

Program of Study: Mechatronics



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: Mechatronics					Postsecondary		
Course/Grade	Ninth	Tenth	Eleventh	Twelfth	TCC	Associates	Bachelor of Science
English	9 th grade Lit/ Composition	10 th grade Lit/ Composition	American Lit/ Composition	World Lit/Composition / British Lit	MT21 Mechatronics Technician - IDSY 1005 Intro to Mechatronics * - IDSY 1170 Industrial Mechanics - IDSY 1190 Fluid Power - IDSY 1195 Pumps and Piping	Industrial Systems Tech. - 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 and Piping Systems - IDSY 1195 Pumps and Piping Systems - IDSY 1210 Industrial Motor Controls II - IDSY 1220 Intermediate Industrial PLCs - IDSY 1230 Industrial Instrumentation Choose one of following: - CIST 1001 Comp. Concepts - COFC 1080 Construct. Trade Core - IDSY 1005 Mechatronics - MCMT 1011 Machine Tool	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:::
Mathematics	Coordinate Algebra	Analytic Geometry	Advanced Algebra/ Algebra II	Pre-calculus			
Science	Physical Science	Biology	Chemistry	AP Physics - Engineering	Diploma Industrial Systems Tech. - 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 and Piping Systems - IDSY 1195 Pumps and Piping Systems - IDSY 1210 Industrial Motor Controls II - IDSY 1220 Intermediate Industrial PLCs - IDSY 1230 Industrial Instrumentation Choose 2 of the following: - IDSY 1210 Industrial Motor Controls II - IDSY 1220 Intermediate Industrial PLCs - IDSY 1230 Industrial Instrumentation		
Social Studies	Psychology	World History	US History	Government (½ unit) Economics (½ unit)			
Pathway Completer	Introduction to Mechatronics-DC Theory, Pneumatic Systems, & PLC	AC Theory, Electrical Motors, & Hydraulic Systems	Semiconductors Mechanical Sys, and Pump & Piping Systems	Work-Based Learning, Youth Apprenticeship, or Capstone Project	Entrance or Exit Point	Entrance or Exit Point	
Industry Recognized Credential (Pathway Completer)	Visit the End of Pathway Assessment Page (see note below)						
Required/ Selective Electives	Health & Personal Fitness (<i>can be taken in grades 9-12</i>)	Introduction to Digital Technology	Physics	Embedded Computing	Entrance or Exit Point	Entrance or Exit Point	
	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.				

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.

Mechatronics Career Pathway Completers - Industry Credentialing for High School Students

Upon completion of sequenced courses in the Mechatronics Career Pathway, students are eligible to complete the Industry-Recognized student credential for fulfillment of the End of Pathway Assessment. Secondary students completing the Mechatronics 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/GAManufacturing>

Sample High Demand Careers in Georgia

Occupation Specialties	Level of Education Needed	Georgia Average Salary	Annual Average Openings in Georgia	2014 – 2024 Employment Outlook
Industrial Engineers	Bachelor's Degree	\$76,880	250	High Demand, High Skill
Industrial Engineering Technicians	Associate's Degree	\$48,330	45	High Demand, High Skill
Industrial Machinery Mechanics	Diploma, On-Job-Training	\$42,500	293	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 <input type="checkbox"/> Career Awareness <input type="checkbox"/> Career Exploration <input type="checkbox"/> Instructional Related <input type="checkbox"/> Connecting <input type="checkbox"/> Work-Based Learning <ul style="list-style-type: none"> • Employability Skill Dev. • Cooperative Education • Internship • Youth Apprenticeship • Clinicals 	Postsecondary Options: <ul style="list-style-type: none"> • 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. (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
<ul style="list-style-type: none"> • Electrical and Electronics Repairers • Commercial and Industrial Equipment Repairers • Industrial Engineers • Industrial Engineering Technicians • Industrial Machinery Mechanics 	<ul style="list-style-type: none"> • Computer User Support Specialists • Electronics Engineering Technicians • Chemical Plant & System Operators <p style="text-align: right;">*ONET Online</p>

Mechatronics Pathway Description

Mechatronics is a diverse field. It encompasses many inter-related disciplines including Electronics, Mechanics, Fluid Power, Electrical Control Systems, Programmable Logic Controllers (PLC), Computers, and Robotics. Mechatronics is a term which includes the above disciplines and takes an integrated approach to their study. People employed in the mechatronics field deal with automated systems in a wide variety of applications. They also deal with related professional and technical support activities such as production planning and control, maintenance, and engineering.

Mechatronics employers face recruitment difficulties because many potential employees do not possess the needed skills. With the advances in automation and robotics, some jobs have been eliminated, but there are more job opportunities for individuals that have advanced technical skills and higher levels of education. Employers need associates with good communication, technical and problem solving skills.

Industry-wide competencies include safety, quality assurance, maintenance, installation and repair, operations and design and development. Since new processes are increasingly automated, it is necessary that students acquire a broad range of technical skills to be competitive in the job market.

There are a variety of job opportunities in mechatronics. Mechatronics can be utilized with companies that need or provide engineering, maintenance, technical support, and technical consulting. Mechatronic equipment and devices can be found in most modern industries, some of which are advanced manufacturing, processing, aviation, automotive, refining, logistics, and power generation.

Additional information regarding this pathway can be found at <http://www.careeronestop.org/CompetencyModel/pyramid.aspx?ME=Y>