Program of Study: Energy Systems

This Program of Study may serve as a graduation guide for the next four plus years, along with other career planning and educational materials. Courses listed in this model may include recommended coursework and should be individualized to students' educational and career goals. Each graduation plan needs to meet minimum high school graduation requirements. Dual Enrollment courses can be high school academic and/or career technical education courses.

	Secondary: Energy Systems					Postsecondary			
Course/Grade	**Ninth**	**Tenth**	**Eleventh**	**Twelfth**	Entrance or Exit Point	**TCC**	**Diploma**	Entrance or Exit Point	**Bachelor of Science**
English	9th grade Lit/ Composition	10th grade Lit/ Composition	American Lit/ Composition	World Lit/ Composition					
Mathematics	Coordinate Algebra	Analytic Geometry	Advanced Algebra/ Algebra II	Pre-calculus					
Science	Physical Science	Biology	Chemistry	AP Physics					
Social Studies	Psychology	World History	US History	Government (½ unit) Economics (½ unit)					
Pathway Completer	**Foundations of Energy and Power Technologies**	**Energy and Power: Technology**	**Appropriate and Alternative Energy Technologies**	Work-Based Learning, Youth Apprenticeship, or Capstone Project					
Industry Recognized Credential (Pathway Completer)		Visit the End of Pathway Assessment Page (see note below)							
Required/ Selective Electives	Health & Personal Fitness (*can be taken in grades 9-12*)	AP Environmental Science	Physics	Statistics					
	Modern Language/Latin *2 units required for admissions to Georgia University System Colleges/Universities* For a listing of Modern Language/Latin courses offered at your high school, please contact your advisor, counselor, or curriculum handbook.			**Other Electives** For a listing of other elective courses offered at your high school, please check with your advisor, counselor, or curriculum handbook.		**Energy Industry Fundamentals** - Complete Academic courses - ALET 1100 History and Structure of the Energy Industry - ALET 1120 Electric Power and Natural Gas Generation, Transmission, and Distribution - ALET 1130 Introduction to Alternative Energy - IDSY 1020, Print Reading and Problem Solving - IDSY 1160 Mechanical Laws and Principles - IDSY 1101 DC Circuit Analysis - IDSY 1105 AC Circuit Analysis	**Diploma – Industrial Systems Technology** - Complete Academic Courses - IDSY 1101 DC Circuit Analysis - IDSY 1105 AC Circuit Analysis - IDSY 1110 Industrial Motor Controls I - IDSY 1120 Basic Industrial PLCs - IDSY 1130 Industrial Wiring - IDSY 1170 Industrial Mechanics - IDSY 1190 Fluid Power Systems - IDSY 1195 Pumps and Piping Systems - Occupational Electives 9 Hours		The University System of Georgia offers students' higher education options at 30 institutions throughout the state, providing a wide range of academic programming including certificates and associate, baccalaureate, masters, doctoral and professional degrees. https://apps.usg.edu/ords/f?p=118:1:0:::::

NOTE: Students have many options to **ENTER** and **EXIT** from their academic studies into the workforce. When a student graduates from high school, they are eligible to choose one of many **ENTRANCE POINT** options: **1.** Enroll in either a 2 or 4 year post-secondary program; **2.** Enroll in an apprenticeship program or the military; or **3.** Enter the workforce using technical skills learned in high school. When a student finishes a 2- or 4-year degree program, they may choose to **EXIT** and **1.** Enroll in an apprenticeship program or the military; **2.** Enroll in a professional university degree program; or **3.** Enter the workforce using technical skills learned.

Energy Systems Career Pathway Completers - Industry Credentialing for High School Students

Upon completion of sequenced courses in the Energy Systems Career Pathway, students are eligible to complete the Industry-Recognized student credential for fulfillment of the End of Pathway Assessment. Secondary students completing the Energy Systems pathway will be able to sit for the National Industry Credentialed assessment offered on-line from NOCTI and SkillsUSA. Once mastery is reached, students will receive recognition for completion and use this credential in conjunction with their job or continuing training. For specific assessment information, refer to: http://bit.ly/GAEnergy

Sample High Demand Careers in Georgia				
Occupation Specialties	**Level of Education Needed**	**Georgia Average Salary**	**Annual Average Openings in Georgia**	**2014 – 2024 Employment Outlook**
Electrical Engineers	Bachelor's Degree	$90,445	120	High Demand, High Skill
Industrial Production Managers	Bachelor's Degree	$96,979	123	High Demand, High Skill
Electrical Power-Line Installers and Repairers	Some postsecondary, no degree required	$48,355	234	High Demand, High Skill

GDOL LaborMarket Explorer

Go to GAfutures at www.gafutures.org for more information about your education and career planning, including valuable financial information (grants and scholarships including HOPE Program, grants and loans, FAFSA, and CSS forms).

Career Enhancement Opportunities

Career-Related Education Activities

- ❑Career Awareness
- ❑Career Exploration
- ❑Instructional Related
- ❑Connecting
- ❑Work-Based Learning
  - Employability Skill Dev.
  - Cooperative Education
  - Internship
  - Youth Apprenticeship
  - Clinicals

Postsecondary Options:

- 4-Year Universities/ Colleges
- 2-Year Colleges
- Technical Colleges
- State Registered Apprenticeships
- Special Purpose Schools
- On-the-Job Training
- Military

Earning Postsecondary Credits While in High School

A vital way to get ahead and realize you can pass college courses is by earning postsecondary credits as a high school student. Georgia offers a dual credit program titled Dual Enrollment. You need to talk with your parents, school counselor, or advisor about the proper courses to take each year in high school and dual credit.

Students completing the course work in this Plan, will have earned/completed an Industry Credential, Technical Certificate of Credit (TCC), Associates of Applied Science Degree, and/or Bachelor's Degree.

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.(https://www.usg.edu/assets/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 complete a placement exam.
- 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 to match their selected career field, including registered apprenticeships.
- Georgia's dual-credit programs have been combined into one program entitled Dual Enrollment, in which high school students may earn their high school course credits while taking college courses.

Related Pathway Occupations	Other Related Occupations
• Engineering Technicians • Mining Engineers • Petroleum Engineers • Hazardous Waste Technicians • Pipefitters/ Pipe Layers • Value/Regulator Repairers • Meteorologists • Geologists	• Telecommunication Technicians • Equipment, Cable, Line • Repairers/Installers • Electricians • Electronics Technicians • Power Plant Operators

*ONET Online

Energy Systems Pathway Description

Energy is a diverse field with many job opportunities. There are many people who help generate energy, transport it and connect energy to the things we use every day. There are also individuals creating new methods of energy generation. Working in energy can mean working for utilities, for gas and oil companies, for government and research groups, for energy education or environmental regulation agencies, for nonprofit energy awareness and conservation organizations or for many other energy related agencies.

Most of the electricity produced in the United States comes from nonrenewable sources such as coal, petroleum and natural gas. Related jobs include power plant operators, power distributors and dispatchers, industrial machinery mechanics, reactor operators and engineers.

Employment opportunities are promising for experienced workers and those just starting their careers. Occupations require varying levels of education, from work experience to college and advanced degrees. Most scientific and research related jobs usually require at least a bachelor's degree. The energy industry as a whole is projected to experience growth in the coming years, particularly with the increase in infrastructure investment for renewable energy and clean energy generation, energy efficiency and Smart Grid technologies. The growth in demand for workers is attributed to the large number of projected retirements in the industry.

With the emphasis on a green economy, occupations like energy auditors and energy engineers are considered new and emerging because of the vast change in their tasks, skills knowledge and credentials. Electrical power-line Installers and repairers will enjoy increased growth from 10%-19% between 2010 and 2020.