# Student Plan of Study - Engineering & Technology

## Current Area of Interest: Science, Technology, Engineering & Math/Engineering & Technology

- 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.

### Grade Level

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>I. English/Language Arts Total 4 credits</th>
<th>II. Math Total 4 credits</th>
<th>III. Science Total 4 credits</th>
<th>IV. Social Studies Total 3 credits</th>
<th>V. Health/Personal Fitness Total 1 credit</th>
<th>VI. Possible electives in additional pathways (students should check the local course description catalog for these and other electives) Total 4 credits</th>
</tr>
</thead>
</table>
| 9th         | Literature & Composition or Approved Dual Enrollment Course | 1 CCGPS Cord Algebra 2 CCGPS Analytic Geometry 3 CCGPS Accel Cord Alg/Analytic Geometry 4 CCGPS Accel Analytic Geometry B/Adv. Algeb r | Biology or Approved Dual Enrollment Course | American Government/Civics or AP Government/Publics US or Approved Dual Enrollment Course | Health ½ credit | Advanced Academic Pathways
|             | Credit Earned | Credit Earned | Credit Earned | Credit Earned | Credit Earned | English/Language Arts, Math, Science, Social Studies |
| 10th        | Literature & Composition or World Literature & Composition or Approved Dual Enrollment Course | 1 CCGPS Analytic Geometry 2 CCGPS Adv. Algebra 3 CCGPS Accel Analytic Geometry/Adv. Algebra 4 CCGPS Pre-Calculus | Physical Science or Physics or AP Physics or Approved Dual Enrollment Course | World History or AP World History or Approved Dual Enrollment Course | 21-42900 Foundations of Engineering & Technology or Approved Dual Enrollment Course | World Language Pathways
|             | Credit Earned | Credit Earned | Credit Earned | Credit Earned | Credit Earned | **Two credits are required for admissions to University System Institutions. For a listing of world language courses offered at your high school, please check with your advisor, counselor, or local course description catalog. A world language pathway may be followed in any of the world language areas included in the state list of approved courses. Upon graduation, students earn a world language pathway when they complete three credits in one language. The third course may reflect an AP, IB or Dual Enrollment designation.** |
| 11th        | American Literature/Composition or AP English Language & Composition/American Lit or Approved Dual Enrollment Course | 1 CCGPS Adv. Algebra 2 CCGPS Pre-Calculus 3 CCGPS Accel Pre-Cal 4 CCGPS CAlg or AP CAlg | Chemistry or Environmental Science or Earth Systems or APIB or Approved Dual Enrollment Course | United States History or AP US History or IB History of the Americas or Approved Dual Enrollment Course | 21,47100 Engineering Concepts or Approved Dual Enrollment Course | Fine Arts/Performing Arts Pathways
|             | Credit Earned | Credit Earned | Credit Earned | Credit Earned | Credit Earned | Visual Arts, Dance, Music, Journalism, Theatre |
| 12th        | Advanced Composition or British Literature or AP/IB English Literature & Composition or Approved Dual Enrollment Course | CCGPS Pre-Cal or Cal or AP CAlg or AP Stats or IB Math or Approved Dual Enrollment Course | Any other of the previous courses or Meteorology or Astronomy or Microbiology or AP Computer Science or Approved Dual Enrollment Course | EconBusiness/Free Enterprise or AP Micro Econ or AP Micro Econ or IB Econ or Approved Dual Enrollment Course | 21,47200 Engineering Concepts or Approved Dual Enrollment Course | Science, Technology, Engineering & Math Pathways
|             | Credit Earned | Credit Earned | Credit Earned | Credit Earned | Credit Earned | Electricity, Electronics, Computer Science, Math, Physics, Engineering, Robotics, or Technology |

### 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 Science 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.**

### Sample Elective Courses

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

- **Other Math Elective Courses:**
  - Adv. Math Decision Making
  - Math of Ind. & Govern.

- **Other Science Elective Courses:**
  - Oceanography or Genetics or AP/IB Science or Meteorology or Biochemistry
  - Science Research III or IV

- **Other Social Studies Elective Courses:**
  - Current Issues or AP/IB Soc Studies or Humanities or Sociology or World Geography

- **Other CTAE Elective Courses:**
  - Other CTAE elective courses are available to complete a related pathway

- **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.
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>Aerospace Engineers</td>
<td>Bachelor’s Degree</td>
<td>$105,700</td>
<td>170</td>
</tr>
<tr>
<td>Electrical Engineers</td>
<td>Bachelor’s Degree</td>
<td>$88,000</td>
<td>90</td>
</tr>
<tr>
<td>Avionics Technicians</td>
<td>Associate’s Degree</td>
<td>$54,000</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: Georgia Department of Labor/ONET

**Related Pathway Occupations:** All Engineers and Engineering Technologists

**Other Related STEM Occupations:**
- Architectural Drafters
- Civil Drafters
- Cost Estimators
- Electrical & Electronics Drafters
- Mapping Technicians
- Quality Control Systems Managers
- Anthropologists
- Archeologists

*ONET Online

**Engineering & Technology**

Today’s professionals in the engineering and technology field continue to revolutionize the way we live. They design, produce, operate, and maintain a variety of equipment and services we use in our everyday lives. The rapidly changing engineering and technology field requires a broad educational background and a lifelong commitment to learning new and specialized information.

Overall job opportunities in engineering and technology are expected to be good, but will vary by specialty. Technology and technology-related employment will continue to increase as technology changes and new technology is invented.

Engineers may work in design and development, testing, production or maintenance. Almost all entry-level engineering jobs require at least a bachelor’s degree, and most engineers specialize in a certain field. Those interested in an occupation in the engineering field should be creative, inquisitive, analytical and detail-oriented. They should also have excellent communication skills because working as part of a team and working with others outside the engineering field is often required. Engineering is considered a nontraditional field for women; therefore, it is important that female students investigate different engineering opportunities where salaries are higher than in many traditional occupations for females. Most science, technology, engineering and math related occupations are nontraditional occupations for young women. Both young men and women should explore all their options for future employment. Visit Gacollege411 for more information regarding STEM-related careers.

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

<table>
<thead>
<tr>
<th>Coursework</th>
<th>Credits</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. English/Language Arts</td>
<td>4</td>
<td>V. Health &amp; Physical Education</td>
<td>1</td>
</tr>
<tr>
<td>II. Math</td>
<td>4</td>
<td>VI. <strong>Career, Technical &amp; Agricultural Education</strong></td>
<td></td>
</tr>
<tr>
<td>III. <em>Science</em></td>
<td>4</td>
<td>and/or ***World Languages, and/or Fine Arts</td>
<td>3</td>
</tr>
<tr>
<td>IV. Social Studies</td>
<td>3</td>
<td>VII. Electives</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TOTAL</td>
<td>23</td>
</tr>
</tbody>
</table>

*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.

### 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. Students should contact the selected institution for specific testing information. Additional admissions information can be found at [Staying On Course](http://www.usg.edu/student-affairs/documents/Staying_on_Course.pdf).

- Students who will continue their education in a Program of Study at one of Georgia’s Technical Colleges 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 databases to select the most appropriate postsecondary opportunities including registered apprenticeships to match their selected career field.

- 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.gadoe.org/Curriculum-Instruction-and-Assessment/CTAE/Pages/CTAE-Georgia-Assessments.aspx](http://www.gadoe.org/Curriculum-Instruction-and-Assessment/CTAE/Pages/CTAE-Georgia-Assessments.aspx)

Richard Woods, Georgia’s School Superintendent

"Educating Georgia’s Future"