. They will extend their biotechnology research skills and create their own databases. Students will use scientific techniques and technology in order to solve forensic investigations. Research, case studies and career exploration are also components of this course. Each student will design an individual capstone project, which will involve problem-based learning experiences.	17187N	1	12	W

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# Career Pathway: Cisco Networking Academy

## Career Cluster: Information Technology

Cisco Networking Academy is for students with strong math skills and a desire to work in the computer field. Fees are required for certification testing. In this program students prepare for the following certifications:

- CompTIA A+ Certification encompassing a technical understanding of computer technology, networking and security, communication skills and professionalism necessary for all entry-level IT professionals and Computer Support Technicians.
- Cisco Certified Technician certificate (CCT)
- Cisco Certified Network Associate certificate (CCNA)
- Cisco Certified Network Associate Security certificate (CCNA Security)

### Education Pathways:

- **Four year college degree pathway:** Leads to careers such as network design engineer, Cisco engineer, senior systems analyst, telecommunication engineer, IT project manager, technical sales executive
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as network administrator, network systems engineer, network technician

### Certification & Articulations:

Students with a minimum of a B average may earn up to 12 college credits through an articulation agreement with the College of Southern Maryland. Credits can also be granted from the following: Anne Arundel CC, Baltimore City CC, Chesapeake CC, CCBC – Catonsville, Harford CC, Howard CC, Montgomery College and Prince George's CC. Industry certifications available include CompTIA A+, CCNA, CCNA Security, CCT and CCNP.

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	Algebra 1 or Honors Geometry	Honors Geometry or Honors Algebra 2	*Honors Algebra 2, Adv. Alg. w/Trig. or PreCalculus	* AP Calculus, PreCalc., Adv. Alg. w/Trig. or AP Stat
3	Honors Earth Systems	Honors Biology	*Physics or AP Physics 1 or AP Science	Enterprise Networking, Security and Automation
4	*Local, State, National Gov't.	*US History	*World History	Enterprise Networking, Security and Automation
5	Fit for Life/Health	Intro. To Networks with Linux (CCT)	Switching Routing & Wireless Essentials	Cyber Operations
6	Cisco IT Essentials with Linux	Intro. To Networks with Linux (CCT)	Switching Routing & Wireless Essentials	Cyber Operations
7	Fine Art Credit (Req. for Grad.)	AP Computer Science Principles or Exploring Computer Science (TechEd Req for Grad)	Financial Literacy (Req. for Grad.)	Computer Internship (if qualify) or AP Computer Science A
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	Intro. to Computer Programming or Elective	Elective



= CTE Courses



= Required



= Recommended

- **PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's four years at North Point.
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- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

## Cisco Networking Academy Course Descriptions:

<b>Course:</b>	<b>Course #</b>	<b>Credits</b>	<b>Grade</b>	<b>Codes</b>
<p><b>Cisco IT Essentials Linux:</b> This course covers fundamental computer and career skills for entry-level IT jobs. The IT Essentials course includes hands-on labs that provide practical experience to prepare students for enterprise networking. Simulation tools help students hone their troubleshooting skills and practice what they learn. Within the IT Essentials course is a unit on Linux. It is designed for learners who are beginning to build Linux knowledge for a career in information technology. NDG Linux Essentials is an introduction to Linux as an operating system, basic open source concepts and the basics of the Linux command line. The course content is developed by experts and includes a Linux virtual machine as well as step-by-step labs which give students hands-on access to practice Linux command line concepts</p>	17183N	1	9	W CC CTP CERT
<p><b>Cisco – CCT Intro. To Networks (ITN) with Linux:</b> This course covers fundamental computer and career skills for entry-level IT jobs. The IT Essentials course includes hands-on labs that provide practical experience to prepare students for enterprise networking. Simulation tools help students hone their troubleshooting skills and practice what they learn. Within the IT Essentials course is a unit on Linux. It is strongly recommended that the NDG Linux Essentials course is used to teach this unit. NDG Linux is the starting point for learning Linux skills. It is designed for learners who are beginning to build Linux knowledge for a career in information technology. NDG Linux Essentials is an introduction to Linux as an operating system, basic open source concepts and the basics of the Linux command line. The course content is developed by experts and includes a Linux virtual machine as well as step-by-step labs which give students hands-on access to practice Linux command line concepts.</p>	17252N	2	10	W CC CTP CERT
<p><b>Cisco – CCNA: Switching Routing &amp; Wireless Essentials (RSE)</b> This course focuses on switching technologies and router operations that support small-to-medium business networks, including wireless local area networks (WLAN) and security concepts. Students perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN. Upon completion of this course, students will be able to: Work with routers, switches and wireless devices to configure and troubleshoot VLANs, Wireless LANs and Inter-VLAN routing; Configure and troubleshoot redundancy on a switched network using STP and EtherChannel. Explain how to support available and reliable networks using dynamic addressing and first-hop redundancy protocols</p>	17181N	2	11	W CC CTP CERT
<p><b>Cisco-Enterprise Networking, Security and Automation:</b> This third course focuses on the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks. It covers wide area network (WAN) technologies and quality of service (QoS) mechanisms used for secure remote access along with the introduction of software-defined networking, virtualization, and automation concepts that support the digitalization of networks.</p>	17253N	2	12	W CC CTC CERT

<p><b>Cisco-Cyber Operations:</b> This course develops career-ready skills needed to detect, monitor, analyze, and respond to ever growing cyber threats world-wide. In this course, students learn about cybercrime, cyberespionage, insider threats, advanced persistent threats, regulatory requirements, and other cybersecurity issues facing organizations. Students develop hands-on knowledge leveraging rich multimedia content and Cisco Packet Tracer activities. The course extends the cybersecurity material covered in Cybersecurity Essentials and prepares students for the Cisco Cybersecurity Operations certification.</p>	17255N	2	12	W CC CTC CERT
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**Career Pathway: Collision Repair**  
**Career Cluster: Transportation Technologies**

The Collision Repair program prepares students for a career in the auto finishing/ auto body repair field. It combines technical, academic and workplace skills in an integrated curriculum in accordance with all National Automotive Technicians Education Foundation (NATEF) and Inter-Industry Conference on Auto Collision Repair (I-CAR) directives. **Please Note:** NATEF/ASE **requires** an exit exam, which tests knowledge about automobiles learned over the 3 years in the course. A testing fee is required. This program is supplemented with courses in art, computers and business. Uniform and fees are required.

**Education Pathways:**

- **Four year college degree pathway:** Leads to careers such as collision repair business owner, insurance adjustor.
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as estimator, painter, and body man.

**Certification & Articulations:**

Students may earn up to 15 college credits from the Community College of Baltimore County at Catonsville and up to 21 credits from Pennsylvania College of Technology (Penn College) towards an Automotive Technology AAS Degree or an Automotive Technology Two-Year Certificate. After completion of the AAS Degree, students may earn an Automotive Technology Management BS Degree from The NATEF end of program assessment provides students the opportunity to also earn the ASE student achievement recognition certification. Fees are required.

**Sample Schedule:**

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	*Physics or another science
4	*Local, State, National Gov't.	*US History	*World History	Financial Literacy (Req. for Grad.)
5	Fit for Life/Health	Safety Procedures	Non-Structural Analysis	Painting and Refinishing
6	Art 1 (Fine Art Cr. Req. for Grad.)	Estimating and Blueprinting	Structural Analysis	Quality Control and Job Placement
7	TechEd Credit (Req. for Grad.)	First Aid&Safety/ Intro. to Weight Training	Elective	Prin. Bus. Manage. OR Elective
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	World Language Or Elective	World Language Or Elective

= CTE Courses  
  = Required  
  = Recommended  
  = Highly Recommended

- **PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. So slight changes to a program may occur during a student's four years at North Point.
- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Collision Repair Course Descriptions:

Course	Course #	Credits	Grade	Codes
<p><b>Safety procedures:</b> Topics of instruction include the following areas: safe use of hand tools, equipment, product safety and personal safety, proper chemical disposal, and federal-state-local regulations for safe disposal of chemicals. Students will learn the physical construction of the automobile.</p>	17281N	1	10	CTP
<p><b>Estimating and Blueprinting:</b> The course emphasizes the proper procedures for measuring; analyzing &amp; developing correct repair procedures for unibody &amp; body-over-frame vehicles. Student develop repair plans &amp; discuss their implementation. The course also emphasizes the restoring of vehicles to their pre-accident condition using manufacturers' &amp; industry recommendations. Areas of instruction will include the following: common abbreviations used in estimating, flat-rate labor times &amp; overlap labor times, how to write a rough estimate, use of computerized estimating software, and how to map/blueprint a vehicle for repairs.</p>	17282N	1	10	CC CTP CERT
<p><b>Non-Structural Analysis/Damage Repair:</b> This course will address an introduction to welding; personal &amp; environmental safety practices associated with clothing; respiratory protection, eye protection; entry level automotive service technology principles &amp; practices; hand tools; power tools/equipment; proper ventilation; proper handling/storage of materials, measuring &amp; mixing procedures, disposal of chemicals/materials in accordance with all governing agencies.</p>	17283N	1	11	CC CTP
<p><b>Structural Analysis/Damage Repair:</b> This course emphasizes the proper procedures for measuring; analyzing &amp; developing correct repair procedures for unibody and body-over-frame vehicles. Students develop repair plans and discuss their implementation. This course emphasizes the restoring of vehicles to their pre-accident condition using manufacturers' and industry recommendations. Students utilize I-CAR Live Curriculum and NATEF Collision Repair program Standards/Task List.</p>	17284N	1	11	CC CERT CTC
<p><b>Painting and Refinishing:</b> Students will develop diagnostic, technical and academic skills through their participation in classroom instruction and hands-on applications. Units to include: identification &amp; correction of defects, surface preparation, paint mixing &amp; matching, paint preparation and application and final detailing.</p>	17285N	1	12	CC CTP CERT
<p><b>Quality Control and Job Placement:</b> This course provides the student with the knowledge and skills to pass the NATEF Painting &amp; Refinishing NA3SA Exam and immediately enter the workforce or attend postsecondary education/training. Students will learn the business end of Collision Repair. Those who are successful in the program may be able to participate in work related internships.</p>	17286N	1	12	

## Career Pathway: Construction Design & Management

### Career Cluster: Construction and Development

The **Construction Design and Management** program is a five course CTE Program of Study. Students to develop an understanding of the design and construction process. Each course uses a project-based learning approach to advance students' understanding of the *design-build-maintain* process. Advanced architectural drafting and design skills are developed through lab-based instruction using Autodesk software tools (AutoCAD and Revit Architecture). Throughout the program, students will develop a portfolio to demonstrate knowledge of each phase of the design and construction management process. Students will also have the opportunity to earn industry certifications: NCCER-Core, Revit and AutoCAD. (fee required)

### Education Pathways:

- **Four year college degree pathway:** Construction Industry: (commercial, institutional, industrial, residential), Consulting: (estimator, scheduler, program manager), Government Agencies: Financial Institutions: (banks, savings and loans), Additional fields include: Draftsperson/Designer, Engineering (Field, Project, Civil, etc), Architect (landscape, residential).
- **Two year technical school, apprenticeship or military pathway:** Equipment Operator, Estimator, Foreman Inspector, Project Coordinator, Project Manager, Safety Officer Scheduler

### Certification & Articulations:

Graduates meet Apprenticeship Training requirements and may earn industry certification and college credit. NCCER-Core, Revit and AutoCAD. Students may earn 3 credits from Morgan State University and University of MD Eastern Shore.

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	*Physics or another Science
4	*Local, State, National Gov't.	*US History	*World History	Financial Literacy (Req. for Grad.)
5	Computer Assisted Drafting & Design (CADD)	Introduction to Construction Design & Management	Principles of Construction Design	Advanced Construction Management
6	Fit for Life/Health	REVIT: 3D Architectural Drafting	Advance Design and 3-D Modeling	Advanced Construction Applications and Certifications
7	Fine Art Credit (Req. for Grad.)	First Aid & Safety/ Intro. To Weight Training	Exploring Computer Science (Tech.Ed. Req. for Grad.)	Advanced Construction Applications and Certifications
8	World Language (Spanish preferred) (2yrs. Rec.)	World Language (Spanish preferred) (2yrs. Rec.)	Architecture & Interior Design or Elective	Prin. Of Bus.Man. or Elective

= CTE Courses
  = Required
  = Recommended
  = Highly Recommended

- **PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's four years at North Point.
- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Construction Design & Management:

Course:	Course #	Credits	Grade	Codes
<b>Computer Assisted Drafting &amp; Design (CADD):</b> This course provides the opportunity for students to understand basic, mechanical drawing concepts through the use of computer-assisted design & drafting software. CADD is the foundation course for numerous technical & engineering career fields.	137083	1	9	CERT
<b>Introduction to Construction Design and Management:</b> This course provides an overview of the design and construction process as well as an introduction to the many career options within the field of construction. Students will be introduced to core concepts in design and construction including: construction methods and materials; fundamental elements of design; and innovative technologies including Green Construction and Design. Students will be introduced to design software as they complete basic design projects, such as a bridge design, floor plans and elevation plans. This course also includes career exploration activities and research regarding the construction industry.	17061N	1	10	CTP
<b>REVIT: 3D Architectural Drafting:</b> <b>(prerequisite: Completion of CADD )</b> This course will provide the opportunity for students to understand building information modeling concepts by adding to the course content previously taught in CADD. REVIT enables students to create a 3D architectural project models for numerous technical and engineering career fields.	137084	1	10	CERT
<b>Principles of Construction Design:</b> This course provides students with an in-depth understanding of the construction design process. Students will complete a series of increasingly complex construction design projects in which they incorporate all aspects of the construction process, including zoning and regulation requirements; construction methods and materials, energy conservation; surveying; and project planning. Students will use design software to generate site plans (topography) as well as detailed building plans. Portfolios are used to show the developmental stages of a design project. Students will work in teams to develop each aspect of a construction project including developing a proposal, site plans, and construction management documents.	17062N	1	11	CTP
<b>Advance Design and 3-D Modeling:</b> Students will work in teams to fully develop designs and a construction management plan for a pre-determined site. In this year-long project, students begin with the legal description and	17063N	1	11	CTC

topography of the site and create a proposal for development. The construction design project must meet the client's needs, budget, and the site characteristics. Students will generate a series of plans to be included with the proposal for submission to an industry review panel for approval. Upon completion of the course, students will demonstrate advanced design/drafting skills and be prepared for the AutoCAD certification exam.				
<b>Advanced Construction Management:</b> This course builds on an understanding of the construction design process to advanced knowledge and skill in construction management. In this course, students will be required to work in teams to complete a project from existing plans. The year-long project will focus on building codes and standards, coordination of the construction process, estimating, planning and scheduling; and site management. Students will complete a portfolio of their design and construction management projects for review by an industry panel	17065N	1	12	CTP
<b>Advanced Construction Applications and Certification:</b> The first three courses, <i>Introduction to Construction Design &amp; Management</i> , <i>Principles of Construction Design</i> , and <i>Advanced Design &amp; 3D Modeling</i> prepare students to take exams for AutoCAD credentialing. As students progress into the advanced courses and use BIM technology, they may also prepare for Revit Architecture certification. Students will complete their Capstone Project.	17064N	2	12	CERT

These codes appear with course descriptions where appropriate: ATE = Advanced Technology Credit; CC = may be eligible for college credit; CTP = Maryland State Dept. of Education Approved Career Technology Program; CTC = CTP Concentrator Course; EOC = End-of-Course Assessment; FA = Fine Arts; TE = Technology Education; W = Weighted, CERT = End of program certification.

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**Career Pathway: Cosmetology**  
**Career Cluster: Consumer Services,**  
**Hospitality & Tourism**



Cosmetology is governed by the State Board of Cosmetology and prepares students to be licensed in the field of Cosmetology. The program prepares individuals to take the Maryland State Board of Cosmetology Licensure test. Students are instructed in the art and science of cosmetology as well as all aspects of the industry. Emphasis is placed on safety, sanitation and hygiene as well as State Board of Cosmetologists' rules and regulations. Related areas of instruction include human relations; anatomy and physiology; mathematics and measurement; analysis, diagnosis and histology of hair, skin and nails; chemistry which includes chemical textured hair services; fundamentals of electricity; product knowledge; customer relations; and employability skills. Salon management is an integral part of the classroom and clinical experience.

The 1,500 hour program includes classroom instruction, clinical experience, related mentored work-based learning experience and a senior capstone project. Regular attendance is critical as is competence in the areas of verbal aptitude, perception, motor coordination, finger and manual dexterity. The two part State exam must be completed prior to graduation in order to receive the 1500 hours. **Upon successful completion of 1,380 hours, the student will be required to take the Maryland State Board of Cosmetologists' Theory portion of the exam.** **Upon successful completion of 1500 hours, the student will be required to take the Practical portion of the Maryland State Board of Cosmetologists' examination.** Additionally, students are required to take part in public service activities practiced outside the regular classroom. Uniform and fees are required.

**Sample Schedule:**

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	Mastery of Cosmetology
4	*Local, State, National Gov't.	*US History	*World History	Mastery of Cosmetology
5	Fit for Life/Health	Principles & Practice of Cosmetology	Theory & Application of Cosmetology	Mastery of Cosmetology
6	Art 1 Fine Art Credit (Req. for Grad. and Req. by Program)	Principles & Practice of Cosmetology	Theory & Application of Cosmetology	Mastery of Cosmetology
7	TechEd Credit (Req. for Grad.)	Financial Literacy (Req. for Grad.)	Theory & Application of Cosmetology	AP Anatomy and Physiology or Introduction to Anatomy & Physiology
8	World Language (2yrs. Rec. )	World Language (2yrs. Rec.)	Theory & Application of Cosmetology	Principles of Bus. Management or Elective

= CTE Courses
  = Required
  = Recommended
  = Highly Recommendations

- **PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's four years at North Point.
- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Education Pathway:

- Leads to a career as a Licensed Cosmetologist.
- **College pathway:** Studies in business and accounting may lead to salon ownership.

### Cosmetology Course Descriptions:

Course:	Course #	Credits	Grade	Codes
<b>Principles and Practice of Cosmetology:</b> The first year cosmetology course will expose students to: cosmetology history; professional image; communicating for success; infection control; properties of the hair and scalp; the principles of hair design; shampooing, conditioning and applying rinses; hairstyling principles and practices; skin and its disorders; nails and their disorders. In the course of the year, students are expected to take advantage of the opportunity to earn 500 hours towards the amount required for licensing. Hours will be earned in Cosmetology 1 class, and work completed with the Drama Department and Skills USA.	17074N	2	10	
<b>Advanced Cosmetology - Theory and Application:</b> Students will build on and extend the skills gained in the first year course, and work to have accumulated 1,000 hours by the end of the year. Students will master manicuring, pedicuring, nail art, nail sculpturing, facials, massaging. After a student accumulates 1,000 hours, s/he is required to work in a salon. Skills taught include permanent waving; hair cutting; removing unwanted hair, chemical hair relaxing and hair coloring.	17075N	4	11	
<b>Mastery of Cosmetology:</b> The senior year concentration is on preparing and taking the state board exam for licensing. At the completion of 1,500 they must take the Maryland Board of Cosmetology exam <u>prior</u> to graduation from high school. In addition to the two required state exams, students must complete a cosmetology portfolio, salon management research project, chemistry project, sculpture nail project, and a nail disease research report.	17076N	4	12	CERT CTC

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**Career Pathway: Criminal Justice,  
Law and Society**  
Career Cluster: Human Resource Services



**\*Membership in the Explorers Program is required**

Criminal Justice prepares students for employment in the law enforcement field. The objectives of this course are to encourage law-abiding behavior; to develop informed and responsible citizens; to teach critical thinking and organizational skills; to foster qualities of self-reliance, individual discipline, and leadership. The program prepares students for immediate entry into the private security field, corrections and loss prevention, and provides students with the opportunity to gain valuable experience toward a college degree in law enforcement. Classroom instruction, field trips, and shadowing experiences are all important components of this program. Uniforms are provided to the students and must be worn twice a week. **\*Community service is required.**

**Education Pathways:**

- **Four year college degree pathway:** Leads to careers such as police officer, forensic investigator, parole officer, federal law enforcement officer
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as paralegal, corrections officer, security guard, private investigator, bail enforcer, loss prevention officer

**Sample Schedule:**

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	Contemporary Issues in Criminal Justice, Law & Society
4	*Local, State, National Gov't.	*US History	*World History	Criminal Justice Capstone & Internships
5	Fit for Life/Health	Introduction to Criminal Justice	Advanced Topics in Criminal Justice	Criminal Justice Capstone & Internships
6	Fine Art Credit (Req. for Grad.)	Introduction to Criminal Justice	Advanced Topics in Criminal Justice	Criminal Justice Capstone & Internships
7	TechEd Credit (Req. for Grad.)	Psychology/Sociology or Elective	Financial Literacy (Req. for Grad.)	Adv. Tech. Ed. or Elective
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	Elective or Speech	Elective (Social Studies Rec.)

= CTE Courses

= Required

= Recommended

## Certification & Articulations:

Students with a minimum of a B average may earn 6 college credits towards an Associates Degree in Criminal Justice through an articulation agreement with the College of Southern Maryland. (CJS1015 and CJS2010)

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- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

## Criminal Justice, Law & Society Course Descriptions:

Course	Course #	Credits	Grade	Codes
<b>Introduction to Criminal Justice:</b> This course provides an overview of the American system of criminal justice. It may include past, present and future theories of justice, criminal law, policing, courts and the associated pre and post-trial legal processes, punishment and corrections, and juvenile justice. Students will also concentrate on standard operating procedures and rules, fingerprinting, drill, traffic direction, radio procedures, ethics in policing, use of force, handcuffing, officer safety, patrol procedures, making an arrest, and first aid/CPR.	17092N	2	10	W CTP
<b>Advanced Topics in Criminal Justice:</b> This course provides an opportunity for students to gain advanced understanding of selected topics in criminal justice. Topics may include criminal courts and the legal process, criminal justice ethics, punishment and corrections, and the juvenile justice. All of the skills obtained in the first year course will be maintained and extended. The largest area of study will be criminal law. Scenarios will be utilized as a teaching technique.	17093N	2	11	CC W CTP
<b>Contemporary Issues in Criminal Justice, Law &amp; Society:</b> This course provides opportunities for students to explore contemporary issues in the fields of criminal justice, law and society. Students examine topics that have become of significant interest within today's society such as forensic testing, public safety, environmental law, ethics, police and society, and homeland security. All skills obtained in the first and second course will be maintained, extended and practiced. Scenarios again will be utilized.	17094N	1	12	CC W CTC
<b>Criminal Justice Capstone and Internships:</b> Students intern at many law enforcement agencies around the county where they apply academic and technical skills to real-life applications in order to develop employability.	17095N	3	12	CTP

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**Career Pathway: Culinary Arts****Career Cluster: Consumer Services, Hospitality and Tourism**

The Culinary Arts program partners with the American Culinary Federation (ACF) to prepare students for successful careers in the food and beverage industry. Students may earn industry certification and credit toward becoming a Certified Fundamental Chef (CFC) or a Safe Service Manager or a Food Handler. Culinary Arts students will develop a variety of skills relating to food service, including services by restaurants, catering and institutional food providers and other recreational and entertainment venues.

Classroom and on-the-job experiences include laboratory, theory, community and shop work as they relate to planning, selecting, purchasing, preserving, preparing and serving food. An emphasis on culinary nutrition will enable students to create successful menus as culinary professionals. Commercial kitchen management, food safety and sanitation, food preparation and presentation will be emphasized. Uniform and fees are required.

**Education Pathways:**

- **Four year college degree pathway:** Leads to careers such as executive chef, dietician/nutritionist, assistant restaurant manager, food purchasing agent, food services supervisor
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as sous chef, kitchen manager, pastry prep, garde manager, maitre'd, cook

**Certification & Articulations:**

Culinary Arts students may earn 18 college credits from Stratford University and up to 10 credits from Anne Arundel CC through a Maryland State Department of Education (MSDE) statewide articulation agreement, 9 credits from Johnson & Wales and 3 credits from the Culinary Institute of America.

**Sample Schedule:**

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	Advanced Professional Cooking/Baking
4	*Local, State, National Gov't.	*US History	*World History	Advanced Professional Cooking/Baking
5	Fit for Life /Health	Culinary Basics & Principles	Professional Cooking	Advanced Professional Cooking/Baking
6	Art 1 (Fine Art Req. for Grad.)	First Aid & Safety/ Intro. Wt.Train.	Professional Cooking	Financial Literacy (Req. for Grad.)
7	TechEd Credit (Req. for Grad.)	Elective	Food & Nutrition Science or Elective	Principles of Business Management
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	Speech or Elective	Anatomy & Physiology or Psych./Sociology or Elective

 = CTE Courses  = Required  = Highly Recommended  = Recommended

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- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Culinary Arts Course Descriptions:

Course:	Course #	Credits	Grade	Codes
<b>Culinary Basics: Foundations of Professional Cooking</b> The students in the first year program will learn about the origins of classical and modern cuisine and the standards of culinary professionalism. Additional topics taught include units on knife skills, safety & sanitation, tools & equipment, purchasing/receiving, basic baking, soups/stocks and mother sauces, produce, food preparation and production, employability skills, and hands on catering.	17204N	1	10	CTP
<b>Professional Cooking:</b> In the second year of the program, students will review knife skills, safety & sanitation, weights/measures, purchasing/receiving, cooking principles, and culinary terms & definitions. They will extend their knowledge by completing phase 2 of soups/stocks and Sauces 2. Additional units taught include Garde Manger, bread/baking 2, food preparation/production, salads, appetizers, cakes/pastries, preparation of group meals. Students will participate in the on-sight farm and develop Farm to Table menus. Catering will continue both on and off premises. Students begin to develop their individual portfolios.	17205N	2	11	CC W CTP
<b>Advanced Professional Cooking/Baking:</b> In the last year of the program, students will sit for their <i>Serve Safe Certification</i> . Additional units taught are meat & seafood fabrication, bread/baking 3, review of all previous units, continue with the Farm to Table initiative and catering. The Capstone project will be participation in the <i>Iron Chef Mystery Basket</i> competition. Students may have the opportunity to compete in the SkillsUSA regional, state and national competitions in a variety of Criminal Justice areas.	17206N	3	12	CC W CERT CTC

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## Career Pathway: Cisco Cyber Security

### Career Cluster: Information Technology

The Cisco CyberSecurity program is an adjunct to the Cisco Networking Academy, which is a nationally recognized program that prepares students for successful careers in information technology fields. It prepares high school students with the professional skills they require to pursue quality academic and professional opportunities. Particular emphasis is given to using decision-making and problem-solving techniques in the application of science, mathematics, communication and social studies concepts to solve networking problems.

Topics relating to Cybersecurity will be interwoven throughout the course of study. Particular emphasis is placed on ethics, operating systems security, vulnerability assessment, legal issues, the hacker culture, intellectual property laws, encryption/decryption algorithms and technologies, protection of critical infrastructure and disaster recovery. Lab fees and certification fees are required.

### Education Pathways:

- **Four year college degree pathway:** Leads to careers such as network design engineer, Cyber Security analyst, Cisco engineer, senior systems analyst, telecommunication engineer, IT project manager, technical sales executive
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as network administrator, network systems engineer, network technician

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	Algebra 1 or Honors Geometry	Honors Geometry or Honors Alg. 2	Honors Alg. 2, Adv. Alg. w/Trig. or *PreCalc.	*AP Calculus, PreCalc or AP Stat
3	*Earth Systems	*Biology	Chemistry, AP Physics 1 or AP Science	AP Science
4	*Local, State, National Gov't.	*US History	*World History	Financial Literacy (Req. for Grad.)
5	Cybersecurity Essentials	Intro. To Networks (CCT)	Switching Routing and Wireless Essentials	CCNA Security (CompTIA Security+)
6	Fit for Life /Health	Intro. To Networks (CCT)	Switching Routing and Wireless Essentials	CCNA Cyber Ops
7	Fine Art Credit (Req. for Grad.)	AP Computer Principles or Exploring Computer Science (TechEd Req. for Grad)	Introduction to Computer Programming or Elective	AP Computer Science A Or Elective
8	World Language (2yrs. Rec..)	World Language (2yrs. Rec.)	World Language or Elective	Elective

= CTE Courses    
 = Required    
 = Recommended    
 = Highly Recommended

- **PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's four years at North Point.
- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Certifications and Articulations:

Industry certifications available are the CompTIA Security+, CCT, Certified Entry Level Networking Technician and Security +, CCNA Cyber Ops. College articulation agreements are currently pending.

### Cyber Security Course Descriptions:

Course	Course #	Credits	Grade	Codes
<b>Cybersecurity Essentials:</b> This course combines Cisco's Introduction to Cybersecurity and Cybersecurity Essentials courses where students start by exploring the broad topic of cybersecurity in a way that matters to them. They learn how to protect their personal data and privacy online and in social media, and learn why more and more IT jobs require cybersecurity awareness and understanding. From there, they develop foundational understanding of cybersecurity and how it relates to information and network security. Students are introduced to the characteristics of cyber crime, security principles, technologies, and procedures to defend networks. Through interactive, multimedia content, lab activities, and multi-industry case studies, students build technical and professional skills to pursue careers in cybersecurity.	17183N	1	9	W CTC CERT
<b>Intro. To Networks (ITN):</b> This course is designed for students with basic PC usage skills. It introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. This course provides students with hands-on classroom and laboratory work in current and emerging networking technology that emphasizes practical experience. The career-oriented approach to learning networking empowers students to enter employment or further their education and training in the computer-networking field. Also, instruction and training are provided in the proper care, maintenance, and use of networking software, tools, and equipment. A task analysis of current industry standards and occupational analysis was used to develop the content	27252N	2	10	W CC CERT CTP
<b>Switching Routing and Wireless Essentials:</b> This course offers in-depth coverage of the current risks and threats to an organization's data, combined with a structured way of addressing the safeguarding of these critical electronic assets. The course provides a foundation for those responsible for protecting network services, devices, traffic, and data.	TBD	2	11	W CTP CC CERT
<b>CCNA Security (CompTIA Security+):</b> Upon completion of this course in the 1 <sup>st</sup> semester, the student will be able to gain a clearer understanding of certain ethical issues in information technology as well as an understanding of how ethical theory can be applied to a discussion and analysis of those issues. In critically examining a cluster of information technology issues within the framework of ethical theory, students can develop a rational, coherent, consistent, and systemic approach to addressing moral issues in information technology. (CompTIA) <a href="#">Security+</a> certification exam.	17182N	2	12	W CC CERT CTP
<b>CCNA Cyber Ops:</b> This course is offered during the 2 <sup>nd</sup> Semester to develop career-ready skills needed to detect, monitor, analyze, and respond to ever growing cyber threats world-wide. In this course, students learn about cybercrime, cyberespionage, insider threats, advanced persistent threats, regulatory requirements, and other cybersecurity issues facing organizations. Students develop hands-on knowledge leveraging rich multimedia content and Cisco Packet Tracer activities. The course extends the cybersecurity material covered in Cybersecurity Essentials and prepares students for the Cisco Cybersecurity Operations certification.	27255N	2	12	W CC CERT CTP

## Career Pathway: Drafting & Design Technology

### Career Cluster: Manufacturing, Engineering & Technology

In Drafting and Design, students start with the basics of mechanical drawing, then move into orthographic projections, sectional views and pictorial plans for use in many engineering fields. Drafting requires students to have a strong conceptual foundation. Focus is on: equivalency & linearity, modeling, geometric objects & algebraic expressions. Other courses suggested for this major are Drawing and Design, Architecture & Interior Design, and Physics.

### Education Pathways:

- **Four year college degree pathway:** Leads to careers such as architect, civil engineer, specifications writer, environmental scientist
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as drafting technician, CAD operator

### Certification & Articulations:

Students with a minimum of a B average may earn up to 9 college credits through an articulation agreement with the College of Southern Maryland. (DFT 1200, DFT 1320, DFT 1340)  
Students are required to take the Apprentice Drafter certification through the American Drafting & Design Association (ADDA) in their senior year. Option of AutoDesk certification. A testing fee is required.

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Physics or AP Physics 1	Chemistry or AP Science
4	*Local, State, National Gov't.	*US History	*World History	Advanced Design & 3D Modeling
5	Fit for Life/Health	Intro. Construct. Dev./Drafting	Principles of Drafting & Construction Design	Advanced Design & 3D Modeling
6	Exploring Computer Science (TechEd Req. for Grad.)	CADD – Computer Assisted Drafting & Design (Req. by program)	Principles of Drafting & Construction Design	Drafting & Construction Design Capstone
7	Art 1 Fine Art credit (Req. for Grad. Also Req. by Program)	Art 2 or Architecture & Interior Design or Elective	REVIT: 3D Architectural Drafting	Financial Literacy (Req. for Grad.)
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	Drawing/Design or Elective	Adv. Tech. Ed. Or Elective



= CTE Courses



= Required



= Recommended



= Highly Recommended

- **PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's four years at North Point.
- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

## Drafting & Design Technology Course Descriptions:

Course	Course #	Credits	Grade	Codes
<b>Introduction to Construction Development:</b> In this course, students will concentrate on basic drafting skills, including exploring the various aspects of sketches; demonstrating the use of English and metric scales; drawing media and projection lines; showing views in an orthographic projection; executing basic drawing line commands; creating text using appropriate style and size.	172015	1	10	CTP CERT
<b>Computer Assisted Drafting &amp; Design (CADD):</b> This course provides the opportunity for students to understand basic, mechanical drawing concepts through the use of computer-assisted design & drafting software. CADD is the foundation course for numerous technical & engineering career fields.	137083	1	10	CERT
<b>Principles of Drafting &amp; Construction Design:</b> The curriculum includes the origin and basics of drafting: line types, sketching, orthographic projection, pictorials, dimensioning, shading, etc. Students will be introduced to skills used in surveying, civil engineering and mechanical drafting. Students will be able to read, understand and use the "language of industry." They will develop professionally appropriate penmanship, in order to enable clear representation and understanding of the product. Students will develop complex mechanical drawings and demonstrate the ability to use and apply fractions, decimals, conversions, ratios and other basic math skills. AutoDesk Design Academy will be taught as the software used in the profession.	17208N	2	11	CTP CC W
<b>REVIT:3D Architectural Drafting:(Prerequisite: Completion of CADD)</b> This course will provide the opportunity for students to understand building information modeling concepts by adding to the course content previously taught in CADD. REVIT enables students to create a 3D architectural project models for numerous technical and engineering career fields.	137084	1	11	CERT
<b>Advanced Design &amp; 3D Modeling:</b> Students are introduced to advanced architectural drafting techniques and methods. They work together as well as individually, to research, design and construct models. Application of basic local building codes for residential construction is taught. This course provides students with experience in advanced concepts of the construction design process. At completion, students have the knowledge and skills to sit for an industry certification.	17210N	2	12	CC W CTC
<b>Advanced Construction Management Capstone:</b> The course builds on an understanding of the construction design process in a capstone project, with advanced BIM knowledge and skill in construction management. Students work in small groups or independently to develop a project that utilizes all the skills and knowledge that have been mastered throughout the Drafting and Design Technology pathway.	17211N	1	12	CTP CC W CERT

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## Career Pathway: Education Careers

Early Childhood Development & Teacher Academy of Maryland

Career Cluster: Human Resource Services

The Education Careers program prepares future teachers and combines the Teacher Academy of Maryland (TAM) and Early Childhood Studies. It explores the teaching professions in early childhood, elementary and secondary education. Units of study include human growth and development, learning theory, curriculum and instruction. Internships at the level a student wishes to teach are completed senior year. Students plan and implement curriculum strategies in a supervised preschool and child care facility.

Successful completion of all required competencies with 85% or better and a final grade of a "B" or better will meet the training requirements of the Maryland State Department of Education Office of Child Care entry level employment (90 hour equivalent). Completion of all education-related courses with a grade of A or B will permit advanced placement at the College of Southern Maryland in the Early Childhood Degree or Certification Program. **Industry Certification (Para-Pro Exam or Praxis Exam) is required.** Uniform and fees may be required.

### Career Pathways:

- **Four year college degree pathway:** Leads to careers such as Pre-K to 12<sup>th</sup> grade teacher, counselor and administrator.

### Certification & Articulations:

Students with a minimum of a B average may earn 9 college credits at the College of Southern Maryland. Additional colleges granting credits include: Bowie State (3), College of Southern Maryland (3) Coppin State (3), Frostburg State (6), Hood College (3), Morgan State (3), St. Mary's College of MD (4), Salisbury (3), Stevenson (3), Towson (3). A certificate may be granted by the Maryland State Department of Education Child Care Administration entry level employment (90 hour equivalent).

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	Financial Literacy (Req. for Grad.)
4	*Local, State, National Gov't.	*US History	*World History	Early Childhood Education/Childcare II
5	Fit for Life/Health	Human Growth & Development	Early Childhood Education/Childcare I	Early Childhood Education Capstone
6	Fine Art Credit (Req. for Grad.)	First Aid&Safety/ Aerobics, Wt.Train.	Early Childhood Education/Childcare Internship	Foundations of Curriculum & Instruction
7	TechEd Credit (Req. for Grad.)	Elective	Teaching as a Profession	Education Academy/Internship
8	World Language (2 yrs. Rec.)	World Language (2 yrs. Rec.)	Elective	Elective

 = CTE Courses

 = Required

 = Recommended

 = Highly Recommended

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## Education Careers Course Descriptions:

Course	Course	Credits	Grade	Codes
<b>Human Growth and Development:</b> (TAM) This course focuses on human development from birth through adolescence. Emphasis is placed on theories of health & safety concerns & contemporary issues. Students explore special challenges to growth & development. They have opportunities for guided observation of children from birth through adolescence in a variety of settings to help them further understand theories of human development.	12053N	1	10	CC CTP
<b>Early Childhood Education/Childcare I:</b> (EC) The course provides students with an introduction to the theory and practical skills to work with small or school-aged children as providers of home, family, residential, or institutional-based childcare services. Topics may include child growth and development, nutrition, recreation, planning and supervision.	C1763N	1	11	CC W CTP
<b>Teaching as a Profession:</b> (TAM) This course focuses on the profession of teaching – its history, purposes, issues, ethics, laws and regulations, roles and qualifications. Emphasis is placed on identifying the current, historical, philosophical and social perspectives of American education, including trends and issues. Students will explore major approaches to human learning. Students will continue to develop the components of a working professional portfolio.	12054N	1	11	CC CTP
<b>Early Childcare Education/Childcare Internship:</b> (EC) The course reviews higher-level care, teaching and observation skills through work based learning field experiences. Students may work to earn the 500 hours required to meet childcare certification requirements.	12058N	1	11	CC W CTC
<b>Early Childhood Education/Childcare II:</b> (EC) This course covers legal and ethical requirements to become a childcare provider and established research-based methods of teaching and working with children. Topics may include child abuse and neglect prevention, parent-child relationships, and applicable legal and administrative requirements, use technology as a teaching tool, and applying developmentally appropriate teaching practices.	C1764N	1	12	CC W CTP
<b>Early Childhood Education Capstone:</b> (EC) As a compilation of the Education Careers pathway, students complete an individualized program-related capstone project. By completing this project, students walk away with an extensive and in-depth understanding of the field of education.	12059N	1	12	CC W CTP
<b>Foundations of Curriculum/Instruction:</b> (TAM) This course explores curriculum delivery models in response to the developmental needs of all children. Emphasis is placed on the development of varied instructional materials & activities to promote learning, classroom management strategies, & a supportive classroom environment. Students will explore basic theories of motivation that increase learning & will participate in guided observations & field experiences to critique classroom lessons in preparation for developing & implementing their own.	12056N	1	12	CC CERT CTC
<b>Education Academy/Internship:</b> (TAM) The internship at a child care, elementary, middle or high school is the culminating course of the Teacher Academy Program. Students have an opportunity to integrate content and pedagogical knowledge in an educational area of interest. They have an opportunity to extend and apply their knowledge about teaching in a classroom setting under the supervision of a mentor teacher.	12057N	1	12	CC W CERT CTP

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## Career Pathway: Electrical Construction

### Career Cluster: Construction and Development

The Electrical Construction program covers a wide variety of areas within the Electrical Industry, to include: Electrical Safety, AC/DC Electrical Theory, use and application of the National Electrical Code, Conduit Bending, Blueprint Reading, NEC Calculations, proper use of Electrical Test Equipment, Residential and Commercial wiring, and Electrical Motor Controls. The program has a strong partnership with local industry groups, and students can earn advanced standing by completing this program. The National Center for Construction Education and Research (NCCER) provides standards, curriculum and assessments for this program. Students need a strong background in math to be successful in Electrical Construction. Uniform may be required. **Please Note:** NCCER requires periodic certification exams, which have testing fees.

### Education Pathways:

- **Four year college degree pathway:** Leads to careers such as electrical engineer, construction management
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as electrical apprentice, journeyman electrician, master electrician, construction foreman, estimator, electrician's helper, business owner

### Certification, Articulations and Apprenticeships

- NCCER certification in Construction Core and Electrical Level 1 Curriculum
- Articulation agreement with the College of Southern Maryland for 22.5 CEUs (TEC-9300, TEC- 7600, TEC-8610) and entry into CSM's electrical apprenticeship training TEC-8620 for qualified students
- Various Apprenticeship opportunities for qualified students

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	*Physics
4	*Local, State, National Gov't.	*US History	*World History	Electrical Construction 2
5	Fit for Life/Health	Foundations of Building & Construction Technology	Electrical Construction 1	Electrical Construction 2
6	Fine Art Credit (Req. for Grad.)	First Aid&Safety/ Intro. to Wt.Trng.	Electrical Construction 1	Electrical Construction 2
7	TechEd Credit (Req. for Grad.)	Advanced Tech Ed credit or Elective	Financial Literacy (Req. for Grad.)	Principles of Business Man.
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	CADD or Elective	Elective

CTE = Courses 
  = Required 
  = Recommended 
  = Highly Recommended

- PLEASE NOTE:** Required and recommended courses, course descriptions and course codes are continually being refined and updated. Slight changes to a program may occur during a student's four years at North Point.
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- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Electrical Construction Course Descriptions:

Course	Course #	Credits	Grade	Codes
<b>Foundations of Building &amp; Construction Technology:</b> Electrical Construction students will be involved in learning the basics for success in the electrician's field, which includes basic construction safety, construction math, hand and power tools, reading construction drawings, communication and employability skills, materials handling, and demonstrating switch control of lighting circuits; NCCER construction core certification exams.	172017	1	10	CTP CERT
<b>Electrical Construction 1:</b> The electrical construction industry encompasses many fields. The junior year of this program provides foundational training in the many aspects of the electrical construction industry. Students will learn the skills and obtain knowledge necessary to work safely with the tools and materials of the trade. Students will concentrate on safety; application of mathematical skills; DC electrical theory; NEC standards, electrical conductor types and sizes; blueprint reading; residential wiring; and conduit bending. The course covers the construction, installation, and troubleshooting techniques of electrical systems. The student is taught to test, measure, and insure the proper functions of electrical measuring instruments. Real world application of electrical skills are incorporated as the students complete outside projects. Various NCCER Electrical Level 1 certification exams taken.	17134N	2	11	CC CERT CTP
<b>Electrical Construction 2:</b> All skills from Electrical Construction 1 are reviewed and taken to an advanced level. Topics taught include electrical service load calculations, electrical motor control; National Electrical Code; AC Theory; and transformers. Students will be given an introduction to programmable logic controllers; variable frequency drives; fire alarm systems; and optical fiber when possible. Students will also be involved in designing and installing the electrical system in a house project off site, when available. Real world application of electrical skills are incorporated as the students complete various outside projects. Opportunities to complete the IBEW/JATC aptitude test on site will be available.	17135N	3	12	CC CERT CTC

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**Career Pathway: Engineering**

Career Cluster: Manufacturing, Engineering and Technology

**PREREQUISITES: Successful completion of Algebra 1 by the end of eighth grade.**

The North Point Engineering program is designed for **college-bound students who have a strong math and science background and interest, and who wish to pursue a career in engineering.** This program encompasses a wide variety of engineering principles including the design process, manufacturing processes, technological systems and problem-based learning used in a variety of engineering field. Through their studies, students will have the opportunity to enhance and extend their study of engineering principles. Students will examine electronics, computer applications, robotics, CADD, materials science, physics and computer engineering programming languages such as MATLAB. Analyzing, synthesizing and evaluating data will be stressed through laboratory experiences and project design culminating in a senior research and design patent project. Students in this program will need to earn two Advanced Technology Education credits to meet graduation requirements. A minimum of two years of a foreign language are recommended.

**Education Pathways:**

- **Four year college degree pathway:** Leads to careers in all areas of engineering – aeronautical, automotive, biomedical, chemical, civil, computer, electrical, environmental, industrial, materials, mechanical, nuclear, marine, optical, petroleum.

**Sample Schedule:**

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	Honors Geometry	*Algebra 2 Honors	*PreCalculus	*AP Calculus
3	Honors Biology	AP Physics 1	AP Physics 2	AP Physics C (Mechanics) or AP Statistics
4	*Local, State, National Govt.	*US History	*World History	Honors Organic Chemistry or AP Science
5	Introduction to Engineering	Engineering Fundamentals	Engineering Applications: (MAT SCI)	Advanced Engineering Research/Design
6	Fit for Life/Health	Computer Apps. For Engineers	Engineering Applications: (MAT LAB)	AP Science OR Elective
7	Fine Art Credit (Req. for Grad.)	Honors Chemistry	Exploring Computer Science (TechEd Req. for Grad.)	Financial Literacy (Req. for Grad.)
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec)	CADD or Elective	Internship or Elective

= CTE courses
  = Required
  = Recommended
  = **Highly Recommended**  
 (See ENG Teachers)

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### Engineering Course Descriptions:

Course	Course #	Credits	Grade	Codes
<b>Introduction to Engineering:</b> (Pre-requisite: Alg. 1) This is the introductory course for the Engineering Pathway. This course encompasses a wide variety of engineering principles including the design process, manufacturing processes, technological systems as well as a plethora of problem-based learning used in a variety of engineering fields. This course engages high school students through project and problem based learning. Problem solving and real world research are integral parts of this curriculum. A high level of math is required to solve many engineering and physics concepts taught, including vectors and kinematics.	172404	1	9	W
<b>Engineering Fundamentals:</b> (Pre-requisite: Honors Geometry and Intro. to Engineering.) All laboratory work, experimentation and engineering projects in this course will result from studies conducted in the AP Physics 1 course taken in conjunction with Engineering Fundamentals. Topics follow directly from the physics course and include measurement, motion, forces, work and energy, momentum, electricity, fluids, waves and optics. Students will gain experience in using a variety of scientific equipment. In addition to laboratory experiments, engineering projects will emphasize application of physics principles to real world engineering problems.	172414	1	10	W
<b>Computer Applications for Engineers:</b> (Pre-requisite: Honors Geometry and Intro. to Engineering.) Students will become literate in the computer tools engineers use. Students will be able to: program a scientific graphing calculator to store, input, loop, list and graph; build projects analyze engineering concepts using Autodesk Inventor consisting of 3-D modeling, constraining geometry and standard dimensioning; model and simulate various engineering principles; utilize all functions of Microsoft Excel including differentiation, integration and other pertinent engineering functions; utilize a programming language for engineering applications using Visual Basic. Creativity through design is continually encouraged.	172314	1	10	W
<b>Engineering Applications:</b> (Pre-requisite: Adv. Alg./Trig., Physics, Eng. Fund., Comp App. for Eng.) <b>(MAT SCI):</b> Students will explore properties of materials through an understanding of physics and basic chemistry. Different types of materials such as metals, ceramics and polymers will be examined. Students will be able to use their knowledge of MATLAB to analyze data collected in their materials science laboratories. <b>(MAT LAB):</b> Students will be introduced to MATLAB, a high-level language and interactive environment that enables engineers to perform computationally intensive tasks faster than with traditional programming languages such as C, C++ and Fortran.	C1711N	1	11	W
	C1712N	1	11	W
<b>Advanced Engineering Research and Design:</b> (Pre-requisite: Pre-Calculus, Chemistry, MATSCI, MATLAB) This capstone class consists of formal, independent research that may lead to a patent-based project which answers and supports an engineering question. When possible, students will have an outside professional mentor. A prototype and presentation will be made and presented by each student to an advisory board.	172424	1	12	W – AP

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## Career Pathway: Graphic Communications - PrintEd

### Career Cluster: Arts, Media and Communication

The Graphics Communication program is designed to give students an overall understanding of the graphing and printing industries and their major operations while teaching academic and technical competencies that lead to nationally recognized certifications. Students may gain certification in Introduction to Graphic Communication, Digital File Preparation and Advertising /Design from the Graphic Arts Education Research Foundation (GAERF). Students may also earn up to six college credits through an articulation agreement with the College of Southern Maryland (CSM) and Bridgemont Community & Technical College. Students will complete senior projects to build their portfolios and are required to take certification exams. Certification testing fees are required.

### Education Pathways:

- **Four year college degree pathway:** Leads to careers such as graphic designer, print and digital production supervisor, printing sales, purchasing agent, desktop publisher, pre-press manager, print buyer
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as estimator, assistant print shop manager, cost analyst, customer service representative, bindery and finishing technician, imaging specialist, press operator

### Certification & Articulations:

Students with a minimum of a B average may earn college credits through articulation agreements with: 6 credits at the College of Southern Maryland, 10 credits at Montgomery College and up to 16 credits at Bridgemont Community & Technical College. Students may also earn certification through the PrintED® National Accreditation and Certification Program in Introduction to Graphic Communication, Digital File Preparation and Digital Production Printing.

### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	AP Computer Science Principles
4	*Local, State, National Gov't.	*US History	*World History	Financial Literacy (Req. for Grad.)
5	Introduction to Graphic Communications	Graphic Communications	Digital Print Production	Graphic Design
6	Art 1 (Fine Art Credit Req. for Grad.)	Digital File Prep/Output	Screen Printing	Elective
7	Fit for Life/Health	Art 2 (Req. by program)	Exploring Computer Science (TechEd Credit Req. for Grad.)	Photography 1 or Elective
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	Suggested GRA Elective or World Lang.	GRA Internship (if qualified) or Elective



= CTE Courses



= Required



= Recommended



= Highly Recommended

### Suggested GRA Electives:

AP Art	Web Design 2	Yearbook
Photography 2	Marketing	Newspaper

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### Graphic Communications Course Descriptions:

Course:	Course #	Credits	Grade	Codes
<b>Intro. To Graphic Communications:</b> This course is designed to give the students a basic understanding of the printing and graphics industry, including the history of print, typography, an over view of flexography, gravure, screen printing, letterpress, with a focus on lithography.	17166N	1	9	
<b>Graphic Communications:</b> The students will learn how to take projects through the pre-press, press and bindery stages of the lithographic process. Students will operate equipment and work with software equivalent to what is used in commercial printing plants around the area. This course is designed to prepare the students for the Introduction to Graphic Communications certification exam, through the Print ED certification process.	17267N	1	10	CC CERT CTP
<b>Digital File Prep/Output:</b> This course is designed to further the student's knowledge of the pre-press process. Students will learn how to produce print-worthy material in industry standard software for page layout, image editing, and image creation. The students will also be introduced to basic design principles, including color, spacing, alignment, and more advanced typography. In this course students will spend most of their time in the computer lab. This course is designed to prepare the students for the Digital File Preparation certification exam, through the Print ED certification process.	17268N	1	10	CC CERT CTP
<b>Digital Print Production:</b> This course is the art of communication, stylizing, and problem-solving through the use of type, space and image. The field also requires creativity and the knowledge of ever changing technology. The competencies address copyright, ethics and intellectual property rights; creating a digital portfolio, typefaces, page layout, image capture, digital illustration and design principles, and corporate branding. Students demonstrate an understanding of additive and subtractive color, design a logo, create an illustration, and pitch an advertising concept.	17272N	1	11	CC CERT CTP

<p><b>Screen printing:</b> Students will learn the types of screen-printing equipment technologies that are commonly used, typical workflows to print a project and maintenance procedures as defined by industry standards; including understanding of various practices considered typical to the screen-printing industry; creating visual representation of ideas and messages by combing words and images, and problem-solving through the use of type, space, and image. The competencies include seven subsections: Technology; Design and Prepress; Frame and Mesh Preparation; Stencil and Screen Preparation; Print Production; Clean-up Process; and Math and Measurement.</p>	<p><b>17273N</b></p>	<p>1</p>	<p>11</p>	<p>CC CERT CTP</p>
<p><b>Graphic Design:</b> The culminating course provides advanced study into the most major facet of the graphics industry. Students will design and create multidimensional projects to target specific audiences. The daily activity is a combination of class projects and the production of live work contracted from other schools, non-profit organizations and the Board of Education. This course is designed to prepare the student for the Advertising &amp; Design certification exam, through the Print ED certification process.</p>	<p><b>17274N</b></p>	<p>1</p>	<p>12</p>	<p>CC CERT CTC</p>

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## Career Pathway: Welding Technology

### Career Cluster: Construction and Development

Students in the Welding Technology program learn to cut and weld ferrous and non-ferrous materials using oxyfuel, plasma, arc cutting and various cutting power tools and welding machines. College bound students in this program supplement the welding curriculum with engineering and computer courses. Students will complete modules from American Welding Society specifications for qualification and certification for entry level welders. The more modules a student completes, the higher his/her placement in the Sheet Metal Workers' Union Local #100 Apprenticeship programs or non-union jobs. Students may earn several welding certifications. Personal equipment and uniform are required. Testing fees are required.

#### Education Pathways:

- **Four year college degree pathway:** Leads to careers in all areas of welding and structural engineering.
- **Two year technical school, apprenticeship or military pathway:** Leads to careers such as iron worker, steamfitter, sheet metal mechanic or apprentice, project foreman

#### Certification & Articulations:

American Welding Society certification in:  
 SMAW certification test (D1.1 and/or D1.5)  
 FCAW certification test (D1.1 and/or D1.5)  
 GMAW certification test (D1.1)  
 GTAW certification to (D1.5)

Articulation agreement with Penn College, Williamsport, PA for Associate and Bachelor degrees in Welding Engineering.

#### Sample Schedule:

CLASSES	GRADE 9	GRADE 10	GRADE 11	GRADE 12
1	*English	*English	*English	*English
2	*Math	*Math	*Math	*Math
3	*Earth Systems	*Biology	*Chemistry	* Physics or another Science
4	*Local, State, National Gov't.	*US History	*World History	Financial Literacy (Req. for Grad.)
5	Fit for Life/Health	Foundations of Building & Construction Technology	Welding 1	Welding 2
6	Fine Art Credit (Req. for Grad.)	First Aid&Safety/ Intro. to Wt.Trng.	Welding 1	Welding 2
7	TechEd Credit (Req. for Grad.)	CADD OR Advanced Tech Ed Credit	Prin. Bus. Man. OR Elective	Welding 2
8	World Language (2yrs. Rec.)	World Language (2yrs. Rec.)	Elective	Elective



= CTE Courses



= Required



= Recommended



= Highly Recommended

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- **\*Course level for academics is determined by teachers, counselor, student and parent. Students are expected to take the level that best challenges and advances their abilities.**
- A sequence in a fine art or JROTC can possibly be substituted for recommended courses based upon student interest.

### Welding Technology Course Descriptions:

Course:	Course #	Credits	Grade	Codes
<b>Foundations of Building &amp; Construction Technology:</b> In the first year of Welding, students concentrate on learning basic safety. They also review construction-related math. The use of hand tools and power tools used by welders is introduced. Students learn the basics of blueprint reading as well. Basic rigging techniques and tools are also taught, as are employability and communication skills.	172018	1	10	CTP CERT
<b>Welding 1:</b> In the second year course, welding safety is reviewed. Skills taught include: oxyfuel cutting; base metal preparation; weld quality; SMAW (shield metal arc welding) equipment and setup; electrodes and selection; beads and fillet welds; groove welds; joint fit-up and alignment; open V-groove welds; SMAW certification test (D1.1 and/or D1.5).	17145N	3	11	CTP CERT
<b>Welding 2:</b> Seniors concentrate on the following units: welding symbols; reading of welding detail drawings; SMAW stainless steel groove welds; air carbon arc cutting and gouging; plasma arc cutting; gas metal and flux core arch welding (GMAW, FCAW) equipment, filler metals, and plates; gas tungsten arch welding (GTAW) equipment, filler materials, plate and aluminum plate. Students will have the ability to take American Welding Society certification exams GMAW and FCAW (D1.1 and/or D1.5).	17146N	2	12	CC CTC CERT

These codes appear with course descriptions where appropriate: ATE = Advanced Technology Credit; CC = may be eligible for college credit; CTP = Maryland State Dept. of Education Approved Career Technology Program; CTC = CTP Concentrator Course; EOC = End-of-Course Assessment; FA = Fine Arts; TE = Technology Education; W = Weighted, CERT = End of course certification exam.

**For more information, visit the North Point website at:**

**[www.ccboe.com](http://www.ccboe.com)**

- **Select High Schools then select North Point**
- **Select CTE Admissions information**
- **Or contact the Admissions Counselor at 301-753-1759**



## GLOSSARY OF TERMS

**ADDA:** American Drafting & Design Association

**ACF:** American Culinary Federation

**APPROVAL OF INSTRUCTOR:** This requirement is indicated for particular courses in which prior skills or experiences are needed.

**ARTICULATED COURSES:** These courses, taken in high school, may be eligible for college credit at participating institutions for students who enroll there after graduation.

**ASE:** Automotive Service Excellence

**CAPSTONE EXPERIENCE:** This culminating course in a career and technology completer program gives students an opportunity to demonstrate the knowledge and skills developed through the integration of all coursework.

**CAREER CLUSTER:** MSDE identified ten (10) Career Clusters that represent core business functions across industry areas in Maryland business. Each Maryland Career Cluster encompasses a range of career pathways based on economic activities, similar interests, common skills, and training required by those in the field.

**CC:** Certified Culinarian

**CPC:** Certified Pastry Culinarian

**CCNA:** Cisco Certified Network Associate

**CCNP:** Cisco Certified Network Professional

**CNA:** Certified Nursing Assistant

**COMPLETER PROGRAM (CTP):** This sequence of courses or career pathway, taken together, prepares students for entrance to a four-year college or university, to gain in-depth knowledge of a particular career field, or for direct entry into the workforce.

**CONCENTRATOR COURSE (CTC):** The concentrator is the designated course in the sequence of courses in a completer program that usually occurs after the student has completed 50 percent of the CTE Program of Study. This course represents the student's intent to be a CTE program completer.

**CTE-Career Technical Education**

**MSDE (Maryland State Department of Education):** The governing agency in the state of Maryland that oversees the operation of public schools serving children in Pre-K through grade 12.

**EXPLORERS:** This program is under the sponsorship of the Charles County Sheriff's Office and is designed for students with an interest in law enforcement. Explorers focus on community service.

**GAERF:** Graphic Arts Education Research Foundation

**I-CAR:** Inter-Industry Conference on Auto Collision Repair

**MAT Sci.:** This course allows students to expand and enhance their understanding of physics, electronics and computer applications.

**MAT Lab:** This course is a high-level language and interactive environment that enables engineers to perform computationally intensive tasks.

**MBON:** Maryland Board of Nursing

**NATEF:** National Automotive Technicians Education Foundation

**NCCER:** National Center for Construction Education and Research

**PARA-PRO:** Industry certification exam for Education Careers and Teacher Academy of Maryland students.

**PREREQUISITE:** This term refers to condition(s) that a student must meet in order to enroll in a particular course or program of study.

**WEIGHTED COURSES:** This term refers to the additional quality points in the numerical calculation of a student's grade point average for courses that are of exceptional rigor and/or require significant work beyond the school day.