



**Science, Technology,
Engineering &
Mathematics**

Plan of Study

Student Name:
School:
Date:

Cluster: Science, Technology, Engineering and Math
Pathway: Engineering and Technology (Engineering Technology A.A.S.)

This Career Pathway Plan of Study can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner’s educational and career goals. This Plan of Study, used for learners at an educational institution, should be customized with course titles/SCED codes and appropriate [high school graduation requirements](#) as well as college entrance requirements.

List Sample Occupations Related to This Pathway: Sample occupation listings may be located at [CTE Resource Center Career Clusters](#); or the [National Career Clusters® Frameworks](#).

<ul style="list-style-type: none"> • Entrepreneur • Risk Manager • Carpenter • Construction & Building Inspector • Construction Manager • Drywall Installer • General Contractor • Project Manager • Roofer • Building Code Inspector • Cost Estimator • Restoration Technician • 	<ul style="list-style-type: none"> • Mason • Plumber, Pipefitter • Tile Installer • Architect • Architectural Drafter • Building Code Inspector • Civil Engineer • Cost Estimator • Interior Designer • Landscape Architect • Survey Technician • Surveyor
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Career Assessment: Identify an appropriate career assessment instrument at the middle school level used to help students and their parents plan for high school:

- VA Wizard

- Or other assessment (please indicate): Major Clarity

Grade	English/ Language Arts	Mathematics	Science	Social Studies/ Social Science	Other Required Courses/ Recommended Electives/Learner Activities	Recommended Career and Technical Courses
7	English 7 (01035)	Math 7 (2037)	Life Science (03158)	U S History (04102/04103)	PE 7	Inventions and Innovations (21099)
8	English 8 (01036)	Math 8/Pre-Algebra (02038)	Physical Science (03159)	Civics & Economics (04161)	PE 8	Technological Systems (21001)

Grade	English/ Language Arts	Mathematics	Science	Social Studies/ Social Science	Other Required Courses/ Recommended Electives/Learner Activities	Recommended Career and Technical Courses
9	English (01001)	Algebra I (02052) Or Geometry (02052)	Biology I (03051)	World History/ Geography I (04052) Or AP Human Geog (04004)	<ul style="list-style-type: none"> Economics & Personal Finance (19262) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE) 	<ul style="list-style-type: none"> 8450 Engineering Explorations Open Elective Summer Bridge SDV 100 NOVA (1 credit)
10	English (01002)	Geometry (02072) Or Algebra Functions(02902) Data Analysis Or Algebra 2 (0256)	Earth Science (03001) Earth Sci 2 (Oceanography) or Earth Sci 2 Astronomy (03004) or Chemistry (03101)	World History/ Geography II (04053) or AP World History Modern (04067)	<ul style="list-style-type: none"> Economics & Personal Finance (19262) Health & PE (2 years) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE) 	<ul style="list-style-type: none"> 8425 Manufacturing Systems I Open Elective or EPF
11	DE English 11 (01003)/ ENG 111 & ENG 112 (6 credits)	Alg Funct.Data Analysis (02902) Algebra II (02056) Or Pre Calc (02104)	Chemistry I (03101) or Physics (03151) Earth Sci 2 (03005) (Oceanography) E.S. 2 Astronomy 03004	DE US History 122 (04101)/ HIS 121 & HIS 122 (6 credits)	<ul style="list-style-type: none"> Economics & Personal Finance (19262) Foreign Language (3 years) Other Electives to Complement Pathway (Core Academic and CTE): 	<ul style="list-style-type: none"> 8416 Electronics Systems I ELE 150 (3 credits) 8427 Manufacturing Systems, Adv. IND 123/SAF 130, and IND 137 (5 credits) 8411 Energy Supply: Sustainability and Efficiency

12	DE English 12 (01004)/ ENG 255 (3 credits)	MTH 161 or MTH 111 (3 credits) and MTH 162 or MTH 111 (3 credits)	Chemistry or Physics I (03151) Earth Sci 2 (03005) (Oceanography) E.S. 2 (Astronomy) (03004)	VA/US Government (04151) or AP VA/US Govt (04157)	<ul style="list-style-type: none"> Economics & Personal Finance (19262) Other Electives to Complement Pathway (Core Academic and CTE): 	<ul style="list-style-type: none"> EPF or Open HS Elective/Externship Open Elective/Externship 8451 Engineering Analysis and Application INS 230 (3 credits) Electronic Systems II MEC 140 and ELE 211 (6 credits) 8414 Sustainable and Renewable Technologies Open Elective/Externship
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List related certifications/credentials approved by VDOE and offered locally:

- Workplace Readiness Skills
- OSHA 10
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ADDITIONAL LEARNING OPPORTUNITIES:

CTSO Organization(s):

- DECA
- FBLA
- FCCLA
- FFA
- Educators Rising
- HOSA- Future Health Professionals
- SkillsUSA
- TSA
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Work-Based Learning:

- Job Shadowing
- Mentorship
- Internship
- Service Learning
- Clinical Experience
- Externships
- Cooperative Education
- Youth Registered Apprenticeship
- Registered Apprenticeship
- Supervised Agricultural Experience
- Entrepreneurship
- School Based Enterprise

- College: Northern Virginia Community College
- School Division(s): Alexandria City Public Schools

SAMPLE POSTSECONDARY PROGRAMS RELATED TO THIS CAREER PATHWAY

Individual plans must include locally agreed upon courses at the postsecondary level

Pathway	Associate's Degree, College Certificate, or Apprenticeship	Bachelor's Degree	Postgraduate Degree
Science, Technology, Engineering, and Math	Engineering Technology A.A.S.	Currently not transferrable credits to a 4-year program.	(Determined Locally – Optional)

RELATED INDUSTRY CERTIFICATIONS AVAILABLE:

OSHA 10

ADDITIONAL LEARNING OPPORTUNITIES:

Work-Based Learning:

- Job Shadowing
- Mentorship
- Internship
- Service Learning
- Clinical Experience
- Externships
- Cooperative Education
- Youth Registered Apprenticeship
- Registered Apprenticeship
- Supervised Agricultural Experience
- Entrepreneurship
- School Based Enterprise



- University/College:
- Degree or Major:
- Number of Articulated CC Credits:

NOTES:

AC STEM at Alexandria City High School

- Offers students an opportunity to earn a high school diploma, industry certifications, work-based learning experiences, and complete an Associate of Applied Science (A.A.S.) degree after graduating high school.
- During the 5-year program, the first four years will be at the high school, where students will earn dual enrollment credits at no cost, followed by the fifth year at the community college.
- Students will have the opportunity to earn college credits needed for the following A.A.S. degree while in H.S



Prepares students for careers in architecture, energy, construction, design, urban design, and skilled trades.



Prepares students for careers in engineering, energy, manufacturing, data center information technology, and distribution systems.