laboratory and mechanical skills need to conduct quality control testing and diagnose biofuels related problems.

Upon completion of the certificate students will be employable in a variety of biofuels markets, including fuel production, analysis, marketing, and distribution.

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Sustainability Technologies
Program sites: Pittsboro Campus

Course Requirements for Biofuels Certificate:

Required Major Core Courses (16 SHC)		
ALT 120	Renewable Energy Tech	2-2-3
ALT 110	Biofuels I	3-0-3
ALT 210	Biofuels II	3-2-4
ALT 211	Biofuels Analytics	2-4-4
MNT 230	Pumps and Piping	1-3-2

Total Semester Hours Credit Required for Graduation: 16

Sustainability Technologies
Credential: Renewable Energy Certificate in Sustainability Technologies
C40370RE

The Renewable Energy certificate is designed to prepare individuals for employment in renewable energy, or related industries, where key emphasis is placed on energy production along with sustainable technologies.

Coursework includes an introduction to sustainability as well as trade specific classes in renewable energy. Some courses include testing options for industry recognized certificates.

Graduates should qualify for positions within the renewable energy, construction, or environmental industries. Employment opportunities exist in both the government and private industry sectors where graduates may function as PV, solar thermal, or biofuels technicians.

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Sustainability Technologies
Program Sites: Pittsboro Campus

Course Requirements for Renewable Energy Certificate

ALT 110	Biofuels I	3-0-3
ALT 120	Renewable Energy Tech	2-2-3
ALT 250	Thermal Systems	2-2-3
ELC 111	Intro to Electricity	2-2-3
ELC 220	Photovoltaic Systems Technology	2-3-3
SST 130	Modeling Renewable Energy	2-2-3
		13-11-18

Industrial Technologies

Computer Aided Drafting Technology
Credential: Associate in Applied Science Degree in Computer-Aided Drafting Technology
A50150

The Computer Aided Drafting Technology curriculum prepares graduates for employment as drafters or designers in a wide range of fields including mechanical and manufacturing engineering. Computer aided drafters and designers assist in the design and development of manufactured products.

This course-of-study prepares students to apply technical skills and advanced computer software and hardware to develop plans and related documentation, and manage the hardware and software of a CAD system. It includes instruction in architectural drafting, computer-aided-drafting (CAD), creating and managing two and three-dimensional models, and linking CAD documents to other software applications and operating systems.

11-11-16

In addition to coursework in computer aided drafting, students will study computer applications, machining, design, planning and problem solving, as well as oral and written communication.

Graduates of the curriculum should qualify for CAD jobs in architectural and engineering consulting firms and industrial design businesses.

Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science in Computer-Aided Drafting Technology
Program Sites: Lee Campus - Day Program

Course Requirements for the Computer-Aided Drafting Technology Degree

I. General Education Academic Core (19 SHC)		C-L-SHC
ENG 111	Freshman Composition	3-0-3
ENG 116	Technical Report Writing	3-0-3
MAT 121	Algebra and Trigonometry	2-2-3
	Humanities/Fine Arts Elective	3-0-3
	Social/Behavioral Science Elective	3-0-3
*PHY 110	Conceptual Physics	3-0-3
*PHY 110A	Conceptual Physics Lab	0-2-1

II. Major Hours (49 SHC)

A. Technical Core (12 SHC)		
DFT 151	CAD I	2-3-3
DFT 152	CAD II	2-3-3
DFT 153	CAD III	2-3-3
DFT 154	Intro to Solid Modeling	2-3-3

B. Program Major (12 SHC)		
DDF 211	Design Process I	1-6-4
DFT 111	Technical Drafting I	1-3-2

DFT 253	CAD Data Management	2-2-3
DFT 254	Intermed Solid Model/Render	2-3-3

C. Other Major Hours (25 SHC)

ARC 114	Architectural CAD	1-3-2
ARC 114A	Architectural CAD Lab	0-3-1
BPR 111	Print Reading	1-2-2
BPR 121	Blueprint Reading: Mechanical	1-2-2
CIS 110	Introduction to Computers	2-2-3
DFT 211	Gears, Cams & Pulleys	1-3-2
DFT 259	CAD Project	1-4-3
DDF 252	Advanced Solid Modeling	2-2-3
MEC 161	Manufacturing Processes I	3-0-3
MEC 161A	Manufacturing Processes I Lab	0-3-1
MEC 180	Engineering Materials	2-3-3

III. Other Required Hours (1 SHC)

Student Success—Select one:

ACA 111	College Student Success	1-0-1
ACA 115	Success and Study Skills	0-2-1
ACA 122	College Transfer Success	1-0-1

Total Semester Hours Credit required for graduation: 69

* Student may substitute PHY 121

Computer Aided Drafting Technology Credential: Diploma in Computer-Aided Drafting Technology D50150

The Computer Aided Drafting Technology curriculum prepares graduates for employment as drafters or designers in a wide range of fields including architecture and manufacturing engineering. Computer aided drafters and designers assist in the design and development of manufactured products.

This course-of-study prepares students to apply technical skills and advanced computer software and hardware to develop plans and related documentation, and manage the hardware and software of a CAD system. It includes instruction in architectural drafting, computer-aided-drafting (CAD), creating and managing two and three-dimensional models, and linking CAD documents to other software applications and operating systems.

In addition to coursework in computer aided drafting, students will study computer applications, machining, design, planning and problem solving, as well as oral and written communication.

Graduates of the curriculum should qualify for CAD jobs in architectural and engineering consulting firms and industrial design businesses.

Program Length: 4 semesters

Career Pathway Options: Associate in Applied Science in Computer-Aided Drafting Technology, Diploma in Computer-Aided Drafting Technology
Program Sites: Lee Campus - Day Program

Course Requirements for the Computer-Aided Drafting Technology Diploma

I. General Education Academic Core (6 SHC)		C-L-SHC
ENG 110	Freshman Composition	3-0-3
MAT 121	Algebra and Trigonometry	2-2-3

II. Major Hours (34 SHC)

A. Technical Core (9 SHC)

DFT 151	CAD I	2-3-3
DFT 152	CAD II	2-3-3
DFT 154	Intro to Solid Modeling	2-3-3

B. Program Major (5 SHC)

DFT 111	Technical Drafting I	1-3-2
DFT 254	Intermed Solid Model/Render	2-3-3

C. Other Major Hours (20 SHC)

BPR 111	Print Reading	1-2-2
BPR 121	Blueprint Reading: Mechanical	1-2-2
CIS 110	Introduction to Computers	2-2-3
DDF 211	Design Process I	1-6-4
DFT 153	CAD III	2-3-3
DFT 211	Gears, Cams & Pulleys	1-3-2
MEC 161	Manufacturing Processes I	3-0-3
MEC 161A	Manufacturing Proc I Lab	0-3-1

Total Semester Hours Credit required for graduation: 40

Computer Aided Drafting Technology Credential: Certificate in Computer-Aided Drafting Technology C50150C

The Computer Aided Drafting Technology curriculum prepares graduates for employment as drafters or designers in a wide range of fields including architecture and manufacturing engineering. Computer aided drafters and designers assist in the design and development of manufactured products.

This course-of-study prepares students to apply technical skills and advanced computer software and hardware to develop plans and related documentation, and manage the hardware and software of a CAD system. It includes instruction in computer-aided-drafting (CAD), creating and managing two and three-dimensional models.

Graduates of the curriculum should qualify for CAD jobs in architectural and engineering consulting firms and industrial design businesses.

Program Length: 2 semesters

Career Pathway Options: Associate in Applied Science in Computer-Aided Drafting Technology (Higher entrance standards required), Diploma Computer-Aided Drafting Technology (Higher entrance standards required), Certificate in Computer-Aided Drafting Technology, Certificate in Computer-Aided Drafting with an Emphasis in Solid Modeling
Program Sites: Lee Campus - Day Program

Course Requirements for the Computer-Aided Drafting Technology Certificate

I. Technical Core (6 SHC)		
DFT 151	CAD I	2-3-3
DFT 152	CAD II	2-3-3
II. Other Major Hours (7 SHC)		
CIS 110	Intro to Computers	2-2-3
BPR 111	Print Reading	1-2-2
BPR 121	Blueprint Reading: Mechanical	1-2-2

Total Semester Hours Credit required for graduation: 13

Computer Aided Drafting Technology Credential: Certificate in Computer-Aided Drafting Technology with an Emphasis in Solid Modeling
C50150S

The Computer Aided Drafting Technology with an Emphasis in Solid Modeling curriculum prepares graduates for employment as drafters or designers in a wide range of fields including architecture and manufacturing engineering. Computer aided drafters and designers assist in the design and development of manufactured products.

This course-of-study prepares students to apply technical skills and advanced computer software and hardware to develop plans and related documentation, and manage the hardware and software of a CAD system. It includes instruction in mechanical drafting, computer-aided-drafting (CAD), creating and managing two and three-dimensional models while emphasizing solid modeling and rendering.

Graduates of the curriculum should qualify for CAD jobs in architectural and engineering consulting firms and industrial design businesses.

Program Length: 3 semesters
Career Pathway Options: Associate in Applied Science in Computer-Aided Drafting Technology (Higher entrance standards required), Diploma Computer-Aided Drafting Technology (Higher entrance standards required), Certificate in Computer-Aided Drafting Technology, Certificate in Computer-Aided Drafting with an Emphasis in Solid Modeling
Program Sites: Lee Campus - Day Program

Course Requirements for the Computer-Aided Drafting Technology with an Emphasis in Solid Modeling Certificate

I. Technical Core (6 SHC)		
DFT 154	Intro to Solid Modeling	2-3-3
DFT 254	Intermediate Solid Modeling/Render	2-3-3
II. Other Major Hours (7 SHC)		
CIS 110	Intro to Computers	2-2-3
BPR 111	Print Reading	1-2-2
BPR 121	Blueprint Reading: Mechanical	1-2-2

Total Semester Hours Credit required for graduation: 13

Computer Integrated Machining Credential: Associate in Applied Science Degree in Computer-Integrated Machining with an Emphasis in Tool, Die and Mold Making
A50210

The Computer-Integrated Machining curriculum prepares students with the analytical, creative and innovative skills necessary to take a production idea from an initial concept through design, development and production, resulting in a finished product.

Coursework may include manual machining, computer applications, engineering design, computer-aided drafting (CAD), computer-aided machining (CAM), blueprint interpretation, advanced computerized numeric control (CNC) equipment, basic and advanced machining operations, precision measurement and high-speed multi-axis machining.

Graduates should qualify for employment as machining technicians in high-tech manufacturing, rapid-prototyping and rapid-manufacturing industries, specialty machine shops, fabrication industries, and high-tech or emerging industries such as aerospace, aviation, medical, and renewable energy, and to sit for machining certification examinations.

This Program has an emphasis on Tool, Die and Mold Making.

Program Length: 6 semesters
Career Pathway Options: Associate in Applied Science in Computer-Integrated Machining with an Emphasis in Tool, Die and Mold Making
Program Sites: Lee Campus - Day Program

Course Requirements for Computer-Integrated Machining Technology with an emphasis in Tool, Die and Mold Making

I. General Education Academic Core (15 SHC)		C-L-SHC
ENG 111	Writing and inquiry	3-0-3

ENG 114	Professional Research and Reporting	3-0-3
MAT 121	Algebra /Trigonometry Iq	2-2-3
	Humanities/Fine Arts Elective	3-0-3
	Social/Behavioral Science Elective	3-0-3

II. Major Hours (61 SHC)

A. Technical Core (16 SHC)

BPR 111	Print Reading	1-2-2
MAC 111	Machining Technology I	2-12-6
MAC 112	Machining Technology II	2-12-6
MAC 124	CNC Milling	1-3-2

B. Other Major Hours Required for Graduation (45 SHC)

CIS 111	Basic PC Literacy	1-2-2
BPR 121	Print Reading: Mechanical	1-2-2
MAC 113	Machining Technology III	2-12-6
MAC 122	CNC Turning	1-3-2
MAC 151	Machining Calculations	1-2-2
MAC 153	Compound Angles	1-2-2
MAC 171	Measure/Material & Safety	0-2-1
MAC 224	Advanced CNC Milling	1-3-2
MAC 226	CNC EDM Machining	1-3-2
MAC 241	Jigs and Fixtures I	2-6-4
MAC 243	Die Making I	2-6-4
MAC 244	Die Making II	1-9-4
MAC 245	Mold Construction I	2-6-4
MAC 246	Mold Construction II	1-9-4
MEC 110	Introduction to CAD/CAM	1-2-2
MEC 142	Physical Metallurgy	1-2-2

Total Semester Hours Credit required for graduation: 76

Computer-Integrated Machining Credential: Diploma in Computer-Integrated Machining D50210

The Computer-Integrated Machining curriculum prepares students with the analytical, creative and innovative skills necessary to take a production idea from an initial concept through design, development and production, resulting in a finished product.

Coursework may include manual machining, computer applications, engineering design, computer-aided drafting (CAD), computer-aided machining (CAM), blueprint interpretation, advanced computerized numeric control (CNC) equipment, basic and advanced machining operations, precision measurement and high-speed multi-axis machining.

Graduates should qualify for employment as machining technicians in high-tech manufacturing, rapid-prototyping and rapid-manufacturing industries, specialty machine shops, fabrication industries, and high-tech or emerging industries such as aerospace, aviation, medical, and renewable energy, and to sit for machining certification examinations.

Program Length: 3 semesters
Career Pathway Options: Associate in Applied Science in Computer-Integrated Machining with an Emphasis in Tool, Die and Mold Making (Higher entrance standards required); Diploma in Computer-Integrated Machining Technology
Program Sites: Lee Campus – Day/Evening Program
Harnett Campus – Day/Evening Program

Course Requirements for Computer-Integrated Machining Technology Diploma

I. General Education Academic Core (9 SHC)		C-L-SHC
*ENG 102	Applied Communication II	3-0-3
*MAT 110	Mathematical Measurement and Literacy	2-2-3
	Humanities/Fine Arts Elective	3-0-3

II. Major Hours (31 SHC)

A. Technical Core (16 SHC)

BPR 111	Print Reading	1-2-2
MAC 111	Machining Technology I	2-12-6
MAC 112	Machining Technology II	2-12-6
MAC 124	CNC Milling	1-3-2

B. Other Major Hours (15 SHC)

BPR 121	Print Reading: Mechanical	1-2-2
CIS 111	Basic PC Literacy	1-2-2
MAC 113	Machining Technology III	2-12-6
MAC 151	Machining Calculations	1-2-2
MAC 171	Measure/Material & Safety	0-2-1
MEC 142	Physical Metallurgy	1-2-2

Total Semester Hours Credit required for graduation: 40

*These courses are not transferable to the Associate in Applied Science Degree.

Computer-Integrated Machining Credential: Certificate in Computer-Integrated Machining C50210

The Computer-Integrated Machining curriculum prepares students with the analytical, creative and innovative skills necessary to take a production idea from an initial concept through design, development and production, resulting in a finished product.

Coursework may include manual machining, computer applications, engineering design, computer-aided drafting (CAD), computer-aided machining (CAM), blueprint interpretation, advanced computerized numeric control (CNC) equipment, basic and advanced machining operations, precision measurement and high-speed multi-axis machining.

Graduates should qualify for employment as machining technicians in high-tech manufacturing, rapid-prototyping and rapid-manufacturing industries, specialty machine

shops, fabrication industries, and high-tech or emerging industries such as aerospace, aviation, medical, and renewable energy, and to sit for machining certification examinations.

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Computer-Integrated Machining with an Emphasis in Tool, Die and Mold Making (Higher entrance standards required); Diploma Computer Integrated-Machining (Higher entrance standards required); Certificate in Computer-Integrated Machining .
Program Sites:
Lee Campus –Day/ Evening Program
Harnett Campus –Day/ Evening Program

Course Requirements for Computer-Integrated Machining Technology Certificate
I. Major Hours (17 SHC)
A. Technical Core (10 SHC

BPR 111	Print Reading	1-2-2
MAC 111	Machining Technology I	2-12-6
MAC 124	CNC Milling	1-3-2

B. Other Major Hours (7 SHC)

BPR 121	Print Reading: Mechanical	1-2-2
MAC 151	Machining Calculations	1-2-2
MAC 171	Measure/Material & Safety	0-2-1
MEC 142	Physical Metallurgy	1-2-2

Total Semester Hours Credit required for graduation: 17

Industrial Systems Technology Credential: Associate in Applied Science Degree in Industrial Systems Technology A50240

The Industrial Systems Technology curriculum is designed to prepare or upgrade individuals to safely service, maintain, repair and install equipment. Instruction includes theory and skill training needed for inspecting, testing, troubleshooting, and diagnosing industrial systems. Students will learn multi-craft technical skills in blueprint reading, mechanical systems maintenance, electricity, hydraulics/pneumatics, welding, machining or fabrication, as well as various diagnostic and repair procedures. Practical application in these industrial systems will be emphasized and additional advanced coursework may be offered.
Upon completion of this curriculum, graduates should be able to individually, or with a team, safely install, inspect, diagnose, repair and maintain industrial process and support equipment. Students will also be encouraged to develop their skills as life-long learners.

Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science in Industrial Systems Technology
Program Sites: Lee Campus - Day Program

Course Requirements for Industrial Systems Technology

I. General Education Academic Core (16 SHC)		**C-L-SHC**
ENG 111	Writing and Inquiry	3-0-3
	Humanities/Fine Arts Elective	3-0-3
	Social/Behavioral Science Elective	3-0-3
PHY 121	Applied Physics I	3-2-4
ENG 116	Technical Report Writing	3-0-3

II. Major Hours (60 SHC)
A. Technical Core (18 SHC)

BPR 111	Print Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
HYD 110	Hydraulics/Pneumatics I	2-3-3
ISC 110	Workplace Safety	1-0-1
MEC 111	Machine Processes I	1-4-3
MNT 110	Introduction to Maintenance Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2

B. Program Major (13 SHC)

BPR 115	Electric/Fluid Power Diagrams	1-2-2
ELC 117	Motors and Controls	2-6-4
ELC 128	Introduction to PLC	2-3-3
ELC 228	PLC Applications	2-6-4

C. Other Major Hours (29 SHC)

AHR 120	HVACR Maintenance	1-3-2
**CIS 111	Basic PC Literacy	1-2-2
ELN 231	Industrial Controls	2-3-3
ELN 260	Prog. Logic Controllers	3-3-4
MNT 111	Maintenance Practices	2-2-3
MNT 230	Pumps and Piping Systems	1-3-2
MNT 240	Industrial Equipment Troubleshooting	1-3-2

*Select **one** emphasis

General IST Emphasis

ELC 229	Applications Project	1-3-2
HYD 121	Hydraulics/Pneumatics II	1-3-2
WLD 117	Industrial SMAW	1-4-3
WLD 121	GMAW (MIG) FCAW/Plate	2-6-4

BioMaintenance Emphasis

BPM 110	Bioprocess Practices	3-4-5
ISC 278	cGMP Quality Systems	2-0-2
MNT 270	Bioprocess Equipment Maintenance	1-3-2
MNT 280	Bioprocess Operating Systems	1-3-2

III. Other Required Hours (1 SHC)
Choose one course:

ACA 111	College Student Success	1-0-1
ACA 115	Success and Study Skills	0-2-1
ACA 122	College Transfer Success	1-0-1

Total Semester Hours Credit required for graduation: 76/77

Industrial Systems Technology
Credential: Diploma in Industrial Systems Technology
D50240

The Industrial Systems Technology curriculum is designed to prepare or upgrade individuals to safely service, maintain, repair and install equipment. Instruction includes theory and skill training needed for inspecting, testing, troubleshooting, and diagnosing industrial systems. Students will learn multi-craft technical skills in blueprint reading, mechanical systems maintenance, electricity, hydraulics/pneumatics, welding, machining or fabrication, as well as various diagnostic and repair procedures. Practical application in these industrial systems will be emphasized and additional advanced coursework may be offered.

Upon completion of this curriculum, graduates should be able to individually, or with a team, safely install, inspect, diagnose, repair, and maintain industrial process and support equipment. Students are encouraged to develop life-long learning skills.

Program Length: 3 semesters
Career Pathway Options: Associate in Applied Science in Industrial Systems Technology (Higher entrance standards required); Diploma in Industrial Systems Maintenance Technology
Program Sites: Lee Campus - Day Program

Course Requirements for Industrial Systems Technology Diploma

I. General Education Academic Core (10 SHC)		**C-L-SHC**
ENG 111	Writing and Inquiry	3-0-3
	Humanities/Fine Arts Elective	3-0-3
PHY 121	Applied Physics I	3-2-4

II. Major Hours (33 SHC)

A. Technical Core (18 SHC)		
BPR 111	Print Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
HYD 110	Hydraulics/Pneumatics I	2-3-3
ISC 110	Workplace Safety	1-0-1
MEC 111	Machine Processes I	1-4-3
MNT 110	Introduction to Maintenance Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2

B. Program Major (5 SHC)		
BPR 115	Electric/Fluid Power Diagrams	1-2-2
ELC 128	Introduction to PLC	2-3-3

C. Other Major Hours (10 SHC)		
AHR 120	HVACR Maintenance	1-3-2
CIS 111	Basic PC Literacy	1-2-2
MNT 111	Maintenance Practices	2-2-3
WLD 117	Industrial SMAW	1-4-3

Total Semester Hours Credit required for graduation: 43

Industrial Systems Technology
Credential: Certificate in Electrical Controls
C5024010

This curriculum will provide students with knowledge of electricity and electrical controls. Students will learn AC/DC electricity, pilot devices, control relays, motor starters, and electromechanical devices. Upon completion, students will have the flexibility of pursuing a Diploma or an Associate in Applied Science Degree in Industrial Systems Maintenance Technology.

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Industrial Systems Technology (Higher entrance standards required); Diploma in Industrial Systems Technology (Higher entrance standards required); Certificate in Electrical Controls
Program Sites: Lee Campus - Evening Program

Course Requirements for Electrical Controls Certificate

I. General Education Academic Core (0 SHC)		**C-L-SHC**

II. Major Hours (SHC)

A. Technical Core (5 **SHC)**		
ELC 112	DC/AC Electricity	3-6-5

B. Program Major (7 SHC)		
ELC 117	Motors and Controls	2-6-4
ELC 128	Introduction to PLC	2-3-3

C. Other Major Hours (4 SHC)		
ISC 110	Workplace Safety	1-0-1
ELN 231	Industrial Controls	2-3-3

Total Semester Hours Credit required for graduation: 16

Industrial Systems Technology
Credential: Certificate in Industrial Hydraulics
C5024020

This curriculum will provide students with knowledge of hydraulics and pneumatics. Students will learn hydraulic and pneumatic blueprint reading, how to repair valves and pumps, and how to measure and troubleshoot systems. Upon completion, students will have the flexibility of pursuing a Diploma or an Associate in Applied Science Degree in Industrial Systems Technology.

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Industrial Systems Technology (Higher entrance standards

required); Diploma in Industrial Systems Maintenance Technology (Higher entrance standards required); Certificate in Industrial Hydraulics
Program Sites: Lee Campus - Evening Program

Course Requirements for Industrial Hydraulics Certificate

I. General Education Academic Core (0 SHC)		**C-L-SHC**

II. Major Hours (17 SHC)

A. Technical Core (5 **SHC)**

HYD 110	Hydraulics/Pneumatics I	2-3-3
MNT 110	Introduction to Maintenance Procedures	1-3-2

B. Program Major (5 SHC)

BPR 115	Electric/Fluid Power Diagrams	1-2-2
ELC 128	Introduction to PLC	2-3-3

C. Other Major Hours (7 SHC)

HYD 121	Hydraulics/Pneumatics II	1-3-2
MNT 111	Maintenance Practices	2-2-3
MNT 230	Pumps and Piping Systems	1-3-2

Total Semester Hours Credit: 17

Industrial Systems Technology
Credential: Certificate in Programmable Logic Controllers (PLC)
C5024030

This curriculum will provide students with knowledge of PLC's and PLC applications. In addition, students will become proficient in the use of PLC software, hardware, maintenance and troubleshooting, and programming. Upon completion, students will have the flexibility of pursuing a Diploma or an Associate in Applied Science Degree in Industrial Systems Technology.

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Industrial Systems Technology (Higher entrance standards required); Diploma in Industrial Systems Technology (Higher entrance standards required); Certificate in Programmable Logic Controllers
Program Sites: Lee Campus - Evening Program

Course Requirements for Programmable Logic Controller Certificate

I. General Education Academic Core (0 SHC)		**C-L-SHC**

II. Major Hours (17 SHC)

A. Technical Core (6 **SHC)**

ELC 112	DC/AC Electricity	3-6-5
ISC 110	Workplace Safety	1-0-1

B. Program Major (7 SHC)

ELC 128	Introduction to PLC	2-3-3
ELC 228	PLC Applications	2-6-4

C. Other Major Hours (4 SHC)

ELN 260	Prog. Logic Controllers	3-3-4

Total Semester Hours Credit: 17

Telecommunications Installation and Maintenance
Credential: Diploma in Telecommunications Installation and Maintenance
D50380

The Telecommunications Installation and Maintenance curriculum prepares individuals for jobs in the telecommunications industry. It provides fundamental training for new students and provides upgrade training for current employees of telecommunications companies. Coursework includes basic electricity, cable splicing, fiber optics, LAN/WAN, cable fault location and repair, central office administration, standards and codes, and other related topics. Emphasis is placed on hands-on installation and maintenance training. A graduate should be prepared to work in the telecommunications industry in outside plant operations, on central office equipment, and on business communication equipment.

Program Length: 3 semesters
Career Pathway Options: Diploma in Telecommunications Installation and Maintenance
Program Sites: North Carolina School of Telecommunications. Day and selected evening courses. Corporate and career-centered programs.

Course Requirements for Telecommunications Installation and Maintenance Diploma

I. General Education Academic Core (6 SHC)		**C-L-SHC**
ENG 102	Applied Communication II	3-0-3
	Social/Behavioral Science Elective	3-0-3

II. Major Hours (36 SHC)

A. Technical Core (17 SHC)

TCT 103	Installer Level I Cabling	1-2-2
TEL 100	Telecommunications Basic Electricity	3-0-3
TEL 105	Fiber Optics: Splicing	1-2-2
TEL 106	Fiber Optics: Connectors	1-2-2
TEL 108	Comdial Key Systems	0-2-1
TEL 201	Station Installation and Repair	1-2-2
TEL 202	Cable Splicing	1-2-2
TEL 203	Cable Fault Location	0-2-1
TEL 205	Digital Central Office Administration	1-2-2

B. Other Major Hours (19 SHC)

CIS 110	Introduction to Computers	1-2-3
MAT 110	Mathematical Measurement and Literacy	2-2-3
TEL 209	ADSL Installation	0-2-1
	Business Elective	3

	Major Electives	9

Business Electives (Choose one course)

BUS 110	Introduction to Business	3-0-3
BUS 125	Personal Finance	3-0-3
BUS 137	Principles of Management	3-0-3
BUS 151	People Skills	3-0-3
BUS 152	Human Relations	3-0-3
BUS 230	Small Business Management	3-0-3
BUS 255	Organizational Behavior in Business	3-0-3
BUS 270	Professional Development	3-0-3
BUS 280	REAL Small Business	4-0-4

Major Elective Course Listing - Select a minimum of 9 SHC from one of the following groups:

(Telecommunications Group)

TEL 102	Pole Climbing	0-2-1
TEL 104	CATV Installation and Repair: Distribution	0-2-1
TEL 109	T-1 Span Line Maintenance	0-2-1
TEL 204	Transmission Fundamentals	2-0-2
TCT 100	Telco Safety Regulations	1-2-2
TCT 101	Vault Management	1-2-2
TCT 102	Underground Locating	1-2-2
TCT 104	Installer Level 2 Copper	1-2-2
TCT 105	Installer Level 2 Fiber	1-2-2
TCT 106	Technician Level Cabling	1-2-2
	OR	

(Small Home/Small Office Networking Group)

NET 125	Networking Basics	1-4-3
NET 126	Routing Basics	1-4-3
NOS 110	Operating Systems Concepts	2-3-3
NOS 130	Windows Single User	2-2-3
	OR	

(Networking Infrastructure Group)

NET 125	Networking Basics	1-4-3
NET 126	Routing Basics	1-4-3
NET 225	Routing and Switching I	1-4-3
NET 230	Wide Area Networking	2-2-3
NET 241	VOIP Fundamentals	2-2-3

Total Semester Hours Credit required for Graduation: 42

Telecommunications Installation and Maintenance
Credential: Certificate in Telecommunications Installation and Maintenance
C50380

The Telecommunications Installation and Maintenance curriculum prepares individuals for jobs in the telecommunications industry. It provides fundamental training for new students and provides upgrade training for current employees of telecommunications companies. Coursework includes basic electricity, cable splicing, fiber optics, LAN/WAN, cable fault location and repair, central office administration, standards and codes, and other related topics. Emphasis is placed on hands-on installation and maintenance training. A graduate should be prepared to work in the telecommunications industry in outside plant operations, on central office equipment, and on business communication equipment.

Program Length: 1 semester
Career Pathway Options: Diploma in Telecommunications Installation and Maintenance (Higher entrance standards required).
Program Sites: N. C. School of Telecommunications – Day

Course Requirements for Telecommunications Installation and Maintenance Certificate

I. General Education Academic Core (0 SHC) C-L-SHC

II. Major Hours (18 SHC)

A. Technical Core (17 SHC)

TCT 103	Installer Level 1 Cabling	1-2-2
TEL 100	Telecommunications Basic Electricity	3-0-3
TEL 105	Fiber Optics: Splicing	1-2-2
TEL 106	Fiber Optics: Connectors	1-2-2
TEL 108	Comdial Key Systems	0-2-1
TEL 201	Station Installation and Repair	1-2-2
TEL 202	Cable Splicing	1-2-2
TEL 203	Cable Fault Location	0-2-1
TEL 205	Digital Central Office Administration	1-2-2

B. Other Major Hours (1 SHC)

TEL 209	ADSL Installation	0-2-1

Total Semester Hours Credit required for graduation: 18

Welding Technology
Credential: Diploma in Welding Technology
D50420

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

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

Graduates of the Welding Technology 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.

Program Length: 5 semesters
Career Pathway Options: Diploma in Welding Technology
Program Sites:

Lee Campus - Day Program

Course Requirements for the Welding Technology Diploma

I. General Education Academic Core (6 SHC)		**C-L-SHC**
ENG 102	Applied Communications II	3-0-3
MAT 110	Mathematical Measurement and Literacy	2-2-3

II. Major Hours (36 SHC)

A. Technical Core (18 SHC)

WLD 110	Cutting Processes	1-3-2
WLD 115	SMAW (Stick) Plate	2-9-5
WLD 121	GMAW (MIG) FCAW/Plate	2-6-4
WLD 131	GTAW (TIG) Plate	2-6-4
WLD 141	Symbols & Specifications	2-2-3

B. Other Major Hours (18 SHC)

BPR 111	Print Reading	1-2-2
ISC 110	Workplace Safety	1-0-1
WLD 116	SMAW (Stick) Plate/Pipe	1-9-4
WLD 151	Fabrication I	2-6-4
WLD 262	Inspection and Testing	2-2-3
WLD 265	Automated Welding/Cutting	2-6-4

Total Semester Hours Credit required for graduation: 42

Welding Technology
Credential: Certificate in Welding Technology
C50420

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

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

Graduates of the Welding Technology 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.

Program Length: 2 semesters
Career Pathway Options: Diploma in Welding Technology (Higher entrance standards required), Certificate in Welding Technology
Program Sites:
Lee Campus - Day Program

Course Requirements for the Welding Technology Diploma

I. General Education Academic Core (0 SHC)		**C-L-SHC**

II. Major Hours (18 SHC)

A. Technical Core (15 SHC

WLD 110	Cutting Processes	1-3-2
WLD 115	SMAW (Stick) Plate	2-9-5
WLD 121	GMAW (MIG) FCAW/Plate	2-6-4
WLD 131	GTAW (TIG) Plate	2-6-4

B. Other Major Hours (3 SHC)

BPR 111	Print Reading	1-2-2
ISC 110	Workplace Safety	1-0-1

Total Semester Hours Credit required for graduation: 18

Welding Technology
Credential: Certificate in Robotic Welding Technology
C50420R

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

Instruction includes consumable welding and cutting processes. Courses may include safety, print reading, automated welding/cutting processes, metallurgy, welding inspection, and destructive and non-destructive testing providing the student with industry-standard skills developed through classroom training and practical application.

Graduates of the Robotics 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, supervision, and welding-related self-employment.

Program Length: 3 semesters
Career Pathway Options: Diploma in Welding Technology (Higher entrance standards required), Certificate in Welding Technology
Program Sites:
Lee Campus - Day Program

Course Requirements for the Welding Technology Diploma

I. General Education Academic Core (0 SHC)		**C-L-SHC**

II. Major Hours (13 SHC)

A. Technical Core (6 SHC)

WLD 110	Cutting Processes	1-3-2
WLD 121	GMAW (MIG) FCAW/Plate	2-6-4

B. Other Major Hours (7 SHC)

BPR 111	Print Reading	1-2-2
ISC 110	Workplace Safety	1-0-1
WLD 265	Automated Welding/Cuttng	2-6-4

Total Semester Hours Credit required for graduation: 13

Public Service Technologies

Barbering Credential: Associate in Applied Science in Barbering A55110

The Barbering credential is designed to provide competency-based knowledge, scientific/artistic principles and hands-on fundamentals associated with the barbering industry. The curriculum also provides a simulated environment that enables students to develop manipulative skills. Coursework includes instruction in all phases of professional barbering, hair design, chemical processes, skin care, nail care, multi--- cultural practices, business/computer principles, product knowledge and other selected topics. Graduates should qualify to sit for the State Board of Examiners. Upon successfully passing the State Board exam, graduates will be issued a license. Employment is available in barbershops and related businesses.

Program Length: 6 semesters
Career Pathway Options: Associate in Applied Science in Barbering
Program Sites: West Harnett Campus, Day and Evening; General Education courses may be taken on a main campus or through distance education

Course Requirements for Barbering Degree

I. General Education Academic Core (15 SHC)		**C-L-SHC**
ENG 111	Expository Writing	3-0-3
	Communication Elective	3-0-3
MAT 110	Mathematical Measurement and Literacy	2-2-3
	Humanities Elective	3-0-3
	Social/Behavioral Science Elective	3-0-3

II. Major Hours (52 SHC)

A. Technical Core (43 SHC)

BAR 111	Barbering Concepts I	4-0-4
BAR 112	Barbering Clinic I	0-24-8
BAR 113	Barbering Concepts II	4-0-4
BAR 114	Barbering Clinic II	0-24-8
BAR 115	Barbering Concepts III	4-0-4
BAR 116	Barbering Clinic III	0-12-4
BAR 117	Barbering Concepts IV	2-0-2
BAR 118	Clinic IV	0-21-7
BAR 119	Trichology and Chemistry	1-3-2

B. Other Major Hours Required for Graduation (9 SHC)

BAR 121	Contemp Hair Coloring	1-3-2
BUS 110	Introduction to Business	3-0-3
CIS 110	Introduction to Computers	2-2-3
WBL 110	World of Work	1-0-1

III. Other Required Hours (1 SHC)

Student Success – Select One

ACA 111	College Student Success	1-0-1
ACA 115	Success and Study Skills	0-2-1
ACA 122	College Transfer Success	1-0-1

Total Semester Hours Credit required for graduation: 68

Communication Elective – Choose One		3-0-3
COM 110	Intro to Communication	3-0-3
COM 120	Intro to Interpersonal Comm	3-0-3
COM 140	Intro to Intercultural Comm	3-0-3
COM 231	Public Speaking	3-0-3
ENG 114	Prof Research & Reporting	3-0-3
ENG 115	Oral Communications	3-0-3
ENG 116	Technical Report Writing	3-0-3

Barbering Credential: Diploma in Barbering D55110

The Barbering Curriculum is designed to provide competency-based knowledge, scientific/artistic principles and hands-on fundamentals associated with the barbering industry. The curriculum also provides a simulated environment that enables students to develop manipulative skills. Coursework includes instruction in all phases of professional barbering, hair design, chemical processes, skin care, nail care, multi-cultural practices, business/computer principles, product knowledge and other selected topics. Graduates should qualify to sit for the State Board of Examiners. Upon successfully passing the State Board exam, graduates will be issued a license. Employment is available in barbershops and related businesses.

Program Length: 4 semesters
Career Pathway Options: Diploma in Barbering
Program Sites: West Harnett Campus - Day

Course Requirements for Barbering Diploma

I. General Education Academic Core (6 SHC)		**C-L-SHC**
ENG 102	Applied Communication II	3-0-3
MAT 110	Mathematical Measurement and Literacy	2-2-3

II. Major Hours (41 SHC)

A. Technical Core (41 SHC)

BAR 111	Barbering Concepts I	4-0-4
BAR 112	Barbering Clinic I	0-24-8
BAR 113	Barbering Concepts II	4-0-4
BAR 114	Barbering Clinic II	0-24-8
BAR 115	Barbering Concepts III	4-0-4
BAR 116	Barbering Clinic III	0-12-4
BAR 117	Barbering Concepts IV	2-0-2
BAR 118	Clinic IV	0-21-7

Total Semester Hours Credit required for graduation:47