

MAT 122	Algebra/Trigonometry II	2-2-3
PHY 131	Physics - Mechanics	3-2-4
	Technical Elective	2

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

Technical Electives

COE 111	Co-Op Work Experience I	0-10-1
COE 121	Co-Op Work Experience II	0-10-1
COE 122	Co-Op Work Experience II	0-20-2
LEO 222	Photonics Applications Project	1-3-2

Total Semester Hours Credit Required for Graduation:

74/75

Semester Curriculum for Laser and Photonics Technology

Degree

1st Semester (Fall)		C-L-SHC
CIS 111	Basic PC Literacy	1-2-2
	OR	
CIS 110	Introduction to Computers	2-2-3
EGR 131	Introduction to Electronics Technology	1-2-2
ELC 131	Circuit Analysis I	3-3-4
ELC 131A	Circuit Analysis I Lab	0-3-1
ENG 111	Expository Writing	3-0-3
ACA 111	College Student Success	1-0-1
MAT 121	Algebra/Trigonometry I	2-2-3
		11/12-12-16/17

2nd Semester (Spring)

ELC 127	Software for Technicians	1-2-2
ELN 131	Analog Electronics I	3-3-4
ELN 133	Digital Electronics	3-3-4
LEO 111	Lasers and Applications	1-3-2
MAT 122	Algebra/Trigonometry II	2-2-3
		10-13-15

3rd Semester (Summer)

ELN 132	Analog Electronics II	3-3-4
PHY 131	Physics - Mechanics	3-2-4
		6-5-8

4th Semester (Fall )

ELN 275	Troubleshooting	1-2-2
ENG 114	Professional Research and Reporting	3-0-3
LEO 211	Photonics Technology	5-6-7
LEO 212	Photonics Applications	3-3-4
	Humanities/Fine Arts Elective	3-0-3
		15-11-19

5th Semester (Spring )

ISC 221	Statistical Quality Control	3-0-3
LEO 221	PC Interface	3-3-4
LEO 223	Fiber Optics	3-3-4
	Social/Behavioral Science Elective	3-0-3
	Technical Elective	2
		12/13- -16

Total Semester Hours Credit: 74/75

## Sustainability Technologies

### Credential: Associate in Applied Science in Sustainability Technologies A40370

The Sustainability Technologies curriculum is designed to prepare individuals for employment in environmental, construction, alternative energy, manufacturing, or related industries, where key emphasis is placed on energy production and waste reduction along with sustainable technologies.

Course work may include alternative energy, environmental engineering technology, sustainable manufacturing and green building technology. Additional topics may include sustainability, energy management, waste reduction, renewable energy, site assessment, and environmental responsibility.

Graduates should qualify for positions within the alternative energy, construction, environmental, and/or manufacturing industries. Employment opportunities exist in both the government and private industry sectors where graduates may function as manufacturing technicians, sustainability consultants, environmental technicians, or green building supervisors.

Program Length: 4 semesters

Career Pathway Options: Associate in Applied Science in Sustainability Technologies

Program sites: Pittsboro Campus

### Course Requirements for Sustainability Technologies Degree

A. General Education Courses (15 SHC)	C-L-SHC
ENG 111 Expository Writing	3-0-3
*ENG 114 Professional Research and Reporting	3-0-3
Humanities/Fine Arts Elective	3-0-3
**MAT 121 Algebra/Trigonometry I	2-2-3
Social/Behavioral Science Elective	3-0-3

\*Students may substitute ENG 113.

\*\*Students may substitute MAT 161

### B. Required Major Core Courses (12 SHC)

BIO 140 Environmental Biology	3-0-3
BIO 140A Environmental Biology Lab	0-3-1
-or-	
ENV 110 Environmental Science	3-0-3
SST 110 Intro to Sustainability	3-0-3
SST 120 Energy Use Analysis	2-2-3
SST 210 Issues in Sustainability	3-0-3

**C. Other Major Hours Required (40/43 SHC)**

ALT 120	Renewable Energy Tech	2-2-3
ALT 220	Photovoltaic Sys Tech	2-3-3
ALT 250	Thermal Systems	2-2-3
ARC 111	Intro to Arch Technology	1-6-3
CIS 110	Introduction to computers	2-2-3
CST 111	Construction I	3-3-4
CST 112	Construction II	3-3-4
CST 150	Building Science	2-2-3
ELC 111	Introduction to Electricity	2-2-3
SST 130	Modeling Renewable Energy	2-2-3
SST 140	Green Building Design and Concepts	3-0-3
SST 250	Sustain Capstone Project	1-6-3
	-or-	
COE 111	Co-op Experience	0-10-1

ENG 111	Expository Writing	3-0-3
	Social/Behavioral Science Elective	3-0-3
4th Semester (Spring)		
SST 250	Sustain Capstone Project	1-6-3
	-or-	
COE 111	Co-op Experience	0-10-1
CST 112	Construction II	3-3-4
*ENG 114	Professional Research and Reporting	3-0-3
	Humanities/Fine Arts Elective	3-0-3
	Technical Elective	3-0-3
		12/13-9/13-14/16
Total Semester Hours Credit		67/70

**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

**Technical Electives (Select minimum 3 hours)**

ALT 110	Biofuels I	3-0-3
ALT 210	Biofuels II	3-2-4
ALT 211	Biofuels Analytics	2-4-4
ELC 221	Adv PV Sys Designs	2-3-3
MNT 230	Pumps and Piping Systems	1-3-2
BUS 280	REAL Small Business	4-0-4
AGR 139	Intro to Sustainable Ag	3-0-3

Total Semester Hours Credit Required for Graduation:  
67/70

**Semester Curriculum for Sustainability Technologies**

**Degree**

1st Semester (Fall)

SST 110	Intro to Sustainability	3-0-3
SST 120	Energy Use Analysis	2-2-3
**MAT 121	Algebra/Trigonometry I	2-2-3
ALT 120	Renewable Energy Tech	2-2-3
SST 140	Green Building Design and Concepts	3-0-3
ELC 111	Intro to Electricity	2-2-3
	Student Success Course	1-0-1
		15-8-19

2nd Semester (Spring)

ARC 111	Intro to Arch Technology	1-6-3
SST 210	Issues in Sustainability	3-0-3
ALT 250	Thermal Systems	2-2-3
CST 150	Building Science	2-2-3
SST 130	Modeling Renewable Energy	2-2-3
CIS 110	Introduction to computers	2-2-3
		12-14-18

3rd Semester (Fall)

ALT 220	Photovoltaic Sys Tech	2-3-3
CST 111	Construction I	3-3-4
BIO 140	Environmental Biology	3-0-3
BIO 140A	Environmental Biology Lab	0-3-1

**Sustainability Technologies  
 Credential: Sustainability Certificate in  
 Sustainability Technologies  
 C40370S**

The Sustainability Technologies certificate is designed to prepare individuals for employment in environmental, construction, alternative energy, and other industries, where key emphasis is placed on energy analysis and waste reduction along with sustainable technologies.

Course includes renewable energy, sustainability measures and green building technology. Additional topics may include green certification programs, energy management, green building design, renewable energy options, and environmental responsibility.

Graduates should qualify for positions within the construction, renewable energy or sustainability field. Employment opportunities exist in both the government and private industry sectors where graduates may function as sustainability consultants, energy analysts, or entry level green building and renewable energy technicians.

Program Length: 2 semesters

Career Pathway Options: Associate in Applied Science in Sustainability Technologies

Program sites: Pittsboro Campus

**Course Requirements for Sustainability Certificate**

**Required Major Core Courses (15 SHC)**

ALT 120	Renewable Energy Tech	2-2-3
SST 110	Intro to Sustainability	3-0-3
SST 120	Energy Use Analysis	2-2-3
SST 140	Green Building Design and Concepts	3-0-3
SST 210	Issues in Sustainability	3-0-3

Total Semester Hours Credit Required for Graduation: 15

**Semester Curriculum for Sustainability Certificate:**

**1st Semester (Fall)**

SST 110	Intro to Sustainability	3-0-3
SST 120	Energy Use Analysis	2-2-3
SST 140	Green Building Design and Concepts	3-0-3
	8-2-9	

**2nd Semester (Spring)**

ALT 120	Renewable Energy Tech	2-2-3
SST 210	Issues in Sustainability	3-0-3
		5-2-6

**Sustainability Technologies  
 Credential: Green Building Certificate in  
 Sustainability Technologies  
 C40370GB**

The Green Building certificate is designed to prepare individuals for employment in construction where key emphasis is placed on sustainable building and design and green building certification programs.

Coursework will include an introduction to sustainability as well as trade specific classes in green building. Graduates should qualify for positions within the construction and green certification industries. Some courses include testing options for industry recognized certificates.

Employment opportunities exist in both government and private industry sectors where graduates may function as sustainability consultants, green building technicians, or weatherization technicians.

Program Length: 2 semesters

Career Pathway Options: Associate in Applied Science in Sustainability Technology

Program Sites: Pittsboro Campus

**Course Requirements for Green Building Certificate**

**Required Courses (17 SHC)**

ARC 111	Intro to Arch Technology	1-6-3
CST 111	Construction I	3-3-4
CST 112	Construction II	3-3-4
CST 150	Building Science	2-2-3
SST 140	Green Building & Designs Concepts	3-0-3
		12-14-17

**Semester Curriculum for Green Building Certificate**

**1st Semester**

CST 111	Construction I	3-3-4
SST 140	Green Building & Designs Concepts	3-0-3
		6-3-7

**2nd Semester**

ARC 111	Intro to Arch Technology	1-6-3
CST 112	Construction II	3-3-4
CST 150	Building Science	2-2-3
		6-11-10

Total Semester Hours Credit

17

**Sustainability Technologies**  
**Credential: Biofuels Certificate in**  
**Sustainability Technologies**  
**C40370B**

This program is designed to equip students with the skills needed to attain a technical position in the biofuels industry.

Students learn the fundamentals of biofuels as well as 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

Semester Curriculum for Biofuels Certificate:

1st Semester (Fall)

ALT 120	Renewable Energy Tech	2-2-3
ALT 110	Biofuels I	3-0-3
MNT 230	Pumps and Piping	1-3-2
		6-5-8

2nd Semester (Spring)

ALT 210	Biofuels II	3-2-4
ALT 211	Biofuels Analytics	2-4-4
		5-6-8

**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 16	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

Semester Curriculum for Renewable Energy Certificate

1st Semester

ALT 110	Biofuels I	3-0-3
ELC 111	Intro to Electricity	2-2-3
ELC 220	Photovoltaic Systems Technology	2-3-3

2nd Semester

ALT 120	Renewable Energy Tech	2-2-3
ALT 250	Thermal Systems	2-2-3
SST 130	Modeling Renewable Energy	2-2-3

Total Semester Hours Credit 18