

Governor's High Demand Career Initiative Report Summary

The 2014 Georgia Governor's High Demand Career Initiative Report identified 162 unique high demand careers and 96 unique high demand skills and attributes.

Over 80 private sector companies participated in a study to determine critical needs area, in terms of careers needed, and the critical skills and attributes most needed by employers.

The column on the left presents the critical careers most often mentioned.

The column on the right shows the critical skills and attributes that were repeatedly identified.

The table on the right are the top careers and skillsets aggregated from the following eight industry sectors.

Overall Trends in High Demand Careers & Skills	
Career	Skill/Attribute
Mechanical Engineer	Soft Skills
Electrical Engineer	Mathematics
Welder	Work Ethic
Machinist	Customer Focus
Computer Numerical Control (CNC) Operator	Project Management
Programmable Logic Controller (PLC)	Robotics
Software Developer	Analytical
Business Support Roles	Business Acumen
Computer Programmer	Problem Solver
Maintenance Technician	Teamwork
Manufacturing Associate	



BS, MAT, & MS of STEM Education

Engineering & Technology Concentration

Supporting the Governor's High Demand Career Initiative

kellrobotics

Agriculture & Food Sector	
Career	Skill/Attribute
Bakery Engineer	Adaptable
Brewery Worker	Attention Systems Certification
Business Support Role	Analytical
Chemical Engineer*	CNC Equipment
CNC Operator*	Communication Skills
Computer Programmer*	Computer Skills
Craftsman	Degrees in Science Fields (Chemistry, Microbiology, Fermentation Science, Food Science)
Electrical Engineer*	Hand Torch & Plasma Welding
Field Service Representative	Machine Tool Technology
Industrial Engineer	Math Skills*
Machinist*	Power Plant Operations Certificate
Manufacturing Associate	Soft Skills*
Mechanic	Stick, MIG & TIG Welding
Mechanical Engineer*	Waste Water Treatment Certificate
Welder	Work Ethic*
Nurse	

Aerospace Sector	
Career	Skill/Attribute
A&P Mechanic	Attention to Detail
Aerospace Engineer*	Blueprint Reading
Aircraft Inspector	Business Acumen
Aircraft Mechanic	Computer Aided Design (CAD)
Aircraft Support Mech.	CNC Operation
Assembly Associates	Communication
Aviation Maint. Tech.	Cost Estimating
Avionics Technician	Criticality
Bonding Associate	Customer Focus*
CNC Machinist	Decision Making
Composite Mechanic	Dependability
Computer Programmer	P.A.A. Certifications
Cont. Improvement Eng.	Flexibility
Customer Service Spec.	Math Skills
Electrical Engineer	NCC Certifications
Electronics Technician	PLC Programming
Engineer	Project Management
Financial Analyst	Problem Solving
Forge Operator	Safety Mindset
Ground Maint. Mech.	Skilled Crafts
Industrial Engineer	Supply Chain
Intention Mechanic	Work Ethic*
Machine/Facilities Tech.*	Work Ready Skills
Machinist	
Maintenance Technician	
Manufacturing Engineer	
Material Buyer*	
Material Science Engineer	
Mechanical Engineer	
Metalurgy Technician*	
Nondestructive Testing Ins.*	
Pilot	
Production Mechanic	
Production Supervisor*	
Structures Mechanic	
Warehouse Worker	
Welder	

Automotive Manufacturing Sector	
Career	Skill/Attribute
Accountant	Ability to Read and Interpret Engineering Drawing and Sketches
Assembly Supervisor*	Accounting*
Auto Body Painter	Analytical Skills*
Automation Technician*	C.P.A. License (with experience in manufacturing environments)
Certified Public Accountant	Communication*
CNC Operator*	Computer-Aided Design (CAD)
Computer Programmer	Computer Skills*
Control Engineer	Electrical Skills*
Design Engineer	Engineering and Manufacturing Systems (Auto)
Draft Engineer	Flexible Manufacturing Concepts
Electrical Engineer*	Fully Certified Status (i.e. Fully certified tool and die maker)
Industrial Engineer	Hydraulics
Machinist*	Lean Management*
Maintenance Mechanic	Math Skills*
Mechanical Technician	Mechanical Systems
Manufacturing Engineer	Passing Drug & Background Check*
Manufacturing Specialist	PLC*
Manufacturing Team Member	Pneumatics
Materials & Planning Leader	Problem Solver
Mechanical Engineer*	Project Management
Mechanic	Robotics*
Mechatronic Technician*	SAP Consulting
Mold Maker	Servo Motors*
Mold Technician	Soft Skills*
Office Supervisor	Statistical Process Control (SPC)
PLC Operator	Teamwork
Quality Control Inspector	Technical Writing
Quality Control Leader	Tool & Die
Quality Engineer	
Technician	
Tool and Die Maker*	
Traditional Business Support	
Test Engineer	
Welder*	

Defense Sector	
Career	Skill/Attribute
Aerospace Engineer*	3D Printing
Certified Program Man.	Adaptability
Certified Program Man.	Advanced Manufacturing
Computer Engineer	Energy Management
Computer Scientist	Finite Element Modeling
Continuous Improvement Engineer	Fuel Systems
Cyber Security Specialist*	Cyber Security Specialist*
Draftsman	Planning & Organization
Electrical Engineer*	Problem Solving
Industrial Engineer	Rapid Prototyping
Industrial Eng. Tech.	Teamwork
IT Specialist	
Manufacturing Technology Engineer	
Material Engineer	
Mechanical Engineer*	
Physicist	
Software Engineer*	
Systems Engineer*	
Upholstery Sewer	

Healthcare & Life Sciences Sector	
Career	Skill/Attribute
Analytical Chemist	Analytical Skills
Case Management Worker*	Attention to detail
Chemical Engineer	Current Good Manufacturing Practices Experience
Corporate Support Functions*	Experience in clean room environment
Electrical Engineer	Experience in FDA Regulated Environments*
Electro-Mechanical Tech	Healthcare Certifications
Experienced Equip. Operator	Leadership
Hospital Marketing/Admissions	Mobile Workforce
IT Engineer	Project Management
IT Specialist	Soft Skills
Lic. Clinical Social Worker	Specialist in Blood Banking (SBB) Designation
Manufacturing Associate*	
Manufacturing Technician	
Mechanical Engineer	
Medical Technician	
Medicare Salesperson	
Nurse	
Nurse (with Cert.)	
Registered Rehab. Nurse Cert.)	
Occupational Therapist	
Physical Therapist	
Plasma Technician	
Plasma Technologist	
Process Engineer	
Production Technician	
Quality Assurance Associate	
Software Engineer	
Speech Therapist	

Information Technology Sector	
Career	Skill/Attribute
Application Developer	Ability to get along with others
Business and Operations Analyst	Analytical Mindset
Business Consultant*	Bilingual
Business Support Services	Business Acumen*
Computer Programmer	Business Intelligence
Computer Scientist	Communication
Cyber Security*	Critical Thinking
Data Analyst	Customer Service*
Data Scientist	Data Analytics*
Electrical Engineering	Defense Acquisition Workforce Improvement Act (DAWIA)
Enrollment Consultant	Certifications
Field Service Engineer	T. Certifications*
Gene Developer	JAVA
IT Security Administrator	LifeLong Learner*
JAVA Developer	Math Degrees
Network Security Specialist	Mobile Application Development
Oracle Developer & DBA	Presentation Skills
Process Improvement Manager	Programming Languages (C#, C++, Python)
Researcher	Project Management*
Salesperson	Spectrum & Frequency Planning
Software Developer*	Statistics Degree
Strategy & Sourcing Consultant	Supply Chain
Web Developer	Virtual Learning
Windows Developer	
Wireless Communication Engineer	

Logistics & Transportation Sector	
Career	Skill/Attribute
Account Manager	Ability to multitask
Capacity Account Manager	Logistics Fields
Certified Public Accountant	Business Acumen
Computer Programmer	Business Writing
Customer Service Specialist	Certified Forklift Operator
Design Technician	Communication
Engineer	Critical Thinking
Forklift Operator*	Decision Making
Industrial Technician	Ethics
Lifeguard	JAVA Programming Language
Maintenance Technician*	JAVA
Office Manager	Maturity
Outside Salesperson	Presentation Skills
Power Plant Operator	Project Management
Refrigeration Specialist	RF Gun
Salesperson	Robotics
Shop Technician/Mechanic	Sales
Truck Driver*	Soft Skills*
Warehouse Worker*	SQL
	Teamwork
	Time Management
	Troubleshooting
	Work Ethics

Manufacturing Sector	
Career	Skill/Attribute
Assembler/fabricator*	Blue Print Reading
Chemical Engineer	Business Skills
CNC Operator*	CAD Software
Electrical Engineer*	CNC Programming
Electrical Maintenance Technician*	Commitment to Success
Engineer*	Communication*
Front Line Leader	Computer Skills*
Industrial Maintenance Technician*	Continuous Improvement
Machinist Operator	Controls
Machinist*	Drafting
Maintenance Mechanic	Engineering
Maintenance Technician	Environmental Health & Safety Experts
Manager	Fluid Power
Manufacturing Engineer*	Knowledge of Supply Chain
Manufacturing Engineer*	Leadership*
Manufacturing Technician	Lean Principles
Mechanical Engineer*	Machine Tooling
Mechanical Maintenance Technician	Math
Operator	OSHA Regulations
Process Engineer	PLC*
Production Supervisor	Print Reading & Gauging
Quality Technician	Reading
Supply Chain Professional	Robotics
Team Facilitator	Safety
Welder*	Soft Skills
	Teamwork*
	Tool & Die*
	Troubleshooting*
	Welding*
	Work Ethic*

Over 50 % of High Demand Careers Require Engineering & Technology Coursework

High School Engineering and Technology

GaDOE CTAE - Energy, Manufacturing, & Science, Technology, Engineering, Mathematics Cluster
TCSG & College & Career Academy Equivalents

* = required for pathway

Electronics Pathway

- 21.45200 Foundations of Electronics*
- 21.45300 Advanced AC and DC Circuits*
- 21.45400 Digital Electronics*
- 21.47800 Electronics Internship

Energy Systems Pathway

- 49.53700 Foundations of Energy Technologies* (replacing the Foundations of Engineering and Technology in August 2014)

- 21.45100 Energy and Power Technology*
- 21.45700 Appropriate and Alternative Energy Technologies*
- 21.44800 Energy Systems Internship

Energy and Power: Generation, Transmission, & Distribution

- 49.53700 Foundations of Energy Technologies*
- 49.53800 Energy and Power: Generation, Transmission, & Distribution*
- 49.53900 Energy Systems Applications*

Engineering Pathway

- 21.42500 Foundations of Engineering and Technology*
- 21.47100 Engineering Concepts*
- 21.47200 Engineering Applications*
- 21.46800 Engineering Internship

Engineering Drafting & Design Pathway

- 48.54100 Introduction to Drafting and Design*
- 48.54200 Survey of Engineering Graphics*
- 48.54300 3D Modeling and Analysis*

Manufacturing Pathway

- 21.44100 Foundations of Manufacturing and Materials Science*
- 21.44500 Robotics and Automated Systems*
- 21.44400 Production Enterprises*
- 21.45800 Manufacturing Internship

Manufacturing - Mechatronics Pathway

- 21.46200 Introduction to Mechatronics - DC Theory, Pneumatic Systems, and Programmable Logic Controllers*
 - 21.46300 AC Theory, Electric Motors, and Hydraulic Systems*
 - 21.46400 Semiconductors, Mechanical Systems, and Pump and Piping Systems*
- Other GPS Engineering & Technology Courses (9-12):
- 21.46100 Research, Design & Project Management

Middle School Engineering and Technology

- 21.02100 Exploring Engineering and Technology Grade 6
- 21.02200 Invention and Innovation Grade 7
- 21.02300 Technological Systems Grade 8

Filling the Need for STEM Teacher Production

Providing a pathway for future teachers

BS of STEM Education, Engineering & Technology Concentration

Leads to Initial Certification in Teaching

FITNESS FOR LIVING 3
HPS 1000 Fitness For Living 2-1-3

GENERAL EDUCATION (Areas A-E, 42 hrs)
AREA A: Essential Skills 9
ENGL 1101 Composition I 3-0-3
ENGL 1102 Composition II 3-0-3
MATH 1113 Precalculus (or MATH 1112) 3-0-3

AREA B: Social Issues 5
Choose one of the following courses: 3-0-3
ANTH 2105 PSYC 2105
CRJU 2105 SOCI 2105
GEOG 2105 2 a 2-0-2
AMST 1102 FL 1002
COM 1109 PHIL 2200
COM 2129

AREA C: Humanities/Fine Arts 6
ENGL 2110 World Literature 3-0-3
ART 1107 Arts in Soc.: Visual Arts or
MUSI 1107 Arts in Society: Music or
TPS 1107 Arts in Society: Theatre 3-0-3

AREA D: Science, Math And Technology 10
PHYS 2211 Principles of Physics I 3-3-4
PHYS 2212 Principles of Physics II 3-3-4
MATH 1190 Calculus I 4-0-4

AREA E: Social Sciences 12
POLS 1101 American Government 3-0-3
ECON 1100 Global Economics 3-0-3 b
HIST 1110 Introduction to World History 3-0-3
HIST 2111 America to 1890 or
HIST 2112 America Since 1890 3-0-3

AREA F: LOWER DIVISION MAJOR REQ 18
CHEM 1211 General Chemistry I 3-0-3
CHEM 1211L General Chemistry I Lab 0-3-1
CHEM 1212 General Chemistry II 3-0-3
CHEM 1212L General Chemistry II Lab 0-3-1
EDG 1211 - Engineering Graphics I 3-0-3
EDG 1212 - Engineering Graphics II 3-0-3
MATH 2202 Calculus II 4-0-4
Course credit from General Education, Area D 2

UPPER DIVISION MAJOR REQ 27
CSE 1301E - C++ Programming for Engineers 3-2-4
ENGR 2214 - Statics 3-0-3
ENED 2007 Design & Manufacturing I (MIT 2.007) 1-6-3
GEOG 2105 2 a 2-0-2
ENED 2008 Design & Manufacturing I (MIT 2.008) 1-6-3
ENED 3001 Informal Methods 3-0-3
HIST 3377 - History of Science 3-0-3
HIST 3378 - History of Technology 3-0-3
ME 3201 Product Realization 2-0-2
ME 3101 Materials Science and Engineering 3-0-3

SUPPORTING DISCIPLINES 36
EDUC 2110 Critical & Contemporary Issues 3-0-3
EDUC 2120 Sociocultural Influence 3-0-3
EDUC 2130 Exploring Teaching & Learning 3-0-3
INED 3304 Education of Exceptional Students 3-0-3
XXXX 4001 Teaching of Engineering 6-0-6
XXXX 4002 Teaching of Engineering Practicum 0-9-3
XXXX 4003 Student Teaching 0-36-12
Science or Math approved by Engineering Ed faculty 3-0-3 e
FREE ELECTIVES 0

Learning community or KSU first-year seminar 0-3 c
PROGRAM TOTAL 126 d

Masters of Arts in Teaching

Leads to Initial Certification in Teaching

PROFESSIONAL DISCIPLINE 26
EDG 1211 - Engineering Graphics I 3-0-3
EDG 1212 - Engineering Graphics II 3-0-3
CSE 1301E - C++ Programming for Engineers 3-2-4
ENED 2007 Design & Manufacturing I (MIT 2.007) 1-6-3
ENED 2008 Design & Manufacturing I (MIT 2.008) 1-6-3
ENED 3001 Informal Methods 3-0-3
HIST 3377 - History of Science 3-0-3
HIST 3378 - History of Technology 3-0-3
ME 3201 Product Realization 2-0-2

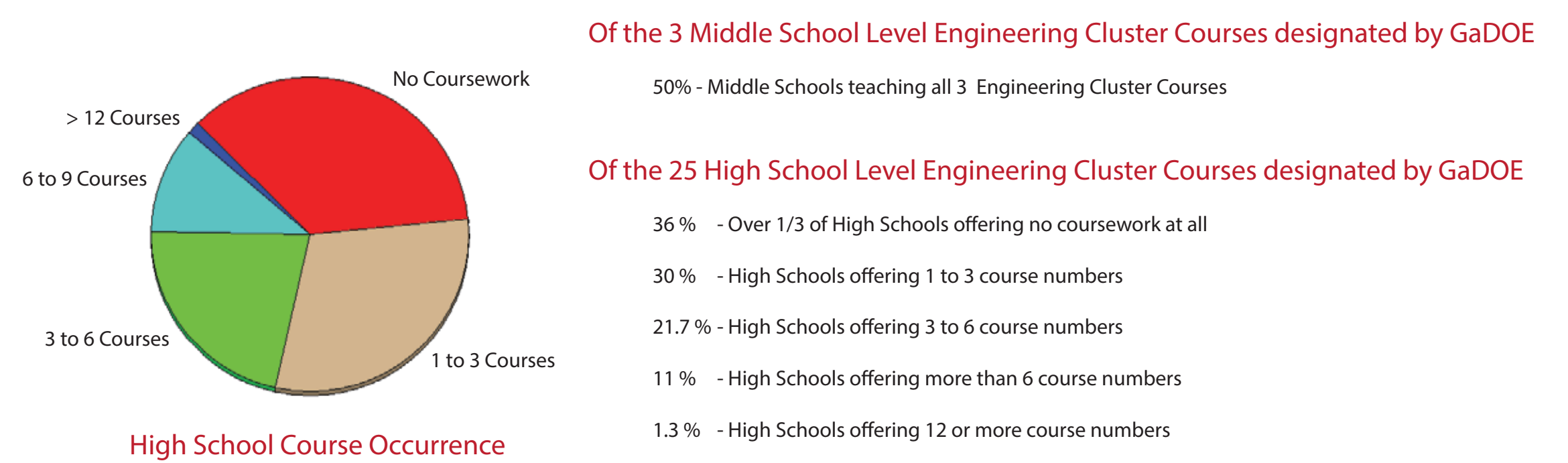
SUPPORTING DISCIPLINES 33
EDUC 2110 Critical & Contemporary Issues 3-0-3
EDUC 2120 Sociocultural Influence 3-0-3
EDUC 2130 Exploring Teaching & Learning 3-0-3
INED 3304 Education of Exceptional Students 3-0-3
XXXX 4001 Teaching of Engineering 6-0-6
XXXX 4002 Teaching of Engineering Practicum 0-9-3
XXXX 4003 Student Teaching 0-36-12

This Section is a VERY rough sketch

21st Century STEM "Integrative" Degree

Differentiators from classic Engineering & Technology educator degrees

- * Integrated approach to STEM education that integrates Science, Technology, Engineering, and Math
- * Strong emphasis for product innovation with intensive hands on labwork
- * Attractive for recruiting next generation T & E educators, from existing robotics competition
- * Support the goals of the International Technology and Engineering Educators Association
- * Meets & Exceeds existing GAPSC 505-3-.39 ENGINEERING AND TECHNOLOGY EDUCATION PROGRAM
- * There is no existing USG degree that
 - * Teaches product innovation and development
 - * Provides hands on access to modern manufacturing labs
 - * Support pedagogy for teaching the next generation Informal Learning activities
 - * Supports i-STEM education through project based learning



Teaches the Expertise Needed for K-12 i-STEM Education

Supports Robotics, Mechatronics, Manufacturing, & Energy



Learn how to effectively recruit and retain student through Informal Learning