Bioprocess Technology
Credential: Associate in Applied Science Degree in Bioprocess Technology
A5044000

The Bioprocess Technology curriculum is designed to prepare individuals to work as Process Operators in biological products manufacturing facilities. Students will combine basic science and communication skills, manufacturing technologies, and good manufacturing practices in the course of study. Students will be expected to develop a strong basic science foundation with a sound understanding of the major technologies employed in the industry. They will also be expected to develop collaborative and disciplined work ethics while consistently practicing problem-solving skills. Upon successful completion of the program, individuals should possess the necessary skills to qualify for employment in a variety of bioprocessing industries.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science in Bioprocess Technology; Certificate in Bioprocess Technology
Program Sites: Lee Campus - Day Program

Course requirements for Bioprocess Technology Degree

A. General Education Courses (19 SHC)		C-L-SHC
COM 231	Public Speaking	3-0-3
	OR	
COM 120	Interpersonal Communication	3-0-3
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ENG 114	Professional Research and Reporting	3-0-3
MAT 161	College Algebra	3-0-3
	OR	
MAT 121	Algebra and Trigonometry	2-2-3
	Social Science Elective	3
	Humanities Elective	3

B. Required Major Core Courses (21 SHC)		
BPM 110	Bioprocess Practices	3-4-5
BPM 111	Bioprocess Measurements	3-3-4
BPM 112	Upstream Bioprocessing	3-4-5
BPM 113	Downstream Bioprocessing	3-3-4
PTC 110	Industrial Environment	3-0-3

C. Other Major Hours Required for Graduation (28 SHC)		
BIO 110	Principles of Biology	3-3-4
BIO 175	General Microbiology	2-2-3
BIO 176	Advanced General Microbiology	1-2-2
CHM 131	Introduction to Chemistry	3-0-3
CHM 131A	Introduction to Chemistry Lab	0-3-1
CHM 132	Organic and Biochemistry	3-3-4
CIS 110	Introduction to Computers	2-2-3
ISC 121	Environmental Health and Safety	3-0-3
ISC 221	Statistical Quality Control	3-0-3
	Co-op/Project Elective	2

Co-op/Project Elective (Choose one course.)

COE 112	Co-op Work Experience I	0-20-2
EGR 285	Design Project	0-4-2

Total Semester Hours Credit required for graduation: 68

Semester Curriculum for Bioprocess Technology Degree

1st Semester (Fall)		
		C-L-SHC
BIO 110	Principles of Biology	3-3-4
CHM 131	Introduction to Chemistry	3-0-3
CHM 131A	Introduction to Chemistry Lab	0-3-1
CIS 110	Introduction to Computers	2-2-3
MAT 161	College Algebra	3-0-3
	OR	
MAT 121	Algebra and Trigonometry	2-2-3
PTC 110	Industrial Environment	3-0-3
		14-8-17
2nd Semester (Spring)		
BIO 175	General Microbiology	2-2-3
BPM 110	Bioprocess Practices	3-4-5
CHM 132	Organic/Biochemistry	3-3-4
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ISC 121	Environmental Health and Safety	3-0-3
		14-11-19
3rd Semester (Summer)		
(COE 112	Co-op Work Experience I	0-20-2)
4th Semester (Fall)		
BIO 176	Advanced General Microbiology	1-2-2
BPM 111	Bioprocess Measurements	3-3-4
COM 231	Public Speaking	
	OR	
COM 120	Interpersonal Communication	3-0-3
	Humanities Elective	3
(EGR 285	Design Project Option	0-4-2)
		10-5-12
		(10-9-14)
5th Semester (Spring)		
BPM 112	Upstream Bioprocessing	3-4-5
BPM 113	Downstream Bioprocessing	3-3-4
ENG 114	Professional Research and Reporting	3-0-3
ISC 221	Statistical Quality Control	3-0-3
	Social Science Elective	3
		15-7-18

Total Semester Hours Credit: 68

Bioprocess Technology
Credential: Certificate in Bioprocess Technology
C5044000

This program prepares individuals to enter the workforce in biological products manufacturing facilities. Course work includes computer or math skill development, exposure to the industrial work environment, basic bioprocessing operations, and a major course elective. Graduates should be qualified to become entry-level trainees in bioprocess manufacturing.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.

Program Length: 2 semesters
Career Pathway Options: Certificate in Bioprocess Technology, Associate in Applied Science Degree in Bioprocess Technology.
Program Site: Lee Campus – Day or Evening Program

Course Requirements for Bioprocess Manufacturing Technology Certificate

A. Required Major Core Courses (8 SHC)		
BPM 110	Bioprocess Practices	3-4-5
PTC 110	Industrial Environment	3-0-3
B. Other Courses (9 SHC)		
CIS 110	Introduction to Computers	2-2-3
	OR	
MAT 121	Algebra and Trigonometry	2-2-3
	OR	
MAT 161	College Algebra	3-0-3
ISC 121	Environmental Health and Safety	3-0-3
	Major Elective	3

Major Elective may be selected from the following:

BIO 110	Principles of Biology	3-3-4
CHM 131	Introduction to Chemistry	3-0-3
CHM 131A	Introduction to Chemistry Lab	0-3-1
CIS 110	Introduction to Computers	2-2-3
ISC 221	Statistical Quality Control	3-0-3
MAT 121	Algebra and Trigonometry	2-2-3
MAT 161	College Algebra	3-0-3

Total Semester Hours Credit required for graduation: 15

Semester Curriculum for Bioprocess Technology Certificate

1st Semester (Fall)		C-L-SHC
CIS 110	Introduction to Computers	2-2-3
	OR	
MAT 121	Algebra and Trigonometry	2-2-3
	OR	
MAT 161	College Algebra	3-0-3
PTC 110	Industrial Environment	3-0-3
ISC 121	Environmental Health and Safety	3-0-3
		8/9-0/2-9
2nd Semester (Spring)		
BPM 110	Bioprocess Practices	3-4-5
	Major Elective	3
		8

Total Semester Hours Credit: 17

Bioprocess Technology/BioQuality Credential: Associate in Applied Science Degree in BioQuality Technology A50440QA

The Bioprocess Technology curriculum is designed to prepare individuals to work in Quality Assurance in biological products manufacturing facilities. Students will combine basic science and communication skills, manufacturing technologies, current good manufacturing practices (cGMP), quality systems, auditing, and validation in the course of study. Students will be expected to develop a strong basic science foundation with a sound understanding of the major technologies employed in the industry. They will also be expected to develop collaborative and disciplined work ethics while consistently practicing problem-solving skills.

Upon successful completion of the program, individuals should possess the necessary skills to qualify for employment in a variety of bioprocessing industries.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science Degree in BioQuality Technology
Program Sites: Lee Campus - Day Program

Course requirements for BioQuality Technology Degree

A. General Education Courses (19 SHC)		C-L-SHC
COM 231	Public Speaking	3-0-3
	OR	
COM 120	Interpersonal Communication	3-0-3
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ENG 114	Professional Research and Reporting	3-0-3
MAT 161	College Algebra	3-0-3
	OR	
MAT 121	Algebra and Trigonometry	2-2-3
	Social Science Elective	3
	Humanities Elective	3
B. Required Major Core Courses (21 SHC)		
BPM 110	Bioprocess Practices	3-4-5
BPM 111	Bioprocess Measurements	3-3-4
BPM 112	Upstream Bioprocessing	3-4-5
BPM 113	Downstream Bioprocessing	3-3-4
PTC 110	Industrial Environment	3-0-3
C. Other Major Hours Required for Graduation (28 SHC)		
BIO 110	Principles of Biology	3-3-4
BIO 175	General Microbiology	2-2-3
CHM 131	Introduction to Chemistry	3-0-3
CHM 131A	Introduction to Chemistry Lab	0-3-1
CHM 132	Organic and Biochemistry	3-3-4
CIS 110	Introduction to Computers	2-2-3
COE 112	Co-op Work Experience I	0-20-2
ISC 175	Quality Assurance Fundamentals	1-0-1
ISC 278	cGMP Quality Systems	2-0-2
ISC 279	Auditing for cGMP	2-2-3
ISC 280	Validation Fundamentals	1-2-2

Total Semester Hours Credit required for graduation: 68

Semester Curriculum for BioQuality Technology Degree

1st Semester (Fall)		C-L-SHC
BIO 110	Principles of Biology	3-3-4
CHM 131	Introduction to Chemistry	3-0-3
CHM 131A	Introduction to Chemistry Lab	0-3-1
CIS 110	Introduction to Computers	2-2-3
MAT 161	College Algebra	3-0-3
	OR	
MAT 121	Algebra and Trigonometry	2-2-3
PTC 110	Industrial Environment	3-0-3
		14-8-17

2nd Semester (Spring)		
BIO 175	General Microbiology	2-2-3
BPM 110	Bioprocess Practices	3-4-5
CHM 132	Organic/Biochemistry	3-3-4
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ISC 175	Quality Assurance Fundamentals	1-0-1
		12-11-17
3rd Semester (Summer)		
COE 112	Co-op Work Experience I	0-20-2
4th Semester (Fall)		
BPM 111	Bioprocess Measurements	3-3-4
COM 231	Public Speaking	
	OR	
COM 120	Interpersonal Communication	3-0-3
	Humanities Elective	3
ISC 278	cGMP Quality Systems	2-0-2
ISC 279	Auditing for cGMP	2-2-3
		13-5-15
5th Semester (Spring)		
BPM 112	Upstream Bioprocessing	3-4-5
BPM 113	Downstream Bioprocessing	3-3-4
ENG 114	Professional Research and Reporting	3-0-3
ISC 280	Validation Fundamentals	1-2-2
	Social Science Elective	3
		13-9-17

Total Semester Hours Credit: 68

Bioprocess Technology/BioQuality Credential: Certificate in BioQuality Technology C50440QA

This program prepares individuals with a background in manufacturing to function in the quality assurance area of a biological product manufacturing facilities. Course work includes basic bioprocessing operations, cGMP, quality systems, auditing, and validation. Graduates should be qualified to work in a bioprocess quality assurance environment.

Entrance Standards: See General Admission Standards on page 6.
Applicants must have previous industrial experience.
Academic Standards: See General Academic Standards on page 16.
Program Length: 2 semesters
Career Pathway Options: Certificate in BioQuality Technology, Associate in Applied Science Degree in BioQuality Technology.
Program Site: Lee Campus – Day or Evening Program

Course Requirements for BioQuality Technology Certificate

A. Required Major Core Courses (5 SHC)		
BPM 110	Bioprocess Practices	3-4-5
B. Other Courses (8 SHC)		
ISC 175	Quality Assurance Fundamentals	1-0-1
ISC 278	cGMP Quality Systems	2-0-2
ISC 279	Auditing for cGMP	2-2-3
ISC 280	Validation Fundamentals	1-2-2

Total Semester Hours Credit required for graduation: 13

Semester Curriculum for BioQuality Technology Certificate

1st Semester (Fall)		C-L-SHC
BPM 110	Bioprocess Practices	3-4-5
ISC 175	Quality Assurance Fundamentals	1-0-1
		4-4-6
2nd Semester (Spring)		
ISC 278	cGMP Quality Systems	2-0-2
ISC 279	Auditing for cGMP	2-2-3
ISC 280	Validation Fundamentals	1-2-2
		5-4-7

Total Semester Hours Credit: 13

Facility Maintenance Worker Credential: Diploma in Facility Maintenance Worker D5017000

This curriculum is designed to prepare students to maintain and repair physical structures and systems of commercial and industrial establishments such as hotels, hospitals, apartment complexes and shopping centers. Students will learn to use hand and power tools, replace defective electric switches and fixtures, maintain performance of environmental control systems, and repair plumbing fixtures, woodworking, plastic and sheetrock, lay brick, finish small areas of concrete and paint structures. Upon completion of this curriculum, the graduate should have the necessary skills to find employment as a facility maintenance worker.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 3 semesters
Career Pathway Options: Diploma in Facility Maintenance Worker
Program Sites: Lee Campus - Day Program Not Currently Offered

Course Requirements for Facility Maintenance Worker Diploma

A. General Education Courses (6 SHC)		C-L-SHC
ENG 102	Applied Communication II	3-0-3
MAT 101	Applied Mathematics	2-2-3
B. Required Major Core Courses (18 SHC)		
FMW 102	Practical Wiring I	2-6-4
FMW 105	Basic Heating	2-2-3
FMW 107	Introduction to Carpentry	1-4-3
MAS 140	Introduction to Masonry	1-2-2
PLU 130	Plumbing Systems	3-9-6
C. Other Major Hours Required for Graduation (16 SHC)		
CIS 111	Basic PC Literacy	1-2-2
FMW 100	Introduction to NEC	1-0-1
FMW 101	Basic NEC Problems	1-2-2
FMW 108	Electrical Blueprints	1-3-2
	Major Electives	9

Major Elective Course Listing (Select a minimum of 9 SHC)

AHR 160	Refrigerant Certification	1-0-1
BPR 130	Blueprint Reading/Construction	1-2-2

FMW 103	Practical Wiring II	2-6-4
FMW 104	Introduction to Industrial Wiring	2-6-4
FMW 106	Domestic Air Conditioning	2-2-3
FMW 109	Introduction to Small Engines	2-2-3
HEA 111	First Aid and Safety	1-2-2
ISC 110	Workplace Safety	1-0-1
ISC 115	Construction Safety	2-0-2
PLU 111	Introduction to Basic Plumbing	1-3-2
PLU 140	Introduction to Plumbing Codes	1-2-2

Total Semester Hours Credit required for graduation: 40

Semester Curriculum for Facility Maintenance Worker Diploma

1st Semester (Fall)		C-L-SHC
FMW 100	Introduction National Electric Code (NEC)	1-0-1
FMW 101	Basic NEC Problems	1-2-2
FMW 102	Practical Wiring I	2-6-4
FMW 105	Basic Heating	2-2-3
FMW 108	Electrical Blueprints	1-3-2
MAT 101	Applied Mathematics I	2-2-3
		9-15-15
2nd Semester (Spring)		
ENG 102	Applied Communication II	3-0-3
FMW 107	Introduction to Carpentry	1-4-3
MAS 140	Introduction to Masonry	1-2-2
PLU 130	Plumbing Systems	3-9-6
	Major Elective	3-0-3
		11-15-17
3rd Semester (Summer)		
CIS 111	Basic PC Literacy	1-2-2
	Major Elective	0-0-6
		1-2-8

Major Elective Course Listing (Select a minimum of 9 SHC)

AHR 160	Refrigerant Certification	1-0-1
BPR 130	Blueprint Reading/Construction	1-2-2
FMW 103	Practical Wiring II	2-6-4
FMW 104	Introduction to Industrial Wiring	2-6-4
FMW 106	Domestic Air Conditioning	2-2-3
FMW 109	Introduction to Small Engines	2-2-3
HEA 111	First Aid and Safety	1-2-2
ISC 110	Workplace Safety	1-0-1
ISC 115	Construction Safety	2-0-2
PLU 111	Introduction to Basic Plumbing	1-3-2
PLU 140	Introduction to Plumbing Codes	1-2-2

Total Semester Hours Credit: 40

Facility Maintenance
Credential: Certificate in Facility Maintenance Helper
C5017000

This curriculum is designed to prepare students to maintain and repair physical structures and systems of commercial and industrial establishments such as hotels, hospitals, apartment complexes and shopping centers. Students will learn to use hand and power tools, replace defective electric switches and fixtures, maintain performance of environmental control systems, and repair plumbing fixtures. Upon completion of this curriculum, the graduate should have the necessary skills to find employment as a facility maintenance helper.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 2 semesters
Career Pathway Options: Diploma in Facility Maintenance Worker (Higher entrance standards required); Certificate in Facility Maintenance Helper
Program Sites: Not currently offered

Course Requirements for Facility Maintenance Helper Certificate

A. Required Major Core Courses (4 SHC)		C-L-SHC
FMW 102	Practical Wiring I	2-6-4

B. Other Major Hrs Required for Graduation (8 SHC)		
FMW 100	Introduction to National Electric Code	1-0-1
	Major Electives	7

Major Elective Course Listing (Select a minimum of 7 SHC)

AHR 160	Refrigerant Certification	1-0-1
BPR 130	Blueprint Reading/Construction	1-2-2
FMW 101	Basic NEC Problems	1-2-2
FMW 103	Practical Wiring II	2-6-4
FMW 104	Introduction to Industrial Wiring	2-6-4
FMW 105	Basic Heating	2-2-3
FMW 106	Domestic Air Conditioning	2-2-3
FMW 107	Introduction to Carpentry	1-4-3
FMW 108	Electrical Blueprints	1-3-2
FMW 109	Introduction to Small Engines	2-2-3
HEA 111	First Aid and Safety	1-2-2
ISC 110	Workplace Safety	1-0-1
ISC 115	Construction Safety	2-0-2
MAS 140	Introduction to Masonry	1-2-2
PLU 111	Introduction to Basic Plumbing	1-3-2
PLU 130	Plumbing Systems	3-9-6
PLU 140	Introduction to Plumbing Codes	1-2-2

Total Semester Hours Credit required for graduation: 12

Semester Curriculum for Facility Maintenance Helper Certificate

1st Semester (Fall)		C-L-SHC
FMW 100	Introduction to National Electric Code	1-0-1
FMW 102	Practical Wiring I	2-6-4
	Major Elective	2
		3-6-7
2nd Semester (Spring)		
	Major Elective	5

Industrial Systems Technology
Credential: Associate in Applied Science Degree in Industrial Systems Technology
A5024000

The Industrial Systems Technology curriculum is designed to prepare or upgrade individuals to safely service, maintain, repair, or 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, and includes various diagnostic and repair procedures. Practical application in these industrial systems will be emphasized and additional advanced course work 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.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 18 (Gen. Info section).
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

A. General Education Courses (15/16 SHC)		C-L-SHC
ENG 110	Freshman Composition	3-0-3
ENG 116	Technical Report Writing	3-0-3
	Humanities Elective	3-0-3
	Social Science Elective	3-0-3
MAT 115	Mathematical Models	2-2-3
	Or	
PHY 121	Applied Physics I	3-2-4

B. Required Major Core Courses (18/19 SHC)		
BPR 111	Blueprint Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
HYD 110	Hydraulics/Pneumatics	2-3-3
ISC 112	Industrial Safety	2-0-2
	Or	
ISC 110	Workplace Safety	1-0-1
MEC 111	Machine Processes I	1-4-3
MNT 110	Intro to Maint Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2

C. Other Major Hours Required for Graduation (43 SHC)		
AHR 120	HVACR Maintenance	1-3-2
BPR 115	Elc Fluid Power Diagrams	1-2-2
CIS 111	Basic PC Literacy	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
ELC 229	Applications Project	1-3-2
ELN 229	Industrial Electronics	3-3-4
ELN 231	Industrial Controls	2-3-3
HYD 121	Hydraulics/Pneumatics II	1-3-2
MNT 230	Pumps & Piping Systems	1-3-2
MNT 240	Ind. Equip. Troubleshooting	1-3-2
WLD 115	SMAW (Stick) Plate	2-9-5
WLD 212	Inert Gas Welding	1-3-2
	Technical Elective	3

Technical Electives (Choose 3 SHC)		
MNT 111	Maintenance Practices	2-2-3
COE 111	Co-op Work Experience I	0-10-1
COE 112	Co-op Work Experience I	0-20-2
COE 121	Co-op Work Experience II	0-10-1

Total Semester Hours Credit Required for Graduation: 75/76

Semester Curriculum for Industrial Systems Technology

1st Semester (Fall)		
C-L-SHC		
BPR 111	Blueprint Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
	Humanities Elective	3-0-3
MEC 111	Machine Processes I	1-4-3
MNT 110	Intro to Maint Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2
		10-18-17

2nd Semester (Spring)		
CIS 111	Basic PC Literacy	1-2-2
ELN 229	Industrial Electronics	3-3-4
ENG 110	Freshman Composition	3-0-3
HYD 110	Hydraulics/Pneumatics	2-3-3
WLD115	SMAW (Stick) Plate	2-9-5
		11-17-17

3rd Semester (Summer)		
AHR 120	HVACR Maintenance	1-3-2
BPR 115	Electric/Fluid Power Diagrams	1-2-2
MAT 115	Mathematical Models	2-2-3
ISC	Safety Elective	1
	Technical Elective	2
		8-9-10

4th Semester (Fall)		
ELC 117	Motors and Controls	2-6-4
ELC 128	Introduction to PLC	2-3-3
ENG 116	Technical Report Writing	3-0-3
HYD 121	Hydraulics/Pneumatics II	1-3-2
MNT 230	Pumps & Piping Systems	1-3-2
WLD 212	Inert Gas Welding	1-3-2
		10-18-16

5th Semester (Spring)		
ELC 228	PLC Applications	2-6-4
ELC 229	Applications Project	1-3-2
ELN 231	Industrial Controls	2-3-3
MNT 240	Ind. Equip. Troubleshooting	1-3-2
	Technical Elective	1
	Social Science Elective	3-0-3
		9-15-15

Total Semester Hours Credit: 75/76

Industrial Systems Technology
Credential: Diploma in Industrial Systems Technology
D5024000

The Industrial Systems Technology curriculum is designed to prepare or upgrade individuals to safely service, maintain, repair, or 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, and includes various diagnostic and repair procedures. Practical application in these industrial systems will be emphasized and additional advanced course work 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.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 18 (Gen. Info section).
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

A. General Education Courses (9/10 SHC)		C-L-SHC
*ENG 102	Applied Communications II	3-0-3
	Humanities Elective	3-0-3
*MAT	101 Applied Mathematics I	2-2-3
Or		
PHY 121	Applied Physics I	3-2-4

B. Required Major Core Courses (18/19 SHC)		
BPR 111	Blueprint Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
HYD 110	Hydraulics/Pneumatics	2-3-3
ISC 112	Industrial Safety	2-0-2
	OR	
ISC 110	Workplace Safety	1-0-1
MEC 111	Machine Processes I	1-4-3
MNT 110	Intro. to Maint. Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2

C. Other Major Hours Required for Graduation (17/18 SHC)		
AHR 120	HVACR Maintenance	1-3-2
BPR 115	Elc Fluid Power Diagrams	1-2-2
CIS 111	Basic PC Literacy	1-2-2
ELN 229	Industrial Electronics	3-3-4
MNT 111	Maintenance Practices	2-2-3
	OR	
COE 112	Co-op Work Exp. I	0-20-2
WLD 115	SMAW (Stick) Plate	2-9-5

*These courses are not transferable to the AAS Degree.

Total Semester Hours Credit Required for Graduation: 44/47

Semester Curriculum for Industrial Systems Technology Diploma

1st Semester (Fall)		
C-L-SHC		
BPR 111	Blueprint Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
MEC 111	Machine Processes I	1-4-3
MNT 110	Intro to Maint. Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2
	Humanities Elective	3-0-3
		11-17-17

2nd Semester (Spring)		
CIS 111	Basic PC Literacy	1-2-2
ELN 229	Industrial Electronics	3-3-4
*ENG 102	Applied Communications II	3-0-3
HYD 110	Hydraulics/Pneumatics	2-3-3
WLD 115	SMAW (Stick) Plate	2-9-5
		11-17-17

3rd Semester (Summer)		
AHR 120	HVACR Maintenance	1-3-2
BPR 115	Electric/Fluid Power Diagr	1-2-2
ISC	Safety Elective	1
*MAT 101	Applied Mathematics I	2-2-3
	Technical Elective	2
		5-10-10

Technical Elective (Choose 2/3 SHC)		
MNT 111	Maintenance Practice	2-2-3
COE 112	Co-op Work Exp. I	0-20-2

*These courses are not transferable to the AAS Degree.

Total Semester Hours Credit: 44/47

Industrial Systems Technology
Credential: Associate in Applied Science Degree in Industrial Systems Technology/Bio-maintenance
A502400B

The Industrial Systems Technology/Biomaintenance Emphasis curriculum is designed to prepare or upgrade individuals to safely service, maintain, repair, or install equipment in the Bioprocess industry. 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, and includes various diagnostic and repair procedures. Practical application in these industrial systems will be emphasized and additional advanced course work 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 bioprocess equipment adhering to FDA regulations. Emphasis is given to providing proper documentation and following Standard Operating Procedures. Students will also be encouraged to develop their skills as life-long learners.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).

Academic Standards: See General Academic Standards on page 18 (Gen. Info section).
Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science in Industrial Systems Technology/Biomaintenance Emphasis
Program Sites:
Lee Campus - Day Program

Course Requirements for Industrial Systems Technology/Biomaintenance Emphasis

A.	General Education Courses (15/16 SHC)	
		C-L-SHC
ENG 110	Freshman Composition	3-0-3
ENG 116	Technical Report Writing	3-0-3
MAT 115	Mathematical Models	2-2-3

Or

PHY 121	Applied Physics I	3-2-4
	Humanities Elective	3-0-3
	Social Science Elective	3-0-3

B. Required Major Core Courses (18/19 SHC)

BPR 111	Blueprint Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
HYD 110	Hydraulics/Pneumatics	2-3-3
ISC 112	Industrial Safety	2-0-2

Or

ISC 110	Workplace Safety	1-0-1
MEC 111	Machine Processes I	1-4-3
MNT 110	Intro to Maint Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2

C. Other Major Hours Required for Graduation (42 SHC)

AHR 120	HVACR Maintenance	1-3-2
BPM 110	Bioprocess Practices	3-4-5
BPR 115	Elc Fluid Power Diagrams	1-2-2
CIS 111	Basic PC Literacy	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
ELN 229	Industrial Electronics	3-3-4
ELN 231	Industrial Controls	2-3-3
ISC 278	cGMP Quality Systems	2-0-2
MNT 230	Pumps & Piping Systems	1-3-2
MNT 240	Ind. Equip. Troubleshooting	1-3-2
MNT 270	Bioprocess Equip Maint	1-3-2
MNT 280	Bioprocess Operating Systems	1-3-2
	Technical Elective	3

Technical Electives (Choose 3 SHC)

MNT 111	Maintenance Practices	2-2-3
COE 111	Co-op Work Experience I	0-10-1
COE 112	Co-op Work Experience I	0-20-2
COE 121	Co-op Work Experience II	0-10-1

Minimum Total Semester Hours Credit Required for Graduation:
75/76

Semester Curriculum for Industrial Systems Technology/ Biomaintenance Emphasis

1st Semester (Fall)		C-L-SHC
BPR 111	Blueprint Reading	1-2-2
ELC 112	DC/AC Electricity	3-6-5
	Humanities Elective	3-0-3
MEC 111	Machine Processes I	1-4-3
MNT 110	Intro to Maint Procedures	1-3-2
WLD 112	Basic Welding Processes	1-3-2
		10-18-17
2nd Semester (Spring)		
BPM 110	Bioprocess Practices	3-4-5
CIS 111	Basic PC Literacy	1-2-2
ELN 229	Industrial Electronics	3-3-4
ENG 110	Freshman Composition	3-0-3
HYD 110	Hydraulics/Pneumatics	2-3-3
		12-12-17
3rd Semester (Summer)		
AHR 120	HVACR Maintenance	1-3-2
BPR 115	Electric/Fluid Power Diagrams	1-2-2
MAT 115	Mathematical Models	2-2-3
ISC	Safety Elective	1
	Technical Elective	2
		8-9-11
4th Semester (Fall)		
ELC 117	Motors and Controls	2-6-4
ELC 128	Introduction to PLC	2-3-3
ENG 116	Technical Report Writing	3-0-3
ISC 278	cGMP Quality Systems	2-0-2
MNT 230	Pumps & Piping Systems	1-3-2
MNT 270	Bioprocess Equip Maint	1-3-2
MNT 280	Bioprocess Operating Systems	1-3-2
		11-15-16
5th Semester (Spring)		
ELC 228	PLC Applications	2-6-4
MNT 280	Bioprocess Operating Systems	1-3-2
ELN 231	Industrial Controls	2-3-3
MNT 240	Ind. Equip. Troubleshooting	1-3-2
	Technical Elective	1
	Social Science Elective	3-0-3
		9-15-15

Total Semester Hours Credit:
76

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.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 18 (Gen. Info section).
Program Length: 2 semesters
Career Pathway Options: AAS 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

A. Required Subject Areas (5 SHC)		C-L-SHC

ELC 112	DC/AC Electricity	3-6-5

B. Other Major Hours Required for Graduation (7 SHC)

ELC 117	Motors and Controls	2-6-4
ELN 231	Industrial Controls	2-3-3

Total Semester Hours Credit Required for Graduation: 12

Semester Curriculum for Electrical Controls Certificate

1st Semester (Fall)

C-L-SHC		
ELC 112	DC/AC Electricity	3-6-5

2nd Semester (Spring)

ELC 117	Motors and Controls	2-6-4
ELN 231	Industrial Controls	2-3-3

Total Semester Hours Credit: 12

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.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 18 (Gen. Info section).
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

A. Required Major Core Courses (5 SHC)		C-L-SHC
HYD 110	Hydraulics/Pneumatics	2-3-3
MNT 110	Intro. to Maint. Procedures	1-3-2

B. Other Major Hours Required for Graduation (8 SHC)

BPR 115	Elc Fluid Power Diagrams	1-2-2
HYD 121	Hydraulics/Pneumatics II	1-3-2
MNT 111	Maintenance Practices	2-2-3
MNT 230	Pumps & Piping Systems	1-3-2

Total Semester Hours Credit Required for Graduation: 14

Semester Curriculum for Industrial Hydraulics Certificate

1st Semester (Fall)

C-L-SHC		
BPR 115	Electric/Fluid Power Diagr	1-2-2
HYD 110	Hydraulics/Pneumatics	2-3-3
MNT 110	Intro to Maint. Procedures	1-3-2
		4-8-7

2nd Semester (Spring)

HYD 121	Hydraulics/Pneumatics II	1-3-2
MNT 111	Maintenance Practices	2-2-3
MNT 230	Pumps & Piping Systems	1-3-2
		3-9-6

Total Semester Hours Credit: 14

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

This curriculum will provide students with a 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.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 18 (Gen. Info section).
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

A. Required Subject Area Courses (5 SHC)		C-L-SHC
ELC 112	DC/AC Electricity	3-6-5

B. Other Major Hours Required for Graduation (11 SHC)

ELC 128	Introduction to PLC	2-3-3
ELC 228	PLC Applications	2-6-4
ELN 229	Industrial Electronics	3-3-4

Total Semester Hours Credit Required for Graduation: 16

Semester Curriculum for Programmable Logic Controller Certificate

1st Semester (Fall)		C-L-SHC
ELC 112	DC/AC Electricity	3-6-5
ELC 128	Introduction to PLC	2-3-3
		5-9-8

2nd Semester (Spring)

ELC 228	PLC Applications	2-6-4
ELN 229	Industrial Electronics	3-3-4
		5-9-8

Total Semester Hours Credit: 16

Industrial Systems Technology
Credential: Certificate in Welding
C5024040

The Welding certificate will provide students with knowledge of various types of welding processes and applications. Students will learn principles of welding, flame cutting, brazing, ARC, MIG, TIG, and safety procedures. Upon completion, students will have the flexibility of pursuing a diploma or an Associate in Applied Science Degree in Industrial Systems Technology.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 18 (Gen. Info section).
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 Welding
Program Sites: Lee Campus - Evening Program

Course Requirements for Welding Certificate

A. Required Major Core Courses (5 SHC)		C-L-SHC
BPR 111	Blueprint Reading	1-2-2
ISC 112	Industrial Safety	2-0-2
	OR	
ISC 110	Workplace Safety	1-0-1
WLD 112	Basic Welding Processes	1-3-2

B. Other Major Hours Required for Graduation (7 SHC)		
WLD 115	SMAW (Stick) Plate	2-9-5
WLD 212	Inert Gas Welding	1-3-2

Total Semester Hours Credit Required for Graduation: 12

Semester Curriculum for Welding Certificate

1st Semester (Fall)		
C-L-SHC		
BPR 111	Blueprint Reading	1-2-2
WLD 112	Basic Welding Processes	1-3-2
ISC	Safety Elective	1
		2-5-5
2nd Semester (Spring)		
WLD 115	SMAW (Stick) Plate	2-9-5
WLD 212	Inert Gas Welding	1-3-2
		3-12-7

Total Semester Hours Credit: 12

Machining Technology with a Concentration in Tool, Die and Mold Making
Credential: Associate in Applied Science Degree in Machining Technology with a Concentration in Tool, Die and Mold Making
A5030A00

Tool, Die and Mold Making is a concentration under the curriculum title of Machining Technology. This curriculum is designed to develop skills in the use of hand tools, computerized equipment and precision instruments for machine tooling used for the mass production of parts.

Students will learn to interpret blueprints, set up manual and Computer Numerical Controllers (CNC) machines and perform basic and advanced machining operations. Emphasis will be placed on the production of tooling used for punching, stamping and molding of parts.

Graduates should qualify for employment opportunities in manufacturing industries and Tool, Die and Mold Making industries.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 6 semesters
Career Pathway Options: Associate in Science in Machining Technology with a Concentration in Tool, Die and Mold Making
Program Sites: Lee Campus - Day Program

Course Requirements for Machining Technology with a Concentration in Tool, Die and Mold Making

A. General Education Courses (15 SHC)		C-L-SHC
ENG 110	Freshman Composition	3-0-3
	OR	
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ENG 114	Professional Research and Reporting	3-0-3
	OR	
ENG 116	Technical Report Writing	3-0-3
MAT 120	Geometry and Trigonometry	2-2-3
	Humanities Elective	3-0-3
	Social Science Elective	3-0-3
B. Required Major Core Courses (44 SHC)		
BPR 111	Blueprint Reading	1-2-2
BPR 121	Blueprint Reading: Mechanical	1-2-2
MAC 111	Machining Technology I	2-12-6
MAC 112	Machining Technology II	2-12-6
MAC 113	Machining Technology III	2-12-6
Required Subject Areas		
MAC 122	CNC Turning	1-3-2
MAC 124	CNC Milling	1-3-2
Concentration		
MAC 153	Compound Angles	1-2-2
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

C. Other Major Hours Required for Graduation (17 SHC)		
CIS 111	Basic PC Literacy	1-2-2
MAC 151	Machining Calculations	1-2-2
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
MEC 141	Manufacturing Process	2-2-3
MEC 110	Introduction to CAD/CAM	1-2-2

Total Semester Hours Credit required for graduation: 76

Semester Curriculum for Machining Technology with a Concentration in Tool, Die and Mold Making

1st Semester (Fall)		C-L-SHC
BPR 111	Blueprint Reading	1-2-2
CIS 111	Basic PC Literacy	1-2-2
MAC 111	Machining Technology	2-12-6
MAC 151	Machining Calculations	1-2-2
MEC 141	Manufacturing Process	2-2-3
		7-20-15
2nd Semester (Spring)		
BPR 121	Blueprint Reading: Mechanical	1-2-2
ENG 110	Freshman Composition	3-0-3
	OR	
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
MAC 112	Machining Technology II	2-12-6
MAC 124	CNC Milling	1-3-2
MAT 120	Geometry/Trigonometry	2-2-3
		9-19-16
3rd Semester (Summer)		
MAC 113	Machining Technology III	2-12-6
	Humanities Elective	3-0-3
		5-12-9
4th Semester (Fall)		
MAC 122	CNC Turning	1-3-2
MAC 153	Compound Angles	1-2-2
MAC 241	Jigs and Fixtures I	2-6-4
MAC 245	Mold Construction I	2-6-4
ENG 116	Technical Report Writing	3-0-3
	OR	
ENG 114	Professional Research and Reporting	3-0-3
		9-17-15
5th Semester (Spring)		
MAC 224	Advanced CNC Milling	1-3-2
MAC 226	CNC EDM Machining	1-3-2
MAC 243	Die Making I	2-6-4
MAC 246	Mold Construction II	1-9-4
MEC 110	Introduction to CAD/CAM	1-2-2
		6-23-14
6th Semester (Summer)		
MAC 244	Die Making II	1-9-4
	Social Science Elective	3-0-3
		4-9-7

Total Semester Hours Credit: 76

Machining Technology
Credential: Diploma in Machining Technology
D5030000

The Machining Technology curriculum is designed to develop skills in the theory and safe use of hand tools, power machinery, computerized equipment and sophisticated precision inspection instruments. Students will learn to interpret blueprints, set up manual and Computer Numerical Controllers (CNC) machines, perform basic and advanced machining operations and make decisions to insure that work quality is maintained. Employment opportunities for machining technicians exist in manufacturing industries, public institutions, governmental agencies, and in a wide range of specialty machining job shops.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 3 semesters
Career Pathway Options: Associate in Applied Science in Machining Technology with a Concentration in Tool, Die and Mold Making (Higher entrance standards required); Diploma in Machining Technology
Program Sites:
Lee Campus - Day Program
Harnett Campus - Day Program

Course Requirements for Machining Technology Diploma

A. General Education Courses (9 SHC)		C-L-SHC
*ENG 102	Applied Communication II	3-0-3
	OR	
ENG 110	Freshman Composition	3-0-3
	OR	
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
*MAT 101	Applied Mathematics I	2-2-3
	OR	
MAT 120	Geometry and Trigonometry	2-2-3
	Humanities Elective	3-0-3

B. Required Major Core Courses (26 SHC)		
MAC 111	Machining Technology I	2-12-6
MAC 112	Machining Technology II	2-12-6
MAC 113	Machining Technology III	2-12-6

Required Subject Areas		
BPR 111	Blueprint Reading	1-2-2
BPR 121	Blueprint Reading: Mechanical	1-2-2
MAC 121	Introduction to CNC	2-0-2
MAC 124	CNC Milling	1-3-2

C. Other Major Hours Required for Graduation (7 SHC)		
CIS 111	Basic PC Literacy	1-2-2
MAC 151	Machining Calculations	1-2-2
MEC 141	Manufacturing Processes	2-2-3

Total Semester Hours Credit required for graduation: 42

Semester Curriculum for Machining Technology Diploma

1st Semester (Fall)		C-L-SHC
BPR 111	Blueprint Reading	1-2-2
CIS 111	Basic PC Literacy	1-2-2
MAC 111	Machining Technology I	2-12-6
MAC 121	Introduction to CNC	2-0-2
MAC 151	Machining Calculations	1-2-2
MEC 141	Manufacturing Processes	2-2-3
		9-20-17
2nd Semester (Spring)		
BPR 121	Blueprint Reading: Mechanical	1-2-2
*ENG 102	Applied Communication II	3-0-3
	OR	
ENG 110	Freshman Composition	3-0-3
	OR	
ENG 111	Expository Writing	3-0-3
ENG111A	Expository Writing Lab	0-2-1
MAC 112	Machining Technology II	2-12-6
MAC 124	CNC Milling	1-3-2
*MAT 101	Applied Mathematics I	2-2-3
	OR	
MAT 120	Geometry and Trigonometry	2-2-3
		9-19-16

3rd Semester (Summer)		
MAC 113	Machining Technology III	2-12-6
	Humanities Elective	3-0-3
		5-12-9

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

Total Semester Hours Credit: 42

Machining Technology
Credential: Certificate in Machining Technology
C5030000

The Machining Technology curriculum is designed to develop skills in the theory and safe use of hand tools, power machinery, computerized equipment and sophisticated precision inspection instruments. Students will learn to interpret blueprints, set up manual and Computer Numerical Controllers (CNC) machines, perform basic machining operations and make decisions to insure that work quality is maintained. Employment opportunities for machining technicians exist in manufacturing industries, public institutions, governmental agencies, and in a wide range of specialty machining job shops.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 3 semesters
Career Pathway Options: Associate in Applied Science in Machining Technology with a Concentration in Tool, Die and Mold Making (Higher entrance standards required); Diploma in Machining Technology (Higher entrance standards required); Certificate in Machining Technology
Program Sites:
Lee Campus - Evening Program
Harnett Campus - Evening Program

Course Requirements for Machining Technology Certificate

A. Required Major Core Courses (12 SHC)		C-L-SHC
MAC 111	Machining Technology I	2-12-6

Required Subject Areas

BPR 111	Blueprint Reading	1-2-2
BPR 121	Blueprint Reading: Mechanical	1-2-2
MAC 121	Introduction to CNC	2-0-2

Total Semester Hours Credit required for graduation: 12

Semester Curriculum for Machining Technology Certificate

1st Semester (Fall)		C-L-SHC
BPR 111	Blueprint Reading	1-2-2
MAC 111A	Machining Technology IA	1-6-3
		2-9-5
2nd Semester (Spring)		
BPR 121	Blueprint Reading: Mechanical	1-2-2
MAC 111B	Machining Technology IB	1-6-3
		2-8-5
3rd Semester (Summer)		
MAC 121	Introduction to CNC	2-0-2

Total Semester Hours Credit: 12

Telecommunications Installation and Maintenance
Credential: Diploma in Telecommunications Installation and Maintenance
D5038000

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. Course work includes basic electricity, cable splicing, fiber optics, LAN-copper, cable fault location and repair, central office administration 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.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 19 (Gen. Info section).
Program Length: 3 semesters
Career Pathway Options: Diploma in Telecommunications Installation and Maintenance
Program Sites:
N. C. School of Telecommunications and Lee Campus - Day

Course Requirements for Telecommunications Installation and Maintenance Diploma

A. General Education Courses (6 SHC)		C-L-SHC
ENG 102	Applied Communications II	3-0-3
PSY 101	Applied Psychology	3-0-3

B. Required Major Core Courses (16 SHC)		
TEL 100	Telecom. Basic Electricity	3-0-3
TEL 105	Fiber Optic Splicing	1-2-2
TEL 106	Fiber Optic Connectors	1-2-2
TEL 108	Comdial Key Systems	0-2-1
TEL 200	LAN: Copper	0-2-1
	OR	
TEL 206	Installer Level 1 Cabling	1-2-2
TEL 201	Station Install & Repair	1-2-2
TEL 202	Cable Splicing	1-2-2
TEL 203	Cable Fault Location	0-2-1
TEL 205	Digital Cent. Of. Admin.	1-2-2

C. Other Major Hours Required for Graduation (18 SHC)		
BUS	Business Elective	3
CIS 111	Basic PC Literacy	1-2-2
MAT 101	Applied Mathematics I	2-2-3
TEL 209	ADSL Installation	0-2-1
	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	Org 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)

ELC 144	OTDR Operation	1-0-1
NET 113	Home Automation Systems	2-2-3
TEL 101	Conductor Connections	0-2-1
TEL 102	Pole Climbing	0-2-1
TEL 104	CATV Installation & Repair: Distribution	0-2-1
TEL 109	T-1 Span Line Mtnce	0-2-1
TEL 204	Transmission Fundamentals	2-0-2
TEL 207	Installer Level 2 Cabling	1-2-2
TEL 208	Technician Level Cabling	1-2-2

OR

(Small Home/Small Office Networking Group)

NET 113	Home Automation Systems	2-2-3
NET 125	Networking Basics	1-4-3
NET 126	Routing Basics	1-4-3
NET 175	Wireless Technologies	2-2-3

OR

(Networking Infrastructure Group)

NET 125	Networking Basics	1-4-3
NET 126	Routing Basics	1-4-3
NET 225	Routing & Switching	1-4-3

Total Semester Hours Credit Required for Graduation: 40

Semester Curriculum for Telecommunications Installation and Maintenance Diploma

1st Semester (Fall)

C-L-SHC		
TEL 100	Telecom. Basic Electricity	3-0-3
TEL 105	Fiber Optic Splicing	1-2-2
TEL 106	Fiber Optic Connectors	1-2-2
TEL 108	Comdial Key Systems	0-2-1
TEL 200	LAN: Copper	0-2-1
	OR	
TEL 206	Installer Level 1 Cabling	1-2-2
TEL 201	Station Install/Repair	1-2-2
TEL 202	Cable Splicing	1-2-2
TEL 203	Cable Fault Location	0-2-1
TEL 205	Digital Cent. Of. Admin.	1-2-2
TEL 209	ADSL Installation	0-2-1
		8-18-17

2nd Semester (Spring)

BUS	Business Elective	3
CIS 111	Basic PC Literacy	1-2-2
ENG 102	Applied Communications II	3-0-3
PSY 101	Applied Psychology	3-0-3
MAT 101	Applied Math I	2-2-3
	Major Elective	3
		12-4-17

3rd Semester (Summer)

	Major Elective	6

Total Semester Hours Credit: 40

Telecommunications Installation and Maintenance
Credential: Certificate in Telecommunications Installation and Maintenance
C5038000

The 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. Course work includes basic electricity, cable splicing, fiber optics, LAN-copper, cable fault location and repair, central office administration 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.

Entrance Standards: See General Admission Standards on page 7 (Gen. Info section).
Academic Standards: See General Academic Standards on page 19 (Gen. Info section).
Program Length: 1 semester
Career Pathway Options: Certificate in Telecommunications Installation and Maintenance
Program Sites: N. C. School of Telecommunications - Day

Course Requirements for Telecommunications Installation and Maintenance Certificate

Required Major Courses (17 SHC)		C-L-SHC
TEL 100	Telecom. Basic Electricity	3-0-3
TEL 105	Fiber Optic Splicing	1-2-2
TEL 106	Fiber Optic Connectors	1-2-2
TEL 108	Comdial Key Systems	0-2-1
TEL 200	LAN: Copper	0-2-1
	OR	
TEL 206	Installer Level 1 Cabling	1-2-2
TEL 201	Station Instal & Repair	1-2-2
TEL 202	Cable Splicing	1-2-2
TEL 203	Cable Fault Location	0-2-1
TEL 205	Digital Cent. Of. Admin.	1-2-2
TEL 209	ADSL Installation	0-2-1

Total Semester Hours Credit Required for Graduation: 17

Semester Curriculum for Telecommunications Installation and Maintenance Certificate

1st Semester (Fall or Spring)		C-L-SHC
TEL 100	Telecom. Basic Electricity	3-0-3
TEL 105	Fiber Optic Splicing	1-2-2
TEL 106	Fiber Optic Connectors	1-2-2

TEL 108	Comdial Key Systems	0-2-1
TEL 200	LAN: Copper	0-2-1
	OR	
TEL 206	Installer Level 1 Cabling	1-2-2
TEL 201	Station Install/Repair	1-2-2
TEL 202	Cable Splicing	1-2-2
TEL 203	Cable Fault Location	0-2-1
TEL 205	Digital Cent. Of. Admin.	1-2-2
TEL 209	ADSL Installation	0-2-1
		8-18-17

Total Semester Hours Credit: 17

General Occupational Technology Degree Credential: Associate in Applied Science Degree in General Occupational Technology A5528000

The General Occupational Technology curriculum provides individuals with an opportunity to upgrade their skills and to earn an associate degree by taking courses suited for their occupational interests and/or needs.
The curriculum content will be individualized for students according to their occupational interests and needs. A program of study for each student will be selected from associate degree-level courses offered by the College. Graduates will become more effective workers, better qualified for advancements within their field of employment, and become qualified for a wide range of entry-level employment opportunities.

Entrance Standards: See General Admission Standards on page 6.
Academic Standards: See General Academic Standards on page 16.
Program Length: 4 semesters
Career Pathway Options: Associate in Applied Science Degree in General Occupational Technology
Program Sites:
Lee Campus - Day and Evening
Harnett Campus - Day and Evening
Chatham Campus - Day and Evening

Course Requirements for General Occupational Technology Degree

A. General Education Courses (16 SHC)		C-L-SHC
ENG 111	Expository Writing	3-0-3
ENG 111A	Expository Writing Lab	0-2-1
ENG 114	Professional Research and Reporting	3-0-3
MAT 140	Survey of Mathematics	3-0-3
	Humanities/Fine Arts Elective	3-0-3
	Social/Behavioral Science Elective	3-0-3

B. Required Major Courses (49 SHC)
Student and academic advisor will select 49 SHC from an approved degree or diploma program. (18 SHC must be core courses.)

Total Semester Hours Credit required for graduation: 65