Student Plan of Study – Heating, Ventilation, Air Conditioning & Refrigeration /Electrical

Name ___________________________  Date ___________________________  School ___________________________

Parent/Guardian Signature ___________________________  Date ___________________________  Advisor/Counselor Signature ___________________________  Date ___________________________

Current Area of Interest: Architecture & Construction/Heating, Ventilation, Air Conditioning & Refrigeration-Electrical - This PLAN OF STUDY should serve as a guide for the next four years. Courses listed in this plan are only recommended coursework and should be individualized to meet each student’s educational and career goals. All plans will meet minimum high school graduation requirements. Applicants to the University System of Georgia and the Technical College System of Georgia institutions should be advised that meeting minimum requirements will not guarantee admission. Postsecondary institutions may set additional requirements.

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>I. English/Language Arts</th>
<th>II. Math</th>
<th>III. Science</th>
<th>IV. Social Studies</th>
<th>V. Health/Personal Fitness</th>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th Grade</td>
<td>1 CCGPS Card Algebra</td>
<td>1 credit</td>
<td>Biolog or Approved Dual Enrollment Course</td>
<td>American Government/Civics or AP Government/Politics US or Approved Dual Enrollment Course</td>
<td>Health ½ credit</td>
<td>4 credits</td>
</tr>
<tr>
<td></td>
<td>2 CCGPS Analytic Geometry</td>
<td>1 credit</td>
<td>1 credit *</td>
<td>½ credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 CCGPS Accel Cord Alg &amp; Analytic Geometry</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10th Grade</td>
<td>1 CCGPS Analytic Geometry</td>
<td>1 credit</td>
<td>Physical Science or Physics or AP Physics or Approved Dual Enrollment Course</td>
<td>World History or AP World History or Approved Dual Enrollment Course</td>
<td>46.5600 Fundamentals &amp; Occupational Safety or Approved Dual Enrollment Course</td>
<td>4 credits</td>
</tr>
<tr>
<td></td>
<td>2 CCGPS Adv Alg</td>
<td>1 credit</td>
<td>1 credit *</td>
<td>1 credit</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>3 CCGPS Accel Analytic Geometry/Adv Alg</td>
<td></td>
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</tr>
<tr>
<td>11th Grade</td>
<td>1 CCGPS Adv Alg</td>
<td>1 credit</td>
<td>Chemistry or Environmental Science or Earth Systems or AP or Approved Dual Enrollment Course</td>
<td>United States History or AP US History or IB History of the Americas or Approved Dual Enrollment Course</td>
<td>47.1400 Introduction to HVAC/R Systems or Approved Dual Enrollment Course</td>
<td>4 credits</td>
</tr>
<tr>
<td></td>
<td>2 CCGPS Pre-Calculus</td>
<td>1 credit</td>
<td>1 credit *</td>
<td>1 credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 CCGPS Accel Pre-Cal</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Advanced Composition or Approved Dual Enrollment Course</td>
<td>1 credit</td>
<td>Other Science Elective Courses: Energy &amp; Power Tech or Appropriate &amp; All Energy Technologies or AP1B Science</td>
<td>Ecomy/Business/Free Enterprise or AP Micro Econ or AP Micro Econ or IB Econ or Approved Dual Enrollment Course</td>
<td>47.4100 Low Voltage Electrical or Approved Dual Enrollment Course</td>
<td>4 credits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 CCGPS Cal or AP Cal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 credit *</td>
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</tbody>
</table>

At the end of the 11th grade, students planning to enter a University System of Georgia Institution or Technical College System of Georgia Institution should take the appropriate admissions test (SAT, ACT, Compass).

Legend:
*Science: Approved 4th Sciences may be used to meet both the required science and required elective in a Career, Technical and Agricultural Education (CTAE) sequence of courses; see Fourth Science Requirements for more information. Student may take science courses in any sequence.

*Math: Select Math sequence 1, 2, 3, 4 based on 9th grade entry course.

**Students must complete two credits of the same world language for admission to University System of Georgia institutions.

*** Students should complete a CTAE pathway and take the related end of pathway assessment.

NOTE: Local systems may offer core courses in a different sequence, not all local systems offer every pathway. Students should explore all credit possibilities including Georgia’s Virtual School Program, Dual Enrollment, Advanced Placement (AP), International Baccalaureate (IB) and Work-Based Learning (WBL) to reach their educational and career goals.

American Literature/Composition or AP English Language & Composition/American Lit or Approved Dual Enrollment Course

| Advanced Math Decision Making or Math of Ind & Govern or AP Math or IB Math or Approved Dual Enrollment Course | 1 credit |
| Advanced Composition or British Literature or AP1B English Literature & Composition or Approved Dual Enrollment Course | 1 credit |

Other English Elective Courses: Literary Types/Composition, Journalism, Oral/Written Communication, Speech

| Other Math Elective Courses: Adv Math Decision Making, Math of Ind & Govern, Math of Finance | Other Science Elective Courses: Energy & Power Tech or Appropriate & All Energy Technologies or AP1B Science | Other Social Studies Elective Courses: Current Issues or AP1B Soc Studies or Psychology or Sociology | Other CTAE Elective Courses: Other CTAE electives are available to complete a related pathway | Total Elective Credits |
| Sample Electives Courses: | | | | 3 |

Architecture & Construction

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SAMPLE Pathway OCCUPATIONS
See *Georgia’s HOT Careers to 2020* for more information on high-skilled, high-wage and high-demand occupations.

<table>
<thead>
<tr>
<th>Occupation Specialties</th>
<th>Entry Level of Education Needed</th>
<th>2012 Annual Wage</th>
<th>Annual Openings 2012-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cost Estimators</em></td>
<td>Bachelor</td>
<td>$57,300</td>
<td>210</td>
</tr>
<tr>
<td>Heating, Air Conditioning, &amp; Refrigeration</td>
<td>Some College</td>
<td>$38,500</td>
<td>150</td>
</tr>
<tr>
<td>Mechanics &amp; Installers</td>
<td>No Degree Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricians</td>
<td>High School</td>
<td>$40,700</td>
<td>340</td>
</tr>
</tbody>
</table>

Source: Georgia Department of Labor/ONET

For more information about your education and career planning, including valuable financial aid information that includes grants and scholarships, see your school counselor.

**Current Georgia Graduation Rule**

**Coursework** | **Credits** | **Coursework** | **Credits**
--- | --- | --- | ---
I. English/Language Arts | 4 | V. Health & Physical Education | 1
II. Math | 4 | VI. **Career, Technical & Agricultural Education** and/or **World Languages, and/or Fine Arts** | 3
III. Science | 4 | VII. Electives | 4
IV. Social Studies | 3 | TOTAL | 23

*Selected 4th Science courses may be used to meet both the required science and required elective in a CTAE sequence of courses.
**Students must complete three credits to complete a CTAE pathway and take the end of pathway assessment.
***Students must complete two credits of the same world language for admission to Georgia Board of Regents colleges/universities.
****Current graduation requirements should be met in all content areas.
NOTE: This plan represents minimum graduation requirements. Local systems may require additional coursework.

Postsecondary Transition:

- Students who will continue their education in a Program of Study at one of the University System of Georgia institutions should prepare to take the ACT or SAT for admissions. Tests for admissions may vary from institution to institution. Contact the selected institution for specific testing information. Additional admissions information can be found at Staying On Course. ([www.gsu.edu/student_affairs/documents/Staying_on_Course.pdf](http://www.gsu.edu/student_affairs/documents/Staying_on_Course.pdf))
- Students who will continue their education in a Program of Study at one of the Technical College System of Georgia institutions should prepare to take the COMPASS test for admissions.
- Students who will continue their education and training in the US Military should take the ASVAB assessment.
- Students should utilize electronic college and career data bases to select the most appropriate postsecondary opportunities to match their selected career field, including registered apprenticeships.
- Georgia’s dual-credit programs have been combined into one program entitled Move on When Ready, in which high school students may earn their high school course credits while taking college courses.

Possible Student Pathway Credentialing Opportunities:

Students completing a pathway are eligible to take a Credentialing/End of Pathway Assessment (EOPA) upon successful completion of the three required courses in the pathway. For specific assessment information, refer to [http://www.padoe.org/Curriculum-Instruction-and-Assessment/CTAE/Pages/CTAE-Georgia-Assessments.aspx](http://www.padoe.org/Curriculum-Instruction-and-Assessment/CTAE/Pages/CTAE-Georgia-Assessments.aspx)

*Related Pathway Occupations:

Cost Estimators
Heating, Air Conditioning, & Refrigeration Mechanics & Installers
Sheet Metal Workers
Pipe Fitters & Steamfitters
Helpers-Installation, Maintenance, & Repair Workers
Pipe Layers
Electricians

Other Related Architecture & Construction Occupations:

Carpenters
Stone Masons
Welders
Machinists

Architecture & Construction/HVACR-Electrical

HVACR stands for heating, ventilation, air-conditioning, and refrigeration systems. These systems control the temperature, humidity, and total air quality of indoor environments and permit the storage and transport of food, medicine, and other perishable items. People who work in the HVACR industry install, maintain, and repair such systems. HVACR technicians are highly skilled workers because the systems on which they work consist of mechanical, electrical, and electronic parts, such as motors, compressors, pumps, fans, ducts, pipes, thermostats, and switches. Technicians must be proficient in reading and interpreting blueprints and manufacturers’ specification manuals.

When mechanics install and service equipment, they must use care, which is especially important when working with cooling systems. The release of refrigerants causes damage to the Earth’s atmosphere. Consequently, HVACR technicians must comply with several laws and regulations that protect the environment.

HVACR technicians usually train through one- or two-year professional-technical programs. Many heating and cooling system mechanics gain apprenticeship training, normally consisting of four years of on-the-job training. Conditioned air contractors must be licensed in Georgia.

Major employers are heating and cooling system installation companies, electrical contractors, and heating and cooling system retailers. Job prospects are excellent because of the growing focus on improving indoor air quality and the increasing use of refrigerated equipment by a growing number of stores and gasoline stations. In addition, environmental concerns will lead to the development of more efficient systems and a growing need for technicians to install, maintain, and repair new systems. If federal and state tax laws continue to encourage individuals and companies to install more efficient HVACR equipment, job growth for HVACR technicians will become even more fast paced.

Richard Woods, Georgia’s School Superintendent

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