

APPLIED ENGINEERING & TECHNOLOGIES

AGRICULTURAL SYSTEMS TECHNOLOGY

Agricultural Systems Technology Degree - A60410

Agricultural Systems Technology is designed to provide individuals with the knowledge and skills needed to repair agricultural equipment.

The course work includes diesel engines, power trains, hydraulics, electrical systems, and fuel systems. Other topics include time management, inventory, and parts control.

Graduates of the curriculum should qualify for entry-level employment opportunities in a dealership as technicians qualified to be contributing members of the work team.

Agricultural Systems Technology Diploma - D60410

Program Sequence

First Semester

TRN 110	Intro to Transportation Tech	2
TRN 120	Basic Transportation Electricity	5
TRN 120A	Basic Transportation Electricity Lab	1
TRN 140	Transportation Climate Control	2
TRN 170	PC Skills for Transportation	2
ENG 110	Freshman Composition	3
HUM 121	The Nature of America	3
Elective List I		2

Second Semester

HET 110	Diesel Engines	6
HET 134	Mechanical Fuel Injection	3
PME 112	Consumer Products	2
MAT 110	Math Measurement & Lit	3
Elective List II		2

Third Semester

Elective List III		2
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Fourth Semester

HET 114	Power Trains	5
HYD 134	Hyd/Hydrostatic Const.	4
PME 121	Component Controls	2
COM 120	Intro Interpersonal Com	3
PSY 118	Interpersonal Psychology	3

Fifth Semester

ELN 112	DC/AC Electricity	4
PME 111	Planters and Sprayers	4
PME 122	Agricultural Telematics	3
Elective List I		4

Complete Agricultural Systems Technology Diploma (D60410): ELN 112, ENG 110, HET 110, HET 114, HET 134, HYD 134, PME 111, PME 112, PME 121, PSY 118, TRN 110, TRN 120, TRN 120A, TRN 140, TRN 170

Elective List I (Select 6 hours from the following courses):

ELN 110	Survey of Electronics	3
ELN 113	Electronic Fuel Injection	2
HET 115	Electronic Engines	3
HET 128	Med/Heavy Duty Tune-up	2
HET 192	Selected Topics	2

PME 211	Adv Equipment Repair	4
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Elective List II (Select 2 hours from the following courses):

HYD 110	Hydraulics/Pneumatics I	3
HYD 112	Hydraulics/Med/Heavy Duty	2

Elective List III (Select 2 hours from the following courses):

WBL 111	Work-Based Learning I	1
WBL 112	Work-Based Learning I	2
WLD 112	Basic Welding Processes	2

Graduation Requirements 70 Credit Hours

AIR CONDITIONING, HEATING, AND REFRIGERATION TECHNOLOGY

Air Conditioning, Heating, and Refrigeration Technology Degree - A35100

The Air Conditioning, Heating, and Refrigeration Technology curriculum provides the basic knowledge to develop skills necessary to work with residential and light commercial systems. Topics include mechanical refrigeration, heating and cooling theory, electricity, controls, and safety.

AAS degree graduates should be able to assist in the start up, preventive maintenance, service, repair, and/or installation of residential and light commercial systems and should be able to demonstrate an understanding of system selection and balance and advanced systems.

Air Conditioning, Heating, and Refrigeration Technology Diploma - D35100A

Topics include mechanical refrigeration, heating and cooling theory, electricity, controls, and safety. The diploma program covers air conditioning, furnaces, heat pumps, tools and instruments. Diploma graduates should be able to assist in the start up, preventive maintenance, service, repair, and/or installation of residential and light commercial systems.

Air Conditioning, Heating, and Refrigeration Technology Certificate - C35100B

Topics include mechanical refrigeration, heating and cooling theory, electricity, controls, and safety. The certificate program covers air conditioning, furnaces, tools, and instruments. Certificate graduates should be able to assist in the start up, preventive maintenance, service, repair, and/or installation of residential systems.

Design Certificate - C35100D

The Air Conditioning, Heating, and Refrigeration Technology Design Certificate is designed for individuals interested in the basics of how to design residential and commercial AHR systems. Topics include building codes, principles and concepts of conventional residential heating and cooling system design, principles of designing heating and cooling systems for commercial buildings, and common business and customer relation practices. Certificate graduates should be able to assist in the design of residential and commercial AHR systems, and the mechanical codes that apply toward system installation.

APPLIED ENGINEERING & TECHNOLOGIES

Building Automation Certificate – C35100E Commercial Refrigeration Certificate – C35100F

Program Sequence

First Semester

AHR 111	HVACR Electricity	3
AHR 113C	Comfort Cooling	2

Second Semester

AHR 110	Introduction to Refrigeration	5
AHR 112	Heating Technology	4
AHR 113L	Comfort Cooling	2
PSY 118	Interpersonal Psychology	3

Third Semester

AHR 114	Heat Pump Technology.....	4
AHR 125	HVACR Electronics	3
AHR 133	HVAC Servicing.....	4
ENG 110	Freshman Composition	3

Complete AHR Evening Certificate (C35100B): AHR 111, AHR 112, AHR 113, AHR 125, AHR 133

Fourth Semester

AHR 115	Refrigeration Systems	2
AHR 213	HVACR Building Code	2
AHR 151	HVAC Duct Systems I	2
AHR 211	Residential System Design.....	3
Elective List I	.....	1

Complete AHR Diploma (D35100A): AHR 110, AHR 111, AHR 112, AHR 113C, AHR 113L, AHR 114, AHR 115, AHR 125, AHR 133, AHR 151, AHR 213, ENG 110, PSY 118

Fifth Semester

AHR 180	HVAC Customer Relations.....	1
AHR 215	Commercial HVAC Controls.....	2
BAT 111	Building Automation Systems.....	2
REF 116	Commercial Systems I	4
COM 120	Interpersonal Communication.....	3

Complete Commercial Refrigeration Certificate (C35100F): AHR 110, AHR 111, AHR 115, REF 116

Sixth Semester

AHR 212	Advanced Comfort Systems.....	4
AHR 225	Commercial System Design.....	3
AHR 250	HVAC System Diagnostics.....	2
AHR 263	Energy Management.....	2
HUM 121	The Nature of America	3
MAT 110	Mathematical Measurement and Lit	3

Complete Design Certificate (C35100D): AHR 211, AHR 213, AHR 225, AHR 235, AHR 263

Complete Building Automation Certificate (C35100E): AHR 111, AHR 125, AHR 215, AHR 225, AHR 263, BAT 111

Elective List I (Select 1 hour from the following courses):

AHR 160	Refrigerant Certification	1
AHR 235	Refrigeration Design.....	3
WBL 111	Work-Based Learning I.....	1

Graduation Requirements.....72 Credit Hours

ARCHITECTURAL TECHNOLOGY

Architectural Technology Degree - A40100

The Architectural Technology curriculum provides individuals with knowledge and skills that can lead to employment in the field of architecture or one of the associated professions.

Students receive instruction in construction document preparation, materials and methods, environmental and structural systems, building codes and specifications, and computer applications as well as complete a design project. Optional courses may be provided to suit specific career needs.

Upon completion, graduates have career opportunities within the architectural, engineering, and construction professions as well as positions in industry and government.

Architectural CAD Certificate - C40100A

The evening Architectural CAD certificate is designed for students employed full-time in architectural engineering or construction positions that require microcomputer knowledge. Courses include basic hands-on architectural drafting in residential construction and computer courses in different types of computer-aided drafting software from basic to advanced levels.

Opportunities for employment exist as junior technicians within architectural practices and engineering and contracting companies.

Courses in this program can be transferred directly into the Architectural Technology associate degree program.

Building Information Modeling (BIM) Certificate – C40100B

Architectural and Landscape Illustration Certificate – C40100D

Landscape Design Certificate – C40100F

Plant Identification Certificate – C40100G

Program Sequence

First Semester

ARC 111	Introduction to Architectural Technology	3
ARC 112	Construction Materials and Methods.....	4
ARC 114	Architectural CAD.....	2
ARC 114A	Architectural CAD Lab.....	1
ARC 250	Survey of Architecture	3

Second Semester

ARC 113	Residential Architectural Technology	3
ARC 212	Commercial Construction Technology	3
ARC 225	Architectural BIM I.....	2
ARC 225A	Architectural BIM I Lab.....	1
ARC 264	Digital Architecture	2
MAT 121	Algebra and Trigonometry	3

Third Semester

ENG 111	Expository Writing	3
HUM 115	Critical Thinking.....	3

Fourth Semester

ARC 131	Building Codes	3
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ARC 132	Specifications and Contracts	2
ARC 211	Light Construction Technology	3
ARC 220	Advanced Architectural CAD	2
ARC 230	Environmental Systems	4
ARC 240	Site Planning.....	3

Complete Architectural CAD Certificate (C40100A): ARC 111, ARC 112, ARC 113, ARC 114, ARC 114A, ARC 220

Fifth Semester

ARC 141	Elementary Structures for Architecture	4
ARC 213	Design Project.....	4
SST 140	Green Building and Design Concepts.....	3
ENG 114	Professional Research and Reporting	3
Elective List (choose from 1 of 4 tracks)		5

Elective 1 Track 1: Complete Building Information Modeling Certificate (C40100B): Choose CIV 125, ARC 226, ARC 226A + ARC 212, ARC 225, ARC 225A, ARC 264

Elective 2 Track 2: Complete Architectural Planning Design Certificate (C40100C): Choose LAR 211, LAR 241, LAR 242 + ARC 213, ARC 240, ARC 264

Elective 3 Track 3: Complete Architectural and Landscape Illustration Certificate (C40100D): Choose ARC 231, ARC 235, LAR 235 + ARC 264

Elective 2 Track 4: Complete Landscape Design Certificate (C40100F): Choose HOR 114, HOR 160, LAR 113, LAR 250 + ARC 111, ARC 114, ARC 114A

Elective 2 Track 5: Complete Plant Identification Certificate (C40100G): Choose HOR 160, HOR 161, HOR 162, LAR 231

Sixth Semester

PSY 150	General Psychology.....	3
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Elective List I (Select 5 hours from the following courses):

ARC 226	Architectural BIM II.....	2
ARC 226A	Architectural BIM II Lab.....	1
CIV 125	Civil/Surveying CAD.....	3
CIV 230	Construction Estimating.....	3
WBL 111	Work-Based Learning I.....	1
WBL 112	Work-Based Learning I.....	2
WBL 113	Work-Based Learning I.....	3

Elective List II (Select 5 hours from the following courses):

HOR 112	Landscape Design I.....	3
HOR 114	Landscape Construction.....	3
HOR 160	Plant Materials I.....	3
HOR 161	Plant Materials II.....	3
HOR 162	Applied Plant Science.....	3
LAR 113	Residential Landscape Design.....	3
LAR 120	Sustainable Development.....	3
LAR 211	Commercial Site Design.....	3
LAR 230	Principles of Exterior Planting.....	4
LAR 231	Principles of Interior Planting.....	3
LAR 241	Adv Site Planning.....	3
LAR 242	Planning and Environment.....	3
LAR 250	Survey of LAR.....	3
WBL 111	Work-Based Learning I.....	1
WBL 112	Work-Based Learning I.....	2
WBL 113	Work-Based Learning I.....	3

Elective List III (Select 5 hours from the following courses):

ARC 231	Architectural Presentations.....	4
ARC 235	Architectural Portfolio.....	3
LAR 111	Introduction to Landscape Arch Tech.....	3
LAR 235	LAR Presentation Techniques.....	3
WBL 111	Work-Based Learning I.....	1

WBL 112	Work-Based Learning I.....	2
WBL 113	Work-Based Learning I.....	3

Elective List IV (Select 5 hours from the following courses):

ARC 261	Solar Technology.....	2
LAR 120	Sustainable Development.....	3
WBL 111	Work-Based Learning I.....	1
WBL 112	Work-Based Learning I.....	2
WBL 113	Work-Based Learning I.....	3

Graduation Requirements 72 Credit Hours

AUTOMOTIVE SYSTEMS TECHNOLOGY

Automotive Systems Technology Degree - A60160

The Automotive Systems Technology curriculum prepares individuals for employment as automotive service technicians. It provides an introduction to automotive careers and increases student awareness of the challenges associated with this fast and ever-changing field.

Classroom and lab experiences integrate technical and academic coursework. Emphasis is placed on theory, servicing and operation of brakes, electrical/electronic systems, engine performance, steering/suspension, automatic transmission/transaxles, engine repair, climate control, and manual drive trains.

Upon completion of this curriculum, students should be prepared to take the ASE exam and be ready for full-time employment in dealerships and repair shops in the automotive service industry.

First Semester

AUT 116	Engine Repair.....	3
AUT 116A	Engine Repair Lab.....	1
TRN 110	Intro to Transportation Tech.....	2
TRN 120	Basic Transport Electricity.....	5
TRN 120A	Basic Transport Electricity Lab.....	1
TRN 170	PC Skills for Transp.....	2
MAT 110	Math Measurement & Lit.....	3

Second Semester

AUT 123	Powertrain Diagn & Serv.....	2
AUT 181	Engine Performance 1.....	3
AUT 181A	Engine Performance 1 Lab.....	1
AUT 213	Automotive Servicing 2.....	2
AUT 231	Man Trans/Axles/Drtrains.....	3
ENG 110	Freshman Composition.....	3
HUM 121	The Nature of America.....	3

Third Semester

TRN 140	Transport Climate Control.....	2
TRN 140A	Transport Climate Control Lab.....	2

Fourth Semester

AUT 141	Suspension & Steering Sys.....	3
AUT 141A	Suspension & Steering Lab.....	1
AUT 151	Brake Systems.....	3
AUT 151A	Brake Systems Lab.....	1
AUT 281	Adv Engine Performance.....	3
PSY 118	Interpersonal Psychology.....	3

Fifth Semester

AUT 114	Safety and Emissions.....	2
AUT 183	Engine Performance II.....	4
AUT 221	Auto Transm/Transaxles.....	3
AUT 221A	Auto Transm/Transax Lab.....	1
COM 120	Interpersonal Communication.....	3
Graduation Requirements.....		65 Credit Hours

APPLIED ENGINEERING & TECHNOLOGIES

BIOPHARMACEUTICAL TECHNOLOGY

Biopharmaceutical Technology Degree - A20180

The Biopharmaceutical Technology curriculum is designed to prepare graduates for employment in pharmaceutical manufacturing and related industries, including chemical quality assurance, microbiological quality assurance, product inspection, documentation review, manufacturing, and product/process validation.

Biopharmaceutical Regulations Certificate - C20180B

This is an introduction to regulatory and applied science course work. This certificate is the first of three “stackable” certificates embedded within the Biopharmaceutical Technology Program.

Biopharmaceutical Manufacturing and Quality Certificate - C20180C

The courses in this certificate emphasize manufacturing processes and quality control procedures applicable to the biopharmaceutical industry and is the second of the “stackable” certificates.

Advanced Biopharmaceutical Practices Certificate - C20180D

The courses in this certificate provide more detail and very specific applications within the industry. This certificate is the third of the three “stackable” certificates of the Biopharmaceutical Technology Program.

Pharmaceutical Basics Certificate - C20180E

Program Sequence

First Semester

BPM 110	Bioprocess Practices.....	5
CHM 131	Introduction to Chemistry	3
CHM 131A	Introduction to Chemistry Lab	1
PTC 110	Industrial Environment	3
ENG 111	Expository Writing	3
MAT 121	Algebra/Trigonometry.....	3

Complete Biopharmaceutical Regulations Certificate (C20180B): BPM 110, CHM 131, CHM 131A, PTC 110

Second Semester

BIO 110	Principles of Biology.....	4
CHM 132	Organic and Biochemistry.....	4
ISC 121	Envir Health & Safety	3
PTC 120	Pharmaceutical Quality Control.....	4
ENG 114	Professional Research and Reporting	3

Third Semester

ENV 212	Instrumentation	4
PTC 210	Pharmaceutical Industrial Processes.....	4
PTC 222	Pharmaceutical Process Control.....	3
HUM 110	Technology and Society	3
PSY 118	Interpersonal Psychology	3

Complete Biopharmaceuticals Manufacturing & Quality Certificate (C20180C): CHM 132, PTC 120, PTC 210, PTC 222

Fourth Semester

PTC 212	Applied Microbiology.....	4
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PTC 214	Parenteral Processes	4
PTC 226	Validation.....	3
PTC 228	Pharmaceutical Issues	1
Elective List I	.....	3

Complete Advanced Biopharmaceutical Practices Certificate (C20180D): PTC 212, PTC 214, PTC 226, PTC 228

Complete Pharmaceutical Basics Certificate (C20180E): BPM 110, ISC 121, PTC 110, PTC 120, PTC 228

Elective List I (Select 3 hours from the following courses):

CIS 110	Intro to Computers.....	3
EGR 115	Introduction to Technology	3
ISC 135	Principles of Industrial Management.....	4
ISC 237	Quality Management	3
WBL 111	Work-Based Learning I.....	1

Graduation Requirements68 Credit Hours

CIVIL ENGINEERING TECHNOLOGY

Civil Engineering Technology Degree - A40140

The Civil Engineering Technology curriculum provides the application of relevant theory of engineering needed by technicians to carry out planning and supervisory tasks in the construction of transportation systems, residential and commercial buildings, bridges, dams, and water and wastewater treatment systems.

Course work includes the communication and computational skills required to support the fields such as materials testing, structures, estimating, project management, hydraulics, environmental technology, and surveying. Additional course work will cover the operation of computers and application software including computer-aided drafting.

Graduates should qualify for technician-level jobs with both public and private engineering, construction, and surveying agencies and are also eligible to continue on at East Carolina University and UNC-Charlotte as a junior.

Civil Engineering Technology: Office/CAD - C40140A

The Civil Engineering Technology Certificate allows students to complete the certificate in two to three semesters. Students are then able to work in the civil field. This certificate is designed to address the all-time high demand for technicians, and to train for jobs in these fields with just a small amount of college. This certificate is for students that are not sure which path they would like to follow. The Civil Design certificate will allow you to work as an engineering technician in engineering offices throughout the country. One job function would be to place ideas down on the computer by working directly with an engineer.

Civil Engineering Technology: Field Technician – C40140B

Civil Engineering Technology: Design – C40140C

APPLIED ENGINEERING & TECHNOLOGIES

Program Sequence

First Semester

ACA 115	Success & Study Skills.....	1
CEG 111	Introduction to GIS and Gnss.....	4
CEG 115	Intro to Tech and Sustainability.....	3
CEG 115A	Tech and Sustainability Lab.....	1
CEG 151	CAD for Engineering Technology.....	3
MAT 121	Algebra and Trigonometry.....	3

Second Semester

CIV 125	Civil/Surveying CAD.....	3
EGR 251	Statics.....	3
SRV 110	Surveying I.....	4
COM 120	Intro to Interpersonal Communication.....	3
ENG 111	Expository Writing.....	3

Third Semester

SRV 111	Surveying II.....	4
HUM 110	Technology and Society.....	3

Fourth Semester

CEG 211	Hydrology and Erosion Control.....	3
CEG 212	Intro to Environmental Technology.....	3
CIV 111	Solis and Foundations.....	4
EGR 252	Strength of Materials.....	3
SRV 260	Field and Office Practices.....	2

Fifth Semester

CEG 210	Construction Materials and Methods.....	3
CEG 230	Subdivision Planning and Design.....	3
CEG 235	Project Mgmt and Estimating.....	3
PSY 118	Interpersonal Psychology.....	3
Elective List I	2

Sixth Semester

Elective List II	2
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Complete Office/CAD Certificate (C40140A): CEG 111, CEG 151, CEG 235, CIV 125,

Complete Field Technician Certificate (C40140B): CEG 210, CEG 235, CIV 111, EGR 252

Complete Design Certificate (C40140C): CEG 211, CEG 212, CEG 230, CEG 235, EGR 252

Elective List I (Select 3 hours from the following courses):

GIS 121	Georeferencing & Mapping.....	3
GIS 246	Principles of Property Mapping.....	3
SRV 240	Topo/Site Surveying.....	4

Elective List II (Select 2 hours from the following courses):

CST 131	OSHA/Safety Certification.....	3
WBL 112	Work-Based Learning I.....	2

Graduation Requirements 70 Credit Hours

COLLISION REPAIR AND REFINISHING TECHNOLOGY

Collision Repair and Finishing Technology Degree – A60130

The Collision Repair and Refinishing Technology program prepares individuals to apply technical knowledge and skills to repair, reconstruct and finish automobile bodies, fenders, and

external features. Includes instruction in structure analysis, damage repair, non-structural analysis, mechanical and electrical components, plastics and adhesives, painting and refinishing techniques, and damage analysis and estimating.

Fundamentals Certificate – C60130A

Fundamentals II Certificate – C60130B Program Sequence

First Semester

AUB 131	Structural Damage I.....	2
TRN 110	Intro to Transportation Tech.....	2
TRN 140	Transportation Climate Control.....	2
TRN 140A	Transportation Climate Control Lab.....	2
ENG 110	Freshman Composition.....	3

Second Semester

AUB 121	Non Structural Damage I.....	3
AUB 132	Structural Damage II.....	4
TRN 120	Basic Transportation Electricity.....	5
MAT 110	Math Measurement & Lit.....	3

Third Semester

TRN 180	Basic Welding for Transportation.....	3
TRN 180A	Basic Welding for Transportation Lab.....	1
PSY 118	Interpersonal Psychology.....	3

Fourth Semester

AUB 111	Painting and Refinishing I.....	4
AUB 122	Non Structural Damage II.....	4
AUB 136	Plastics & Adhesives.....	3
COM 110	Intro to Communication.....	3

Complete Fundamentals Certificate (C60130A): AUB 111, AUB 131, TRN 110, TRN 120, TRN 140

Fifth Semester

AUB 112	Painting and Refinishing II.....	4
AUB 114	Special Finishes.....	2
AUB 162	Autobody Estimating.....	2
HUM 110	Technology & Society.....	3

Complete Fundamentals II Certificate (C60130B): AUB 111, AUB 112, AUB 121, AUB 131

Sixth Semester

AUB 150	Automotive Detailing.....	2
ACA 220	Professional Transitions.....	1
Elective List I	.....	2

Elective List I (Select 2 hours from the following courses):

TRN 130	Introduction to Sustainable Transport.....	3
TRN 170	PC Skills for Transportation.....	2
WBL 111	Work-Based Learning I.....	1
WBL 112	Work-Based Learning I.....	2
WBL 121	Work-Based Learning II.....	1
WLD 131	GTAW (TIG) Plate.....	4

Graduation Requirements 65 Credit Hours

APPLIED ENGINEERING & TECHNOLOGIES

CONSTRUCTION EQUIPMENT SYSTEMS TECHNOLOGY

Construction Equipment Systems Technology Degree - A60450

Construction Equipment Systems curriculum is designed to provide individuals with the knowledge and skills needed to troubleshoot and repair construction equipment systems. Construction equipment includes dozers, scrapers, loaders, and forklifts.

The core course work includes the theory of operations, troubleshooting techniques, and repair procedures for engines and electrical and hydraulics systems. The concentration courses will include transmissions, brakes, undercarriage, and equipment repair. Other related courses will be required.

Graduates of the curriculum should qualify for entry-level employment opportunities at businesses that repair construction equipment. Entry and advancement levels depend on the amount of training completed, knowledge and ability levels, work performance, and ethics.

Construction Equipment Systems Technology Diploma - D60450

Hydraulics, Engines, and Transmissions Certificate- C60450BB

This certificate is designed to provide individuals with the knowledge and skills needed to troubleshoot and repair hydraulics, engines, and transmissions in construction equipment.

The core course work includes the theory of operations, troubleshooting techniques, and repair procedures for engines and hydraulics systems. The concentration courses will also include transmissions.

Graduates of the curriculum should qualify for entry-level employment opportunities at businesses, which repair construction equipment. Entry and advancement levels depend on the amount of training completed, knowledge and ability levels, work performance, and ethics.

Fuel Injection, Electrics, & Electronics Certificate – C60450BC

This certificate curriculum is designed to provide individuals with the knowledge and skills needed to troubleshoot and repair fuel injection, electrical, and electronic systems in construction equipment. Construction equipment includes dozers, scrapers, loaders, and forklifts.

The core course work includes the theory of operations, troubleshooting techniques, and repair procedures for electrical and electronic systems. The concentration courses will also include fuel injection systems.

Graduates of the curriculum should qualify for entry-level employment opportunities at businesses, which repair construction equipment. Entry and advancement levels depend on the amount of training completed, knowledge and ability levels, work performance, and ethics.

Program Sequence

First Semester

TRN 110 Intro to Transportation Tech.....2

TRN 120	Basic Transportation Electricity	5
TRN 120A	Basic Transportation Electricity Lab	1
TRN 140	Transportation Climate Control	2
TRN 170	PC Skills for Transportation.....	2
ENG 110	Freshman Composition	3
Elective List I	.....	2

Second Semester

HET 110	Diesel Engines.....	6
PME 118	Undercarriage Components	2
PME 221	Construction Equipment Servicing	2
MAT 110	Math Measurement & Lit	3
Elective List II	2

Third Semester

Elective List III	2
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Fourth Semester

HET 114	Power Trains	5
HYD 134	Hydraulic/Hydrostatic Construction	4
PME 117	Equipment Braking Systems	3
COM 120	Interpersonal Communication.....	3
PSY 118	Interpersonal Psychology	3

Complete Hydraulics, Engines, and Transmission Certificate (C60450BB): Choose 2 hours from Elective List 2 + HET 110, HET 114

Fifth Semester

HET 125	Preventative Maintenance	2
HET 134	Mechanical Fuel Injection	3
PME 211	Advanced Equipment Repair.....	4
HUM 121	The Nature of America	3
Elective List I	.....	4

Complete Fuel Injection, Electrical, and Electronics Certificate (C60450BC): Choose 4 hours from Elective List 1 + HET 134, TRN 120

Complete Construction Equipment Systems Technology Diploma (D60450): Choose 4 hours from Elective List 1 + ENG 110, HET 110, HET 114, HET 134, HYD 134, PME 117, PME 118, PME 221, PSY 118, TRN 110, TRN 120, TRN 120A, TRN 140, TRN 170

Elective List I (Select 6 hours from the following courses):

ELN 110	Survey of Electronics.....	3
ELN 112	Diesel Electronics System	4
ELN 113	Electronic Fuel Injection	2
HET 115	Electronic Engines.....	3
HET 128	Medium/Heavy Duty Tune-up.....	2
HET 192	Selected Topics	2

Elective List II (Select 2 hours from the following courses):

HYD 110	Hydraulics/Pneumatics I.....	3
HYD 112	Hydraulics/Medium/Heavy Duty	2

Elective List III (Select 2 hours from the following courses):

WBL 111	Work-Based Learning I.....	1
WBL 112	Work-Based Learning I.....	2
WLD 112	Basic Welding Processes.....	2

Graduation Requirements68 Credit Hours

APPLIED ENGINEERING & TECHNOLOGIES

CONSTRUCTION MANAGEMENT TECHNOLOGY

Construction Management Technology Degree - A35190

The Construction Management Technology curriculum is designed to provide training for persons interested in project management and other related positions in the construction industry.

Coursework focuses on such topics as construction materials, methods and techniques of modern construction, building codes, contractor licensing law, contractor business law, OSHA and safety on the construction site, project management, project scheduling, project costs and productivity, residential and commercial estimating, residential and commercial blueprint reading, and human relations issues in the construction industry.

Graduates should qualify for entry-level positions as project manager assistants, site superintendents, construction foremen, building inspectors, estimators, and other construction management-related jobs.

Construction Management Technology: Basic Certificate – C35190C

The Construction Management Technology Basic Certificate is designed for individuals already in the construction industry who want to study the basic principles of construction management. Topics include safety/OSHA regulations and compliance, residential and commercial blueprint reading, project planning and scheduling, human relations, issues, and professional construction supervision.

Individuals who complete this certificate will have taken an essential step in the process of qualifying as a construction project manager, superintendent, foreman, or estimator.

Construction Management Technology: Basic Construction Estimating – C35190D

Construction Management Technology: Construction Safety Management – C35190E

Program Sequence

First Semester

BPR 130	Blueprint Reading/Const.....	3
CMT 112AB	Construction Management I, Pt 1.....	3
CMT 210	Construction Management Fund.....	3
CMT 212	Total Safety Performance.....	3
MAT 121	Algebra and Trigonometry.....	3

Second Semester

BPR 230	Commercial Blueprints.....	2
CMT 112BB	Construction Management I, Pt 2.....	3
CMT 218	Human Relations Issues.....	3
CST 131	OSHA/Safety/Certification.....	3
ENG 111	Expository Writing.....	3

Complete Safety Management Certificate (C35190E): BPR 130, BPR 230, CMT 210, CMT 212, CMT 218, CST 131

Third Semester

CMT 120	Codes and Inspections.....	3
SST 140	Green Building and Design Concepts.....	3
COM 120	Intro Interpersonal Com.....	3

PSY 150	General Psychology.....	3
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Fourth Semester

CMT 193A	Selected Topics.....	3
CMT 214	Planning and Scheduling.....	3
CST 150	Building Science.....	3
CST 241	Planning/Estimating I.....	3
HUM 110	Technology and Society.....	3

Complete Basic Certificate (C35190C): BPR 130, BPR 230, CMT 210, CMT 212, CMT 214, CMT 218

Fifth Semester

ACC 120	Prin of Financial Acct.....	4
BUS 139	Entrepreneurship I.....	3
CMT 226	Applications Project*.....	3
CST 242	Planning/Estimating II.....	4

Complete Basic Construction Estimating Certificate (C35190D): BPR 130, BPR 230, CMT 193A, CMT 210, CST 241, CST 242

Graduation Requirements..... 70 Credits Hours

DIESEL AND HEAVY EQUIPMENT TECHNOLOGY

Diesel and Heavy Equipment Technology Degree - A60460

The Diesel and Heavy Equipment Technology curriculum is designed to provide individuals with the knowledge and skills needed to troubleshoot and repair medium- and heavy-duty vehicles.

The core course work includes the theory of operations, troubleshooting techniques, and repair procedures for engines, electrical, and hydraulic systems. Other courses cover transmissions, brakes, and steering/suspension. Additional related courses will be required.

Graduates of the curriculum should qualify for entry-level employment opportunities at businesses that repair medium- and heavy-duty vehicles. Entry and advancement levels depend on the amount of training completed, knowledge and ability levels, work performance, and ethics.

Diesel and Heavy Equipment Technology Diploma - D60460

Hydraulics, Engines, and Transmission Forklift Certificate - C60460BB

Fuel Injection, Electrical, and Electronics Forklift Certificate - C60460BC

Program Sequence

First Semester

TRN 110	Intro to Transportation Tech.....	2
TRN 120	Basic Transportation Electricity.....	5
TRN 120A	Basic Transportation Electricity Lab.....	1
TRN 140	Transportation Climate Control.....	2
TRN 170	PC Skills for Transportation.....	2
ENG 110	Freshman Composition.....	3
Elective List I	.....	2

APPLIED ENGINEERING & TECHNOLOGIES

Second Semester

HET 110	Diesel Engines	6
HET 233	Suspension and Steering	4
MAT 110	Math Measurement & Lit	3
Elective List II	2

Third Semester

Elective List III	2
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Fourth Semester

HET 114	Power Trains	5
HYD 134	Hyd/Hydrostatic Const.....	4
HET 231	Medium/Heavy Duty Brake System	2
HET 232	Medium/Heavy Duty Brake System Lab	1
COM 120	Interpersonal Communication	3
PSY 118	Interpersonal Psychology	3

Complete Hydraulics, Engines, and Transmission Forklift Certificate (C60460BB): Choose HYD 110 or HYD 112 + HET 110, HET 114

Fifth Semester

HET 125	Preventative Maintenance.....	2
HET 134	Mechanical Fuel Injection.....	3
PME 211	Advanced Equipment Repair	4
HUM 121	The Nature of America.....	3
Elective List I	.....	4

Complete Fuel Injection, Electrical, and Electronics Forklift Certificate (C60460BC): Choose 4 hours from Elective List 1 + HET 134, TRN 120

Complete Diesel and Heavy Equipment Technology Diploma (D60460): Choose 4 hours from Elective List 1 and 2 hours from Elective List 2 + ENG 110, HET 110, HET 114, HET 125, HET 134, HET 231, HET 232, HYD 134, PSY 118, TRN 110, TRN 120, TRN 120A, TRN 140, TRN 170

Elective List I (Select 6 hours from the following courses):

ELN 110	Survey of Electronics	3
ELN 112	Diesel Electronics System.....	4
ELN 113	Electronic Fuel Injection	2
HET 115	Electronic Engines	3
HET 128	Medium/Heavy Duty Tune-up	2
HET 192	Selected Topics.....	2

Elective List II (Select 2 hours from the following courses):

HYD 110	Hydraulics/Pneumatics I.....	3
HYD 112	Hydraulics/Medium/Heavy Duty.....	2

Elective List III (Select 2 hours from the following courses):

WBL 111	Work-Based Learning I	1
WBL 112	Work-Based Learning I	2
WLD 112	Basic Welding Processes.....	2

Graduation Requirements 68 Credit Hours

ELECTRICAL SYSTEMS TECHNOLOGY

Electrical Systems Technology Degree - A35130

The Electrical Systems Technology curriculum is designed to provide training for persons interested in the installation and maintenance of electrical systems found in residential, commercial, and industrial facilities.

Training, most of which is hands-on, will include such topics as photovoltaic AC/DC theory, basic wiring practices, programmable logic controllers, industrial motor controls, the National Electrical Code, and other subjects as local needs require.

Graduates should qualify for a variety of jobs in the electrical field as an on-the-job trainee or apprentice assisting in the layout, installation, and maintenance of electrical systems.

Electrical Systems Technology Diploma - D35130

The Electrical Systems Technology curriculum is designed to provide training for persons interested in the installation and maintenance of electrical systems found in residential, commercial, and industrial facilities.

Training, most of which is hands-on, will include such topics as AC/DC theory, basic wiring practices, programmable logic controllers, industrial motor controls, the National Electrical Code, and other subjects as local needs require.

Diploma graduates should qualify for a variety of jobs in the electrical field as an on-the-job trainee or apprentice assisting in the layout, installation, and maintenance of electrical/electronic systems.

Residential Wiring Certificate – C35130A

Commercial Wiring Certificate – C35130B

Industrial Wiring Certificate – C35130C

Wiring Methods Certificate – C35130D

Program Sequence

First Semester

ELC 112	DC/AC Electricity	5
ELC 113	Residential Wiring.....	4
ELC 118	National Electrical Code	2
ELC 127	Software for Technicians	2

Second Semester

ELC 114	Commercial Wiring	4
ELC 117	Motors and Controls	4
ELC 119	NEC Calculations	2

Complete Wiring Methods Certificate (C35130D): ELC 113, ELC 114, ELC 118, ELC 119

Third Semester

ELC 115	Industrial Wiring.....	4
ELC 128	Introduction to PLC.....	3
Elective List I or II.....		3

Complete Electrical Systems Technology Diploma (D35130): Choose ALT 120 + ELC 112, ELC 113, ELC 114, ELC 115, ELC 117, ELC 118, ELC 119, ELC 128, ENG 110, PSY 118

Fourth Semester

BPR 130	Print Reading-Construction	3
ISC 121	Envir Health and Safety.....	3
MAT 110	Math Measurement and Literacy	3
Elective List I or II.....		3

APPLIED ENGINEERING & TECHNOLOGIES

Complete Residential Wiring Certificate (C35130A): BPR 130, ELC 112, ELC 113, ELC 118

Fifth Semester

ACA 220	Professional Transition.....	1
ELC 121	Electrical Estimating.....	2
ELC 134	Transformer Applications	2
Elective List I or II		3

Complete Commercial Wiring Certificate (C35130B): ELC 114, ELC 117, ELC 119, ELC 121

Complete Industrial Wiring Certificate (C35130C): ELC 115, ELC 128, ELC 134, ISC 121

General Education Academic Core Requirements

COM 120	Interpersonal Communications	3
ENG 110	Freshman Composition	3
HUM 121	The Nature of America	3
PSY 118	Interpersonal Psychology	3

Elective List I – Renewable Energy Track (Select 9 hours from the following courses):

ALT 120	Renewable Energy Tech.....	3
ELC 220	Photovoltaic Sys Tech.....	3
ELC 221	Adv Photovoltaic Sys Designs	3

Elective List II - Business Track (Select 9 hours from the following courses):

BUS 110	Introduction to Business.....	3
BUS 115	Business Law I.....	3
BUS 139	Entrepreneurship I.....	3

Graduation Requirements..... 65 Credit Hours

ELECTRONICS ENGINEERING TECHNOLOGY

Electronics Engineering Technology Degree - A40200

The Electronics Engineering Technology curriculum prepares individuals to become technicians who design, build, install, test, troubleshoot, repair, and modify developmental and production electronic components, equipment, and systems such as industrial/computer controls, manufacturing systems, communication systems, and power electronic systems.

A broad-based core of courses, including basic electricity, solid-state fundamentals, digital concepts, and microprocessors, ensures the student will develop the skills necessary to perform entry-level tasks. Emphasis is placed on developing the student's ability to analyze and troubleshoot electronic systems.

Graduates should qualify for employment as engineering assistants or electronic technicians with job titles such as electronics engineering technician, field service technician, maintenance technician, electronic tester, electronic systems integrator, bench technician, and production control technician.

Basic Electronics Certificate - C40200A

The Basic Electronics certificate provides the student with a program of study necessary for developing basic electronic skills. The student will gain an understanding of AC/DC basic circuits, digital circuits, and basic electronic devices. Courses are an adjunct of the Electronics Engineering Technology program and may be transferred directly toward completion of the A.A.S. degree in Electronics Engineering Technology.

PLC Programming Certificate - C40200B

The PLC Programming Certificate provides the student with the basic technical skills and knowledge necessary to work with the Programmable Logic Controllers typically found in an industrial environment. The program investigates the operation and programming of PLCs and the interfacing of PLCs to electronic devices and sensors routinely found in industrial controls. Students entering the program are expected to have a basic knowledge of AC and DC electrical circuits.

SCADA Systems Certificate - C40200E

Instrumentation Certificate - C40200F

Embedded Systems Certificate – C40200G

Program Sequence

First Semester

EGR 131	Intro to Electronics Technology	2
ELC 131	Circuit Analysis I.....	4
ELN 133	Digital Electronics	4
ENG 111	Expository Writing.....	3
MAT 121	Algebra and Trigonometry*.....	3

Second Semester

ELN 131	Analog Electronics I.....	4
ELN 260	Prog Logic Controllers	4
ELN 275	Troubleshooting.....	2
HUM 110	Technology and Society	3
PSY 118	Interpersonal Psychology	3

Complete Basic Electronics Certificate (C40200A): EGR 131, ELC 131, ELN 131, ELN 133, ELN 275

Third Semester

ELN 132	Analog Electronics II.....	4
ELN 231	Industrial Controls.....	3

Fourth Semester

CSC 133	C Programming	3
ELN 232	Introduction to Microprocessors	4
ELN 234	Communication Systems.....	4
Elective List I		3

Fifth Semester

ELN 152	Fabrication Techniques	2
ELN 233	Microprocessor Systems	4
ELN 235	Data Communications Systems	4
ENG 114	Professional Research and Reporting.....	3
Elective List I		3

Complete PLC Programming Certificate (C40200B): Choose ATR 214, ATR 215 + ELN 231, ELN 260

Complete SCADA Systems Certificate (C40200E): Choose ATR 214, PCI 170, PCI 172 + ELN 260

Complete Instrumentation Certificate (C40200F): Choose ATR 215, ELC 250, PCI 172 + ELN 260

Complete Embedded Systems Certificate (C40200G): CSC 133, ELN 133, ELN 152, ELN 233

Elective List I (Select 3 hours from the following courses):

ATR 214	Advanced PLCs.....	4
ATR 215	Sensors and Transducers	3
ELC 250	Critical Power Systems.....	4
PCI 170	DAQ and Control	4

APPLIED ENGINEERING & TECHNOLOGIES

PCI 172	SCADA Systems.....	4
WBL 111	Work-Based Learning I	1

Graduation Requirements 69 Credit Hours

FACILITY MAINTENANCE TECHNOLOGY

Facility Maintenance Technology – A50190

The Facility Maintenance Technology curriculum prepares individuals to repair and maintain electrical and mechanical systems and physical structures of commercial and industrial institutions. Emphasis is on multi-disciplined systems maintenance, troubleshooting, and problem resolution. Course work includes carpentry, interior and exterior finishes, plumbing, electrical, masonry, air conditioning, heating, welding, machining, blueprint reading, building codes, and OSHA regulations, as well as computer applications.

Graduates should qualify for positions as general building mechanics or maintenance technician.

Facility Maintenance Technology: Electrical Systems Certificate – C50190A

Facility Maintenance Technology: HVACR Certificate – C50190B

Facility Maintenance Technology: Basic Plumbing Certificate – C50190C

Basic Facilities Technology I Certificate – C50190D

Basic Facilities Technology II Certificate – C50190E

Program Sequence

First Semester

AHR 113	Comfort Cooling	4
ELC 113	Residential Wiring	4
PLU 115	Basic Plumbing	4
PLU 140	Intro to Plumbing Codes.....	2
WLD 112	Basic Welding Processes.....	2

Second Semester

AHR 111	HVACR Electricity	3
AHR 112	Heating Technology	4
ELC 114	Commercial Wiring.....	4
ELC 127	Software for Technicians.....	2

Complete Facility Maintenance Technology: HVACR Certificate (C50190B): AHR 111, AHR 112, AHR 113, WLD 112

Complete Basic Facilities Technology I Certificate (C50190D): AHR 111, AHR 112, AHR 113, ELC 113

Complete Basic Facilities Technology II Certificate (C50190E): ELC 114, ELC 127, PLU 115, PLU 140, WLD 112

Third Semester

ENG 110	Freshman Composition	3
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HUM 110	Technology and Society	3
PSY 118	Interpersonal Psychology	3

Fourth Semester

AHR 120	HVACR Maintenance	2
BPR 130	Print Reading Construction.....	3
ISC 121	Envir Health & Safety	3
MNT 110	Intro to Maint Procedures	2
MAT 110	Math Measurement & Literacy	3

Fifth Semester

CAR 140	Basic Carpentry	4
MAS 140	Intro to Masonry.....	2
COM 120	Intro Interpersonal Comm.....	3
Elective List I	.....	8
Elective List II	.....	1

Complete Facility Maintenance Technology: Electrical Systems Certificate (C50190A): Choose ELC 112 + ELC 113, ELC 114, ELC 127, ISC 121

Complete Facility Maintenance Technology: Basic Plumbing Certificate (C50190C): Choose PLU 211 + ELC 127, PLU 115, PLU 140, WLD 112

Elective List I (Select 8 hours from the following courses):

AHR 133	HVAC Servicing.....	4
ELC 112	DC/AC Electricity	5
MNT 150	Basic Building Maintenance	2
PLU 120	Plumbing Applications	9
PLU 211	Commercial/Ind Plumbing	3
PLU 214	Backflow Preventer Install	2

Elective List II (Select 1 hour from the following courses):

ACA 115	Success & Study Skills.....	1
ACA 122	College Transfer Success	1
ACA 220	Professional Transitions	1
WBL 111	Work-Based Learning I.....	1

Graduation Requirements 69 Credit Hours

GEOMATICS TECHNOLOGY

Geomatics Technology Degree - A40420

The Geomatics Technology curriculum provides training for technicians in the many areas of surveying. Surveyors are involved in land surveying, route surveying, construction surveying, photogrammetry, mapping, global positioning systems, geographical information systems, and other areas of property description and measurements.

Course work includes the communication and computational skills required for boundary, construction, route, and control surveying, photogrammetry, topography, drainage, surveying law, and subdivision design, with emphasis upon applications of electronic data collection and related software including CAD.

Graduates should qualify for jobs as survey party chief, instrument person, surveying technician, highway surveyor, mapper, GPS technician, and CAD operator. Graduates will be prepared to pursue the requirements necessary to become a Registered Land Surveyor in North Carolina.

Geomatics Technology: CAD Certificate – C40420A

Geomatics Technology: Field Technician Certificate – C40420B

APPLIED ENGINEERING & TECHNOLOGIES

Geomatics Technology: Design Certificate – C40420C

Program Sequence

First Semester

ACA 115	Success & Study Skills.....	1
CEG 115	Intro to Tech and Sustainability.....	3
CEG 115A	Intro to Tech and Sustainability Lab.....	1
SRV 110	Surveying I.....	4
MAT 121	Algebra and Trigonometry.....	3
PSY 118	Interpersonal Psychology.....	3

Second Semester

CEG 111	Introduction to GIS/GNSS.....	4
CEG 151	CAD for Engineering Tech.....	3
COM 120	Intro to Interpersonal Communication.....	3
ENG 111	Writing and Inquiry.....	3
SRV 111	Surveying II.....	4

Third Semester

CIV 125	Civil/Surveying CAD.....	3
SRV 260	Field and Office Practices.....	2

Fourth Semester

CEG 211	Hydrology and Erosion Control.....	3
COM 120	Intro to Interpersonal Communication.....	3
HUM 110	Technology and Society.....	3
GIS 121	Georeferencing and Mapping.....	3
SRV 210	Surveying III.....	4
SRV 250	Advanced Surveying.....	4

Complete Field Technician Certificate (C40420B): SRV 110, SRV 111, SRV 210, SRV 260

Fifth Semester

CEG 230	Subdivision Planning and Design.....	3
GIS 246	Principles of Property Mapping.....	3
SRV 220	Surveying Law.....	3
SRV 240	Topo/Site Surveying.....	4
Elective List I	.....	3

Complete CAD Certificate (C40420A): CEG 111, CEG 115, CEG 151, CIV 125, GIS 246

Complete Design Certificate (C40420C): CEG 211, CEG 230, SRV 240, SRV 250

Sixth Semester

Elective List II	2
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Elective List I (Select 3 hours from the following courses):

CEG 210	Construction Materials & Methods.....	3
CEG 212	Intro to Environmental Tech.....	3
CEG 235	Project Management and Estimating.....	3
EGR 251	Statics.....	3

Elective List II (Select 2 hours from the following courses):

CST 131	OSHA/Safety/Certification.....	3
WBL 112	Work-Based Learning I.....	2

Graduation Requirements 72 Credit Hours

HEAVY EQUIPMENT OPERATION, MANAGEMENT, AND SERVICE

Heavy Equipment Operation, Management, and Service: Repair and Welding Degree – A35340A

Program Sequence

First Semester

HEO 111	Heavy Equipment Operations I.....	12
HEO 114	Erosion Control and Regulations.....	2
ISC 121	Environmental Health and Safety.....	3
PSY 118	Interpersonal Psychology.....	3
Elective List I	.....	2

Completes Basic Heavy Equipment Operator Certificate (C35340A): Choose 2 credit hours from Elective List I + HEO 111, ISC 121

Complete Basic Evening Operator Certificate (C35340EA): HEO 111

Second Semester

HEO 112	Heavy Equipment Operations II.....	12
HEO 113	Grades and Drawings.....	3
HET 125	Preventive Maintenance.....	2
ENG 110	Freshman Composition.....	3

Completes Advanced Heavy Equipment Operator Certificate (C35340B): HEO 112, HEO 113, HET 125

Completes Advanced Evening Operator Certificate (C35340EB): HEO 112

Third Semester

Elective List II	2
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Completes Heavy Equipment Operation, Management, and Service Diploma (D35340): Choose 2 credits from Elective List I and 2 credits from Elective List II + ENG 110, HEO 111, HEO 112, HEO 113, HEO 114, HET 125, ISC 121, PSY 118

Fourth Semester

HYD 134	Hydraulic/Hydrostatic Construction.....	4
TRN 120	Basic Transportation Electricity.....	5
TRN 170	PC Skills for Transportation.....	2
WLD 110	Cutting Processes.....	2
HUM 121	The Nature of America.....	3

Fifth Semester

HET 134	Mechanical Fuel Injection.....	3
PME 221	Construction Equipment Servicing.....	2
WLD 112	Basic Welding Processes.....	2
COM 120	Intro to Personal Communication.....	3
MAT 110	Math Measurement and Lit.....	3

Elective List I (Select 2 hours from the following courses):

HEO 150	MSHA-Equip Tech and Operator.....	2
ISC 115	Construction Safety.....	2

Elective List II (Select 2 hours from the following courses):

HEO 116	Soil Excavation & Groundwork.....	2
TRN 140	Trans Climate Control.....	2
WBL 111	Work-based Learning I.....	1
WBL 112	Work-based Learning I.....	2
WBL 121	Work-based Learning II.....	1

Graduation Requirements 73 Credit Hours

APPLIED ENGINEERING & TECHNOLOGIES

Heavy Equipment Operation, Management, and Service: Project Management Degree – A35340B

Program Sequence

First Semester

HEO 111	Heavy Equipment Operations I	12
HEO 114	Erosion Control and Regulations	2
ISC 121	Environmental Health and Safety	3
PSY 118	Interpersonal Psychology	3
Elective List I		2

Completes Basic Heavy Equipment Operator Certificate (C35340A): Choose 2 credit hours from Elective List I + HEO 111, ISC 121

Complete Basic Evening Operator Certificate (C35340EA): HEO 111

Second Semester

HEO 112	Heavy Equipment Operations II	12
HET 125	Preventive Maintenance	2
MAT 121	Algebra/Trigonometry I	3
Elective List II		3

Completes Advanced Evening Operator Certificate (C35340EB): HEO 112

Third Semester

Elective List III		2
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Fourth Semester

HEO 113	Grades and Drawings	3
ISC 222	Project Planning and Control	2
SRV 110	Surveying I	4
TRN 170	PC Skills for Transportation	2
COM 120	Intro to Personal Communication	3

Completes Advanced Heavy Equipment Operator Certificate (C35340B): HEO 112, HEO 112, HET 125

Fifth Semester

BUS 137	Principles of Management	3
CEG 235	Project Management/Estimating	3
ENG 110	Freshman Composition	3
HUM 121	The Nature of America	3
Elective List IV		2

Completes Heavy Equipment Operation, Management, and Service Diploma (D35340): Choose 2 credits from Elective List I and 2 credits from Elective List II + ENG 110, HEO 111, HEO 112, HEO 113, HEO 114, HET 125, ISC 121, PSY 118

Elective List I (Select 2 hours from the following courses):

HEO 150	MSHA-Equip Tech and Operator	2
ISC 115	Construction Safety	2

Elective List II (Select 3 hours from the following courses):

CEG 115	Intro to Tech and Sustainability	3
EGR 115	Intro to Technology	3

Elective List III (Select 2 hours from the following courses):

CMT 210	Construction Management Fund	3
CMT 212	Total Safety Performance	3
TRN 140	Trans Climate Control	2
WBL 111	Work-based Learning I	1
WBL 112	Work-based Learning I	2
WBL 121	Work-based Learning II	1

Elective List IV (Select 2 hours from the following courses):

CEG 210	Construction Mtls & Methods	3
HEO 116	Soil Excavation & Groundwork	2

Graduation Requirements 72 Credit Hours

Heavy Equipment Operation, Management, and Service: Entrepreneurship/Business Degree – A35340C

Program Sequence

First Semester

HEO 111	Heavy Equipment Operations I	12
HEO 114	Erosion Control and Regulations	2
ISC 121	Environmental Health and Safety	3
PSY 118	Interpersonal Psychology	3
Elective List I		2

Completes Basic Heavy Equipment Operator Certificate (C35340A): Choose 2 credit hours from Elective List I + HEO 111, ISC 121

Complete Basic Evening Operator Certificate (C35340EA): HEO 111

Second Semester

HEO 112	Heavy Equipment Operations II	12
HEO 113	Grades and Drawings	3
HET 125	Preventive Maintenance	2
ENG 110	Freshman Composition	3
MAT 110	Math Measurement and Lit	3

Completes Advanced Heavy Equipment Operator Certificate (C35340B): HEO 112, HEO 112, HET 125

Completes Advanced Evening Operator Certificate (C35340EB): HEO 112

Third Semester

Elective List II		2
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Completes Heavy Equipment Operation, Management, and Service Diploma (D35340): Choose 2 credits from Elective List I and 2 credits from Elective List II + ENG 110, HEO 111, HEO 112, HEO 113, HEO 114, HET 125, ISC 121, PSY 118

Fourth Semester

BUS 110	Introduction to Business	3
BUS 139	Entrepreneurship I	3
ISC 222	Project Planning and Control	2
TRN 170	PC Skills for Transportation	2
Elective List III		3

Fifth Semester

BUS 137	Principles of Management	3
CEG 235	Project Management/Estimating	3
COM 120	Intro to Personal Communication	3
HUM 121	The Nature of America	3

Elective List I (Select 2 hours from the following courses):

HEO 150	MSHA-Equip Tech and Operator	2
ISC 115	Construction Safety	2

Elective List II (Select 2 hours from the following courses):

CEG 115	Intro to Tech and Sustainability	3
HEO 116	Soil Excavation & Groundwork	2
TRN 140	Trans Climate Control	2
WBL 111	Work-based Learning I	1
WBL 112	Work-based Learning I	2

APPLIED ENGINEERING & TECHNOLOGIES

WBL 121 Work-based Learning II 1

Elective List III (Select 3 hours from the following courses):

CMT 210 Construction Management Fund..... 3
 CMT 212 Total Safety Performance 3
 EGR 115 Intro to Technology 3

Graduation Requirements 72 Credit Hours

Heavy Equipment Operation, Management, and Service Diploma – D35340

Program Sequence

First Semester

HEO 111 Heavy Equipment Operations I 12
 HEO 114 Erosion Control and Regulations 2
 ISC 121 Environmental Health and Safety..... 3
 PSY 118 Interpersonal Psychology 3
 Elective List I 2

Second Semester

HEO 112 Heavy Equipment Operations II 12
 HEO 113 Grades and Drawings 3
 HET 125 Preventive Maintenance..... 2
 ENG 110 Freshman Composition 3

Third Semester

Elective List II 2

Elective List I (Select 2 hours from the following courses):

HEO 150 MSHA-Equip Tech and Operator 2
 ISC 115 Construction Safety..... 2

Elective List II (Select 2 hours from the following courses):

HEO 116 Soil Excavation & Groundwork..... 2
 MAT 110 Math Measurement and Lit 3
 WBL 111 Work-based Learning I..... 1
 WBL 112 Work-based Learning I..... 2
 WBL 121 Work-based Learning II..... 1

Graduation Requirements 44 Credit Hours

Basic Heavy Equipment Operator Certificate – C35340A

Program Sequence

First Semester

HEO 111 Heavy Equipment Operations I 12
 ISC 121 Environmental Health and Safety..... 3
 Elective List I 2

Elective List I (Select 2 hours from the following courses):

HEO 150 MSHA-Equip Tech and Operator 2
 ISC 115 Construction Safety..... 2

Graduation Requirements 17 Credit Hours

Advanced Heavy Equipment Operator Certificate – C35340B

Program Sequence

First Semester

HEO 112 Heavy Equipment Operations II..... 12
 HEO 113 Grades and Drawings..... 3
 HET 125 Preventive Maintenance 2

Graduation Requirements 17 Credit Hours

Basic Evening Operator Certificate – C35340EA

Program Sequence

First Semester

HEO 111 Heavy Equipment Operations I 12

Graduation Requirements 12 Credit Hours

Advanced Evening Operator Certificate – C35340EB

Program Sequence

First Semester

HEO 112 Heavy Equipment Operations II..... 12

Graduation Requirements 12 Credit Hours

INTERIOR DESIGN

Interior Design Degree - A30220

The Interior Design curriculum is designed to prepare students for a variety of job opportunities in the field of both residential and non-residential interior design. The focus of the studies is technical knowledge, professional practices, and aesthetic principles.

Students receive instruction in basic design, graphic presentation, construction document preparation, materials and methods, environmental and structural systems, building codes and specifications, computer-aided design, history of interiors and furnishings, color theory, products, business practices, and general education courses.

Upon completion, graduates have career opportunities in residential or commercial interior design, architecture, set design, showroom design, furniture/textiles/accessories sales, and any business dealing with interiors.

Residential Interior Design Certificate – C30200A

Décor Focus Interior Design Certificate – C30200B

Commercial Interior Design Certificate – C30200C

APPLIED ENGINEERING & TECHNOLOGIES

Program Sequence

First Semester

ARC 111	Introduction to Architectural Technology.....	3
ARC 114	Architectural CAD	2
ARC 114A	Architectural CAD Lab	1
DES 112	Building and Construction Sys	3
DES 125	Graphic Presentation I	2
DES 135	Principles & Elements of Design	4

Second Semester

ARC 264	Digital Architecture	2
DES 193A	Selected Topics	3
DES 220	Principles of Interior Design	3
DES 235	Products	3
DES 255	History of Interior & Furnishings I.....	3
Elective List I	.....	3

Third Semester

ENG 111	Expository Writing	3
HUM 110	Technology and Society.....	3

Fourth Semester

ARC 225	Architectural BIM I.....	2
ARC 225A	Architectural BIM I Lab.....	1
DES 230	Residential Deign I.....	3
DES 240	Commercial and Contract Design	3
DES 256	History of Int Design II.....	3
DES 280	Codes and Standards/Int Design.....	3

Complete Residential Interior Design Certificate (C30200A): ARC 111, ARC 114, ARC 114A, DES 112, DES 125, DES 220, DES 230

Fifth Semester

DES 210	Business Practices for Interior Design	2
DES 265	Lighting and Interior Design	2
DES 285	Capstone.....	4
ENG 114	Professional Research and Reporting	3
PSY 150	General Psychology.....	3

Complete Décor Focus Interior Design Certificate (C30200B): DES 135, DES 225, DES 235, DES 255, DES 256, DES 265

Complete Commercial Interior Design Certificate (C30220C): DES 210, DES 220, DES 240, DES 265, DES 280, DES 285

Sixth Semester

MAT 110	Math Measurement and Literacy	3
Elective List II	.....	2

Elective List I (Select 3 hours from the following courses):

ARC 220	Advanced Architectural CAD	2
DES 225	Textiles and Fabrics.....	3

Elective List II (Select 2 hours from the following courses):

BUS 260	Business Communication	3
WBL 111	Work-Based Learning I	1
WBL 112	Work-Based Learning I	2
WBL 121	Work-Based Learning II	1

Completion Requirements72 Credit Hours

Mechanical Engineering Technology

Mechanical Engineering Technology Degree - A40320

The Mechanical Engineering Technology curriculum provides a board and diverse educational experience. Course work includes computer-aided drafting and design, applied mechanics, materials engineering, quality control, manufacturing methods and processes, computer usage, mathematics, physics and oral and written communications. The courses will stress critical thinking, planning and problem solving.

The diversity of Mechanical Engineering Technology degree enables students to pursue exciting careers in following fields:

- Engineering/Architectural
- Mechanical Design
- Manufacturing
- Quality
- Service

If elected, students can pursue a 4 year Engineering Technology degree after graduation.

Mechanical Design Certificate - C40320B

Study of design elements for CAD users.

Thermal Mechanics Certificate - C40320C

The Thermal Mechanics Certificate provides a refresher or a concentration in thermal sciences.

Materials Engineering Certificate - C40320D

The Materials Engineering Certificate will provide students with an understanding of engineering materials and processes.

Additive Manufacturing Certificate - C40320G

The Additive Manufacturing Certificate will help students understand modeling and manufacturing processes used in additive manufacturing such as 3D printing.

Mechanical Drafting Certificate – C40320H

Mechatronics Certificate – C40320I

Program Sequence

First Semester

DFT 151	CAD I.....	3
EGR 115	Introduction to Technology	3
MEC 161	Manufacturing Processes I	3
ENG 111	Expository Writing.....	3
MAT 121	Algebra/Trigonometry I.....	3

Second Semester

DFT 152	CAD II.....	3
DFT 153	CAD III.....	3
MEC 130	Mechanisms	3
ENG 114	Professional Research and Reporting.....	3
PHY 131	Physics-Mechanics.....	4

Third Semester

TDP 110	Intro to 3D Printing.....	3
PSY 118	Interpersonal Psychology.....	3

APPLIED ENGINEERING & TECHNOLOGIES

Fourth Semester

DFT 154	Intro to Solid Modeling	3
EGR 251	Statics	3
MEC 180	Manufacturing Materials.....	3
MEC 265	Fluid Mechanics	3
Elective List I	.....	3

Complete Mechanical Design Certificate (C40320B): DFT 151, DFT 154, MEC 130, MEC 180

Complete Materials Engineering Certificate (C40320D): DFT 151, MEC 130, MEC 161, MEC 180

Complete Additive Manufacturing Certificate (C40320G): DFT 151, DFT 154, MEC 161, MEC 180, TDP 110

Complete Mechanical Drafting Certificate (C40320H): DFT 151, DFT 152, DFT 153, DFT 154, TDP 110

Complete Mechatronics Certificate (C40320I): ELN 260 + MEC 130, MEC 161, MEC 265

Fifth Semester

EGR 252	Strength of Materials	3
EGR 285	Design Project.....	2
ISC 121	Env Health and Safety	3
MEC 267	Thermal Systems	3
HUM 110	Technology and Society.....	3

Complete Thermal Mechanics Certificate (C40320C): DFT 154, MEC 180, MEC 265, MEC 267

Elective List I (Select 3 hours from the following courses)

ARC 225	Architectural BIM I.....	2
ARC 225A	Architectural BIM I Lab.....	1
CEG 111	Introduction to GIS and Gnss.....	4
ELC 128	Introduction to PLC	3
WBL 111	Work-Based Learning I	1
WBL 112	Work-Based Learning I	2

Graduation Requirements 66 Credit Hours

MISSION CRITICAL OPERATIONS

Mission Critical Operations Degree – A40430

The Mission Critical Operations curriculum is designed to prepare students through the study and application of principles from mathematics, natural sciences, and technology and applied processes based on these subjects.

Course work includes mathematics, natural sciences, engineering sciences and technology.

Graduates should qualify to obtain occupations such as technical service providers, materials and technologies testing services, process improvement technicians, engineering technicians, industrial and technology managers, or research technicians.

The Mission Critical Operations curriculum prepares graduates for employment in a wide range of positions in specific mission critical environments, operations technology, and maintenance. Course work includes the development of a student's ability to maintain technically sophisticated systems for business continuity and near continuous uptime using engineering, information technology, and industrial management and maintenance skills. The course work emphasizes analytical and problem-solving skills required to sustain high availability national security interests and includes instruction in electromechanical systems, networking, automation, cybersecurity, emergency management and systems integration.

Graduates should qualify for employment as entry-level technicians with businesses, industries, educational systems, and governmental agencies in national critical infrastructure areas including, but not limited to, communications, emergency services, energy, financial services, healthcare, information technology, and transportation.

Introduction to MCO Certificate – C40430A

Critical Electrical Systems Certificate – C40430B

Critical Control Systems Certificate – C40430C

Mission Critical Operations Certificate – C40430D

Program Sequence

First Semester

BAT 117	Principles of Heat and Fluids	3
ISC 112	Industrial Safety	2
MCO 110	Intro to MCO	3
MNT 110	Intro to Maintenance Procedures.....	2
ENG 111	Writing and Inquiry.....	3
MAT 121	Algebra/Trigonometry	3

Second Semester

ELC 127	Software for Technicians	2
ELC 131	Circuit Analysis I	4
MCO 115	MCO Infrastructures	3
MNT 222	Industrial Sys Schematics.....	2
HUM 110	Technology and Society	3

Complete Introduction to MCO Certificate (C40430A): BAT 117, ISC 112, MCO 110, MCO 115, MNT 110

Third Semester

PSY 118	Interpersonal Psychology	3
WBL 112	Work-Based Learning I.....	2

Fourth Semester

ATR 112	Intro to Automation	3
BAT 111	Building Automation Systems.....	2
ELN 235	Data Communication Systems	4
ELC 250	Critical Power Systems.....	4
MCO 210	Critical Site Operations	3

Complete Critical Electrical Systems Certificate (C40430B): ELC 131, ELC 250, ELN 235

Fifth Semester

MCO 260	Critical Facility Infrastructures.....	4
MCO 265	Critical Facility Management	3
MCO 266	ICS Cyber Security	3
PCI 172	SCADA Systems	4
ENG 114	Prof Research & Reporting.....	3

Complete Critical Control Systems (C40430C): ATR 112, BAT 111, MCO 266, MNT 222, PCI 172

Complete Mission Critical Operations Certificate (C40430D): ELC 127, MCO 210, MCO 260, MCO 265

Graduation Requirements 68 Credit Hours

APPLIED ENGINEERING & TECHNOLOGIES

PLUMBING

Plumbing: Residential Diploma - D35300A

The Plumbing curriculum is designed to give individuals the opportunity to acquire basic skills to assist with the installation and repair of plumbing systems in residential and small buildings.

Course work includes sketching diagrams, interpretation of blueprints, and practices in plumbing assembly. Students will gain knowledge of state codes and requirements.

Graduates should qualify for employment at parts supply houses, maintenance companies, and plumbing contractors to assist with various plumbing applications.

Plumbing: Commercial Diploma – D35300B

Plumbing Concepts I Certificate - C35300D

The Plumbing certificate curriculum is designed to give individuals the opportunity to acquire basic skills to assist with the installation and repairs of plumbing systems in residential and small buildings.

Course work includes sketching diagrams, interpretation of blueprints, and practices in plumbing assembly. Students will gain additional knowledge of State Codes and requirements.

Graduates should qualify for employment at parts supply houses, and for entry-level positions with maintenance companies and plumbing contractors to assist with various plumbing applications.

Plumbing Concepts II Certificate - C35300E

The Plumbing certificate curriculum is designed to give individuals the opportunity to acquire basic skills to assist with the installation and repairs of plumbing systems in residential and small buildings.

Course work includes sketching diagrams, interpretation of blueprints, and practices in plumbing assembly. Students will gain additional knowledge of State Codes and requirements.

Graduates should qualify for employment at parts supply houses, and for entry-level positions with maintenance companies and plumbing contractors to assist with various plumbing applications.

Program Sequence – Plumbing: Residential Diploma (D35300A)

First Semester

BPR 130	Blueprint Reading/Construction.....	3
PLU 110	Modern Plumbing	9
PLU 124	Plumbing Business Operations	2
PLU 145	Plumbing Measure Calculations.....	2

Second Semester

ENG 110	Freshman Composition	3
PLU 120	Plumbing Applications	9
PLU 140	Introduction to Plumbing Codes	2
PLU 150	Plumbing Diagrams	2
PLU 160	Plumbing Estimates.....	2

Complete Plumbing Concepts I Certificate (C35300D): BPR 130, PLU 110, PLU 140

Complete Plumbing Concepts II Certificate (C35300E): PLU 120, PLU 150, PLU 160

Third Semester

PLU 130	Plumbing Systems.....	6
PSY 118	Interpersonal Psychology	3
Electives I.....		1

Electives List I (Choose 1 hour from the following):

SST 140	Green Building and Design Concepts.....	3
PLU 192	Selected Topics in Plumbing	2

Graduation Requirements 44 Credit Hours

Program Sequence – Plumbing: Commercial Diploma (D35300B)

First Semester

BPR 130	Blueprint Reading/Construction.....	3
PLU 120	Plumbing Applications	9
PLU 140	Intro to Plumbing Codes.....	2
PLU 211	Commercial/Industrial Plumbing.....	3
PSY 118	Interpersonal Psychology	3

Second Semester

BPR 230	Commercial Blueprints	2
PLU 110	Modern Plumbing	9
PLU 124	Plumbing Business Operations	2
PLU 145	Plumbing Measure/Calculations.....	2
Electives List I.....		3

Complete Plumbing Concepts I Certificate (C35300D): BPR 130, PLU 110, PLU 140

Third Semester

PLU 214	Backflow Preventer Install	2
PLU 230	Slab Rough-In	4
ENG 110	Freshman Composition	3
Electives List II		1

Electives List I (Choose 3 hours from the following):

PLU 220	Commercial Rough-In Plumbing	4
PLU 225	Commercial Trim-Out Procedures	4

Electives List II (Choose 1 hour from the following):

SST 140	Green Building and Design Concepts	3
WBL 111	Work-Based Learning I.....	1

Graduation Requirements 48 Credit Hours

WELDING TECHNOLOGY

Welding Technology Degree - A50420

The Welding Technology curriculum provides students with a sound understanding of the science, technology, and applications essential for successful employment in the welding and metal industry.

Instruction includes consumable and non-consumable electrode welding and cutting processes. Courses in math, blueprint reading, metallurgy, welding inspection, and destructive and non-destructive testing provides the student with industry-standard skills developed through classroom training and practical application.

Welding Technology Diploma - D50420

Successful graduates of the Welding Technology diploma curriculum may be employed as entry-level technicians in welding and metalworking industries. Career opportunities also exist in construction, manufacturing, fabrication, sales, quality control, supervision, and welding-related self-employment.

Welding Technology Certificate - C50420B

Instruction includes an introduction to consumable and non-consumable electrode welding and cutting processes. Additional courses in blueprint reading, metallurgy, and destructive testing

APPLIED ENGINEERING & TECHNOLOGIES

provides the student with industry-standard skills developed through classroom training and practical application.

Successful graduates of the Welding Technology certificate curriculum may be employed as entry-level technicians in welding and metalworking industries. Career opportunities also exist in construction, manufacturing, fabrication, sales, quality control, and welding-related self-employment.

Fabrication Design Certificate - C50420C

Instruction includes an introduction to fabrication design as it applies to welding technology.

Computer Controlled Welding Certificate - C50420D

Instruction includes an introduction to computer controlled welding.

Program Sequence

First Semester

ENG 110	Freshman Composition	3
WLD 110	Cutting Processes	2
WLD 115	SMAW (Stick) Plate.....	5
WLD 121	GMAW (MIG) FCAW/Plate.....	4
WLD 141	Symbols and Specifications	3

Complete Welding Certificate (C50420B): WLD 110, WLD 115, WLD 121, WLD 141

Second Semester

MAT 110	Math Measurement and Literacy.....	3
WLD 116	SMAW (Stick) Plate/Pipe.....	4
WLD 122	GMAW (MIG) Plate	3
WLD 131	GTAW (TIG) Plate.....	4

Third Semester

WLD 132	GTAW (TIG) Plate/Pipe.....	3
WLD 151	Fabrication I.....	4
WLD 262	Inspection and Testing	3

Complete Fabrication Design Certificate (C50420C): WLD 110, WLD 131, WLD 141, WLD 151

Complete Welding Technology Diploma (D50420): ENG 110, MAT 110, WLD 110, WLD 115, WLD 116, WLD 121, WLD 122, WLD 131, WLD 132, WLD 141, WLD 151, WLD 262

Fourth Semester

ISC 112	Industrial Safety.....	2
WLD 215	SMAW (Stick) Pipe.....	4
PSY 118	Interpersonal Psychology	3
Elective List I		3

Fifth Semester

WLD 231	GTAW (TIG) Pipe.....	3
WLD 265	Automated Welding/Cutting.....	4
COM 110	Introduction to Communication.....	3
HUM 121	The Nature of America	3

Complete Computer Controlled Welding Certificate (C50420D): WLD 110, WLD 121, WLD 131, WLD 141, WLD 265

Elective List I (Select 3 hours from the following courses):

BUS 110	Introduction to Business	3
MEC 180	Engineering Materials.....	3
WBL 111	Work-Based Learning I.....	1
WBL 112	Work-Based Learning I.....	2

Graduation Requirements.....66 Credit Hours