

Grayson College Course Catalog

Overview

Advanced manufacturing technology is used in automated fabrication machinery (robotics) that require skilled technicians to design, program, service and repair. Mechatronics refers to the combination of **mechanics** and **electronics**.

Our hands-on Advanced Manufacturing programs prepare graduates to go to work as an entry-level service technician, diagnosing, servicing and repairing automated systems. Advanced manufacturing skills are also an excellent supplement to related areas such as electronics and engineering.

Course Requirements

Grayson College Admission policies require a high school diploma or equivalent. The AAS requires TSI completion. The certificates are TSI exempt.

AAS Degree Requirements

Associate of Applied Science - Advanced Manufacturing Technology

Subject	Semester Hours
First Semester	
TECM 1303 (Technical Calculations)	3
EDUC 1300 (Learning Frameworks)	3
* CRIJ 1307 or HIST 1301	3
MATH 1332 (Contemporary Mathematics)	3
* MCHN 1320 (Precision Tools and Measurements)	3
* ELPT 1311 (Fundamentals of Electricity)	3
MCHN 1302 (Print Reading for Machine Trade)	3
ENGL 1301 (Composition I)	3
* ARTS 1301 or PHIL 1301	3
MCHN 1371 (Manufacturing Skills Standards)	3
QCTC 1343 (Quality Assurance)	3
* MCHN 1438 (Basic Machine Shop I)	4
MCHN 1454	4
ELPT 2319 (Programmable Logic Controllers I)	3
MCHN 1326 (Intro to Computer Aided Manufacturing)	3
INMT 1391 (Special Topics in Manufacturing Tech.)	3
ELPT 1441 (Motor Control)	4
INMT 2388 (Internship-Manufacturing Technology/Technician)	6
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60	

*Please review your Student Planner or contact your Student Success Coach/Faculty Mentor to review which courses may be used to fill this degree requirement.

Certificate Degree Requirements

Advanced Manufacturing Technician - Certificate

Subject	Semester Hours
TECH 1303 (Technical Calculations)	3
MCHN 1320 (Prec Tools & Measure)	3
ELPT 1311 (Basic Electrical Theory)	3
MCHN 1302 (Print Rdng for Mchn)	3
MCHN 1371 (MSSC Local Needs)	3

QCTC 1343 (Quality Assurance)	3
MCHN 1438 (Basic Mch Shop I)	4
MCHN 1454 (Intermediate Machining)	4
ELPT 2319 (PLC'S I)	3
MCHN 1326 (CAM)	3
INMT 1391 (Spec Top in Mfg Technology)	3
ELPT 1441 (Motor Controls)	4
INMT 2388 (Internship Mfg Tech)	3
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	42

Basic Manufacturing Technician - Certificate

Subject	Semester Hours
TECM 1303 (Technical Calculations)	3
* MCHN 1320 (Prec Tools & Measure)	3
* ELPT 1311 (Basic Electrical Theory)	3
MCHN 1302 (Print Rdng for Mchn)	3
QCTC 1343 (Quality Assurance)	3
* MCHN 1438 (Basic Shop I)	4
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	18

(*) asterisk denotes co-requisite classes

Mechatronics Technician - Certificate

Subject	Semester Hours
ELPT 1311 (Fundamentals of Electricity)	3
TECM 1303 (Technical Calculations)	3
ELPT 1441 (Motor Control)	4
ELPT 2319 (Programmable Logic Controllers I)	4
MCHN 1326 (Introduction to Computer Aided Manufacturing)	3
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	16

Capstone Requirement: All students must complete the required departmental comprehensive written and practical competency exam prior to graduation to satisfy the requirements for a capstone experience.

Advanced Manufacturing Level I Machining - Certificate

Subject	Semester Hours
MCHN 1408 (Basic Lathe)	4
MCHN 1413 (Basic Milling)	4
MCHN 1458 (Intermediate Lathe)	4
MCHN 2402 (Intermediate Milling)	4
MCHN 2433 (Advanced Lathe)	4
MCHN 2437 (Advanced Milling)	4
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	24

Capstone Requirement: All students must complete the required departmental comprehensive written and practical competency exam prior to graduation to satisfy the requirements for a capstone experience.

ELPT 1311 - Fundamentals of Electricity

Basic theory and practice of electrical circuits. Includes calculations as applied to alternating and direct current.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 2.0

Lab hours: 2.0

ELPT 1441 - Motor Control

Operating principles of solid-state and conventional controls along with their practical applications. Includes braking, jogging, plugging, safety interlocks, wiring, and schematic diagram interpretations.

Grade Basis: L

Credit hours: 4.0

Lecture hours: 3.0

Lab hours: 2.0

ELPT 2319 - Programmable Logic Controllers I

Fundamental concepts of programmable logic controllers, principles of operation and numbering systems as applied to electrical controls.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 2.0

Lab hours: 2.0

INMT 1391 - Special Topics in Manufacturing Technology

Topics address recently identified current events, skills, knowledge and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 3.0

INMT 2388 - Internship- Manufacturing Technology/Technician

A work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

Grade Basis: L

Credit hours: 6.0

Lab hours: 20.0

Restrictions:

- Internship of 160 hours required.
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MCHN 1302 - Print Reading for Machining Trades

A study of blueprints for machining trades with emphasis on machine drawings.

Grade Basis: L

Credit hours: 3.0

Lecture hours: 2.0

Lab hours: 2.0

MCHN 1320 - Precision Tools and Measurement

An introduction to the modern science of dimensional metrology. Emphasis on the identification, selection, and application of various types of precision instruments associated with the machining trade. Practice of basic layout and piece part measurements while using standard measuring tools.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 2.0
Lab hours: 4.0

MCHN 1326 - Introduction to Computer Aided manufacturing

A study of Computer-Aided manufacturing (CAM) software which is used to develop applications in manufacturing. Emphasis on tool geometry, tool selection and the tool library.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 2.0
Lab hours: 2.0

MCHN 1371 - Manufacturing Skills Standards Council Certification

A course that is focused on the core skills and knowledge needed by the nation's front-line production and material handling workers. Addresses core technical competencies of higher skilled production workers in all sectors of manufacturing (Safety, Quality Practices & Measurement, and Manufacturing Processes & Production)

Grade Basis: L
Credit hours: 3.0
Lecture hours: 2.0
Lab hours: 2.0

MCHN 1408 - Basic Lathe

Not Available

Grade Basis: L
Credit hours: 4.0
Lecture hours: 2.0
Lab hours: 6.0

MCHN 1413 - Basic Milling

Not Available

Grade Basis: L
Credit hours: 4.0
Lecture hours: 2.0
Lab hours: 6.0

MCHN 1438 - Basic Machine Shop I

A course that introduces the student to machining fundamentals. The student will use basic machine tools including the lathe, milling machine, drill press, power saw, and bench grinder. Machine terminology, theory, math, part layout, and bench work using common measuring tools is included. Emphasis is placed on shop safety, housekeeping, and preventative maintenance.

Grade Basis: L
Credit hours: 4.0
Lecture hours: 2.0
Lab hours: 6.0

MCHN 1458 - Intermediate Lathe

Not Available

Grade Basis: L
Credit hours: 4.0
Lecture hours: 2.0
Lab hours: 6.0

MCHN 2402 - Intermediate Milling

Not Available

Grade Basis: L
Credit hours: 4.0
Lecture hours: 2.0
Lab hours: 6.0

MCHN 2433 - Advanced Lathe

Not Available

Grade Basis: L
Credit hours: 4.0
Lecture hours: 2.0
Lab hours: 6.0

MCHN 2437 - Advanced Milling

Not Available

Grade Basis: L
Credit hours: 4.0
Lecture hours: 2.0
Lab hours: 6.0

QCTC 1343 - Quality Assurance

Principles and applications designed to introduce quality assurance. Covers the benefits and applications of quality assurance, proficiency in the use of the tools of quality assurance, application of sampling techniques, evaluation of quality assurance standards, performance of system audits and implementation of a corrective and preventative action plan.

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0
Lab hours: 1.0

TECM 1303 - Technical Calculations

Specific mathematical calculations required by business, industry, and health occupations. Solve technical math problems using addition, subtraction, multiplication, and division; convert between whole numbers, fractions, mixed numbers, and decimals; perform calculations involving percent, ratios, and proportions; and convert numbers to different units of measurement (standard and/or metric).

Grade Basis: L
Credit hours: 3.0
Lecture hours: 3.0
Lab hours: 1.0

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