

Current and emerging job opportunities exist in the areas of fiber optic communications, materials processing, laser surgery, research and a variety of related areas. Program graduates often begin work as technicians in product testing, field service, product development or sales.

Program Length: 5 semesters

Career Pathway Options: Associate in Applied Science in Laser and Photonics Technology

Program Sites: Harnett Campus - Day Program

Course Requirements for Laser and Photonics Technology Degree

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 I | 2-2-3 |
| | Humanities/Fine Arts Elective | 3-0-3 |
| | Social/Behavioral Science Elective | 3-0-3 |

II. Major Hours (59 SHC)

A. Core (12 SHC)

| | | |
|---------|----------------------|-------|
| ELC 131 | Circuit Analysis I | 3-3-4 |
| ELN 131 | Analog Electronics I | 3-3-4 |
| ELN 133 | Digital Electronics | 3-3-4 |

B. Program Major (13 SHC)

| | | |
|---------|-------------------------|-------|
| LEO 111 | Lasers and Applications | 1-3-2 |
| LEO 211 | Photonics Technology | 5-6-7 |
| LEO 212 | Photonics Applications | 3-3-4 |

C. Other Major Hours Required for Graduation (34 SHC)

| | | |
|----------|-----------------------------------|-------|
| CIS 110 | Introduction to Computers | 2-2-3 |
| EGR 131 | Introduction to Electronics Tech. | 1-2-2 |
| ELC 127 | Software for Technicians | 1-3-2 |
| ELC 131A | Circuit Analysis I Lab | 0-3-1 |
| ELN 132 | Analog Electronics II | 3-3-4 |
| ELN 232 | Intro to Microprocessors | 3-3-4 |
| ELN 275 | Troubleshooting | 1-3-2 |
| ISC 221 | Statistical Quality Control | 3-0-3 |
| LEO 213 | Advanced Photonics Applications | 3-3-4 |
| MAT 122 | Algebra/Trigonometry II | 2-2-3 |
| PHY 131 | Physics - Mechanics | 3-2-4 |
| | Technical Elective | 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 |

Technical Electives

| | | |
|---------|--------------------------------|--------|
| WBL 111 | Work-Based Learning I | 0-10-1 |
| WBL 121 | Work-Based Learning II | 0-10-1 |
| WBL 122 | Work-Based Learning II | 0-20-2 |
| LEO 222 | Photonics Applications Project | 1-3-2 |

Total Semester Hours Required for Graduation: 75

Sustainability Technologies

Credential: Associate in Applied Science Degree 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 | Writing and Inquiry | 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 171

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- | |
| WBL 111 | Co-op Experience | 0-10-1 |

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

**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

**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 |

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

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.

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 | Writing and Inquiry | 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 |