Engineering Technologies

Computer Engineering Technology Credential: Associate in Applied Science Degree in Computer Engineering Technology A40160

The Computer Engineering Technology curriculum provides the skills required to install, service, and maintain computers, peripherals, networks, and microprocessor and computer controlled equipment. It includes training in both hardware and software, emphasizing operating systems concepts to provide a unified view of computer systems.

Coursework includes mathematics, physics, electronics, digital circuits, and programming with emphasis on the operation, use, and interfacing of memory and devices to the CPU. Additional topics may include communications, networks, operating systems, programming languages, Internet configuration and design, and industrial applications.

Graduates will qualify for employment opportunities in electronics technology, computer service, computer networks, server maintenance, programming, and other areas requiring a knowledge of electronic and computer systems. Graduates will also qualify for certification in electronics, computers, or networks.

Program Length: 5 semesters
Career Pathway Options: Associate of Applied Science Degree in Computer Engineering Technology
Program Sites: Lee Campus - Day

Course Requirements for Computer Engineering Technology Degree

A. General Education (16 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 121 Algebra/Trigonometry I  2-2-3
Humanities/Fine Arts Elective  3-0-3
Social/Behavioral Science Elective  3-0-3

B. Required Major Core Courses (19 SHC)
CET 111  Computer Upgrade/Repair I  2-3-3
ELC 131  DC/AC Circuit Analysis  4-3-5
ELN 131  Electronic Devices  3-3-4
ELN 133  Digital Electronics  3-3-4
**Programming Elective  3

C. Other Major Hours Required for Graduation (40 SHC)
CET 211  Computer Upgrade/Repair II  2-3-3
CET 225  Digital Signal Processing  2-2-3
CIS 110  Introduction to Computers  2-2-3
EGR 131  Intro to Electronics Tech  1-2-2
ELN 132  Linear IC Applications  3-3-4
ELN 232  Introduction to Microprocessors  3-3-4

Total Semester Hours Credit in Program: 75

Semester Curriculum for Computer Engineering Technology Degree
1st Semester (Fall)   C-L-SHC
CIS 110  Introduction to Computers  2-2-3
EGR 131  Intro to Electronics Tech  1-2-2
ELC 131  DC/AC Circuit Analysis  4-3-5
ENG 111  Expository Writing  3-0-3
ENG 111A Expository Writing Lab  0-2-1
MAT 121  Algebra/Trigonometry I  2-2-3
12-11-17

2nd Semester (Spring)
ELN 131  Electronic Devices  3-3-4
ELN 133  Digital Electronics  3-3-4
MAT 122  Algebra/Trigonometry II  2-2-3
NOS 110  Operating Systems Concepts  2-2-3
PHY 131  Physics-Mechanics  3-2-4
13-12-18

3rd Semester (Summer)
ELN 132  Linear IC Applications  3-3-4
ENG 114  Prof. Research and Reporting  3-0-3
6-3-7

4th Semester (Fall)
CET 111  Computer Upgrade/Repair I  2-3-3
CET 225  Digital Signal Processing  2-2-3
ELN 232  Introduction to Microprocessors  3-3-4
Social Science Elective  3-0-3
**Programming Elective  2-3-3
12-11-16

5th Semester (Spring)
CET 211  Computer Upgrade/Repair II  2-3-3
EGR 131  Intro to Electronics Tech  1-2-2
ELN 232  Introduction to Microprocessors  3-3-4
NET 110  Networking Concepts  2-2-3
PCI 170  DAQ and Control  3-3-4

*Programming Electives (choose 3 SHC)
CSC 134  C++ Programming  2-3-3
CSC 139  Visual BASIC Programming  2-3-3
CSC 151  JAVA Programming  2-3-3

**Technical Electives:  (Select 2 SHC)
CSC 134  C++ Programming  2-3-3
CSC 139  Visual BASIC Programming  2-3-3
CSC 151  JAVA Programming  2-3-3
ELN 247  Electronics Application Project  1-3-2
NET 125  Networking Basics  1-4-3
NET 126  Routing Basics  1-4-3
NOS 120  Linux/UNIX Single User  2-2-3
NOS 130  Windows Single User  2-2-3
Electronics Engineering Technology
Credential: Associate in Applied Science
Degree in Electronics Engineering Technology
A40200

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

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

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

Program Length: 5 semesters
Career Pathway Options: Associate in Applied Science Degree in Electronics Engineering Technology
Program Sites: Lee Campus - Day Program

Course Requirements for Electronics Engineering Technology

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 121 Algebra/Trigonometry I 2-2-3

B. Required Major Core Courses (17 SHC)

ELC 131 DC/AC Circuit Analysis 4-3-5
ELN 131 Electronic Devices 3-3-4
ELN 133 Digital Electronics 3-3-4
ELN 232 Introduction to Microprocessors 3-3-4

C. Other Major Hours Required for Graduation (43 SHC)

CET 225 Digital Signal Processing 2-2-3
CIS 110 Introduction to Computers 2-2-3
EGR 131 Introduction to Electronics Tech. 1-2-2
ELC 127 Software for Technicians 1-2-2
ELN 132 Linear IC Applications 3-3-4
ELN 234 Communication Systems 3-3-4
ELN 247 Electronic Applications Project 1-3-2
ELN 275 Troubleshooting 1-2-2
ISC 221 Statistical Quality Control 3-0-3
MAT 122 Algebra/Trigonometry II 2-2-3
Electronics Engineering Technology

Credential: Certificate in Electronics Technology

C40200

This curriculum prepares individuals to work as skilled assemblers, inspectors, or testers in consumer or industrial electronics environments. Work tasks include mounting, soldering, and wiring of electronics components, assembling sub-units, and final assembly and inspection of complete systems. Coursework includes basic electricity, mathematics, solid-state electronics, and basic assembly skills. Graduates should qualify for employment as an electronics assembler, electronics tester, or electronics inspector.

Program Length: 3 semesters
Career Pathway Options: Associate in Applied Science Degree in Electronics Engineering Technology, Certificate in Electronics Technology
Program Sites: Lee Campus - Day Program, Harnett Campus – Day Program, Online Program

Course Requirements for Electronics Technology Certificate

A. General Education Courses (3 SHC) C-L-SHC
   MAT 121 Algebra/Trigonometry I 2-2-3

B. Required Major Core Courses (13 SHC)
   ELN 131 Electronic Devices 3-3-4
   ELN 132 Linear IC Applications 3-3-4
   PHY 131 Physics - Mechanics 3-2-4

C. Other Major Hours Required for Graduation (2 SHC)
   EGR 131 Introduction To Electronics Technology 1-2-2

Total Semester Hours Credit Required for Graduation: 18

Semester Curriculum for Electronics Technology Certificate

1st Semester (Fall) C-L-SHC
   CIS 110 Introduction to Computers 2-2-3
   EGR 131 Introduction to Electronics Technology 1-2-2
   ELC 131 DC/AC Circuit Analysis 4-3-5
   ENG 111 Expository Writing 3-0-3
   ENG 111A Expository Writing Lab 0-2-1
   MAT 121 Algebra/Trigonometry I 2-2-3

2nd Semester (Spring)
   ELC 127 Software for Technicians 1-2-2
   ELN 131 Electronic Devices 3-3-4
   MAT 121 Algebra/Trigonometry II 2-2-3
   12-12-17

3rd Semester (Summer)
   ELN 132 Linear IC Applications 3-3-4
   PHY 133 Physics-Sound and Light 3-2-4
   6-5-8

4th Semester (Fall)
   CET 225 Digital Signal Processing 2-2-3
   ELN 232 Introduction to Microprocessors 3-3-4
   ELN 234 Communication Systems 3-3-4
   ENG 114 Professional Research and Reporting 3-0-3
   14-8-17

5th Semester (Spring)
   ELN 247 Electronic Applications Project 1-3-2
   ELN 275 Troubleshooting 1-2-2
   ISC 221 Statistical Quality Control 3-0-3
   PCI 170 DAQ and Control 3-3-4
   Humanities/Fine Arts Elective 3-0-3
   11-8-17

Total Semester Hours Credit: 76
Laser and Photonics Technology
Credential: Associate in Applied Science
Degree in Laser and Photonics Technology
A40280

The Laser and Photonics Technology curriculum is designed to develop the practical knowledge and skills required to be a successful technician in business and industry. Coursework includes mathematics, science, communication, electronics and optics courses. An in-depth sequence of laboratory learning experiences develops the hands-on skills needed for specifying, operating and maintaining laser and photonics-based systems.

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

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 121  Algebra/Trigonometry I  2-2-3
Humanities/Fine Arts Elective  3-0-3
Social/Behavioral Science Elective  3-0-3

B. Required Major Core Courses (34 SHC)
ELC 131  DC/AC Circuit Analysis  4-3-5
ELN 131  Electronic Devices  3-3-4
ELN 132  Linear IC Applications  3-3-4
ELN 133  Digital Electronics  3-3-4
LEO 111  Principles of Lasers  1-3-2
LEO 211  Photonics Technology  5-6-7
LEO 212  Photonics Applications  3-3-4
LEO 223  Fiber Optics  3-3-4

C. Other Major Hours Required for Graduation (24/25 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 127  Software for Technicians  1-2-2
ELN 275  Troubleshooting  1-2-2
ISC 221  Statistical Quality Control  3-0-3
LEO 221  PC Interface  3-3-4
LEO 222  Photonics Applications Project  1-3-2
MAT 122  Algebra/Trigonometry II  2-2-3

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  DC/AC Circuit Analysis  4-3-5
ENG 111  Expository Writing  3-0-3
ENG 111A  Expository Writing Lab 0-2-1
MAT 121  Algebra/Trigonometry I  2-2-3

2nd Semester (Spring)
ELC 127  Software for Technicians  1-2-2
ELN 131  Electronic Devices  3-3-4
ELN 133  Digital Electronics  3-3-4
LEO 111  Principles of Lasers  1-3-2
MAT 122  Algebra/Trigonometry II  2-2-3

3rd Semester (Summer)
ELN 132  Linear IC Applications  3-3-4
PHY 131  Physics - Mechanics  3-2-4

4th Semester (Fall)
ELC 132  Software for Technicians  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

5th Semester (Spring)
ISC 221  Statistical Quality Control  3-0-3
LEO 221  PC Interface  3-3-4
LEO 222  Photonics Applications Project  1-3-2
LEO 223  Fiber Optics  3-3-4
Social/Behavioral Science Elective  3-0-3

Total Semester Hours Credit: 74/75
Mechanical Engineering Technology
Credential: Associate in Applied Science
Degree in Mechanical Engineering Technology
A40320

The Mechanical Engineering Technology curriculum prepares graduates for employment as technicians in the diversified mechanical and manufacturing engineering fields. Mechanical Engineering technicians assist in design, development, testing, process design and improvement, and troubleshooting and repair of engineered systems. Emphasis is placed on the integration of theory and hands-on application of engineering principles.

In addition to coursework in engineering graphics, engineering fundamentals, materials and manufacturing processes, mathematics, and physics, students will study computer applications, critical thinking, planning and problem solving, and oral and written communication.

Graduates of the curriculum will find employment opportunities in the manufacturing or service sectors of engineering technology. Engineering technicians may obtain professional certification by application to organizations such as American Society for Quality Control (ASQC), Society of Manufacturing Engineers (SME), and National Institute for Certification in Engineering Technology (NICET).

Program Length: 6 semesters
Career Pathway Options: Associate in Applied Science in Mechanical Engineering Technology
Program Sites:
Lee Campus - Day Program

Course Requirements for Mechanical Engineering Technology

A. General Education Courses (16 SHC)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 111</td>
<td>3-0-3</td>
</tr>
<tr>
<td>ENG 111A</td>
<td>0-2-1</td>
</tr>
<tr>
<td>ENG 114</td>
<td>3-0-3</td>
</tr>
<tr>
<td>MAT 121</td>
<td>2-2-3</td>
</tr>
<tr>
<td>Humanities/Fine Arts Elective</td>
<td>3-0-3</td>
</tr>
<tr>
<td>Social/Behavioral Science Elective</td>
<td>3-0-3</td>
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B. Required Major Core Courses (24 SHC)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>*CIS 110</td>
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</tr>
<tr>
<td>DDF 211</td>
<td>1-6-4</td>
</tr>
<tr>
<td>DFT 151</td>
<td>2-3-3</td>
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<tr>
<td>DFT 152</td>
<td>2-3-3</td>
</tr>
<tr>
<td>MEC 161</td>
<td>3-0-3</td>
</tr>
<tr>
<td>MEC 231</td>
<td>1-4-3</td>
</tr>
<tr>
<td>MEC 250</td>
<td>4-3-5</td>
</tr>
</tbody>
</table>

B. Required Major Core Courses (24 SHC)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>DFT 111</td>
<td>1-3-2</td>
</tr>
<tr>
<td>DFT 254</td>
<td>2-3-3</td>
</tr>
<tr>
<td>MEC 232</td>
<td>1-4-3</td>
</tr>
</tbody>
</table>

C. Other Major Hours Required for Graduation (27 SHC)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC 121</td>
<td>2-0-2</td>
</tr>
<tr>
<td>MAT 122</td>
<td>2-2-3</td>
</tr>
<tr>
<td>MEC 110</td>
<td>1-2-2</td>
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<tr>
<td>MEC 130</td>
<td>2-2-3</td>
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<tr>
<td>MEC 161A</td>
<td>0-3-1</td>
</tr>
<tr>
<td>PHY 131</td>
<td>3-2-4</td>
</tr>
<tr>
<td>PHY 133</td>
<td>3-2-4</td>
</tr>
</tbody>
</table>

Major Elective Course Listing (Select 3 SHC)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFT 153</td>
<td>2-3-3</td>
</tr>
<tr>
<td>DFT 254</td>
<td>2-3-3</td>
</tr>
<tr>
<td>MEC 232</td>
<td>1-4-3</td>
</tr>
</tbody>
</table>

Total Semester Hours Credit required for graduation: 67

*Student may substitute CIS 111

Semester Curriculum for Mechanical Engineering Technology Degree

1st Semester (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*CIS 110</td>
<td>2-2-3</td>
</tr>
<tr>
<td>DFT 111</td>
<td>1-3-2</td>
</tr>
<tr>
<td>ENG 111</td>
<td>3-0-3</td>
</tr>
<tr>
<td>ENG 111A</td>
<td>0-2-1</td>
</tr>
<tr>
<td>MAC 121</td>
<td>2-0-2</td>
</tr>
<tr>
<td>MEC 110</td>
<td>1-2-2</td>
</tr>
<tr>
<td>MAT 121</td>
<td>2-2-3</td>
</tr>
</tbody>
</table>

2nd Semester (Spring)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFT 152</td>
<td>2-3-3</td>
</tr>
<tr>
<td>PHY 131</td>
<td>3-2-4</td>
</tr>
<tr>
<td>MAT 122</td>
<td>2-2-3</td>
</tr>
<tr>
<td>ENG 114</td>
<td>3-0-3</td>
</tr>
<tr>
<td>MEC 161</td>
<td>3-0-3</td>
</tr>
<tr>
<td>MEC 161A</td>
<td>0-3-1</td>
</tr>
</tbody>
</table>

3rd Semester (Summer)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 133</td>
<td>3-2-4</td>
</tr>
</tbody>
</table>

4th Semester (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>DFT 152</td>
<td>2-3-3</td>
</tr>
<tr>
<td>MEC 231</td>
<td>1-4-3</td>
</tr>
<tr>
<td>MEC 160</td>
<td>2-2-3</td>
</tr>
<tr>
<td>Social/Behavioral Science Elective</td>
<td>3-0-3</td>
</tr>
<tr>
<td>Humanities/Fine Arts Elective</td>
<td>3-0-3</td>
</tr>
</tbody>
</table>

5th Semester (Spring)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>DDF 211</td>
<td>1-6-4</td>
</tr>
<tr>
<td>DFT 154</td>
<td>2-3-3</td>
</tr>
<tr>
<td>Major Elective</td>
<td>3</td>
</tr>
<tr>
<td>MEC 250</td>
<td>4-3-5</td>
</tr>
</tbody>
</table>

Total Semester Hours Credit Required for Graduation: 67

*Student may substitute CIS 111
### Mechanical Engineering Technology

**Credential: Diploma in Mechanical Engineering Technology D40320**

The Mechanical Engineering Technology curriculum prepares graduates for employment as technicians in the diversified mechanical and manufacturing engineering fields. Mechanical Engineering technicians assist in design, development, testing, process design and improvement, and troubleshooting and repair of engineered systems. Emphasis is placed on the integration of theory and hands-on application of engineering principles. In addition to coursework in engineering graphics, engineering fundamentals, materials and manufacturing processes, mathematics, and physics, students will study computer applications, critical thinking, planning and problem solving, and oral and written communication.

Graduates of the curriculum should find employment opportunities in the manufacturing or service sectors of engineering technology. Engineering technicians may obtain professional certification by application to organizations such as American Society for Quality Control (ASQC), Society of Manufacturing Engineers (SME), and National Institute for Certification in Engineering Technology (NICET).

**Program Length: 3 semesters**  
Career Pathway Options: Associate in Applied Science in Mechanical Engineering Technology, Diploma in Mechanical Engineering Technology  
Program Sites:  
Lee Campus - Day Program

#### Course Requirements for Mechanical Engineering Technology Diploma

**A. General Education Courses (7 SHC)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 111</td>
<td>3-0-3</td>
</tr>
<tr>
<td>ENG 111A</td>
<td>0-2-1</td>
</tr>
<tr>
<td>MAT 121</td>
<td>2-2-3</td>
</tr>
</tbody>
</table>

**B. Required Major Core Courses (16 SHC)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDF 211</td>
<td>1-6-4</td>
</tr>
<tr>
<td>DFT 151</td>
<td>2-3-3</td>
</tr>
<tr>
<td>DFT 152</td>
<td>2-3-3</td>
</tr>
<tr>
<td>MEC 161</td>
<td>3-0-3</td>
</tr>
<tr>
<td>MEC 231</td>
<td>1-4-3</td>
</tr>
</tbody>
</table>

**C. Other Major Hours Required for Graduation (16 SHC)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>*CIS 110</td>
<td>2-2-3</td>
</tr>
<tr>
<td>DFT 111</td>
<td>1-3-2</td>
</tr>
<tr>
<td>MAC 121</td>
<td>2-0-2</td>
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<tr>
<td>MEC 110</td>
<td>1-2-2</td>
</tr>
<tr>
<td>MEC 232</td>
<td>1-4-3</td>
</tr>
<tr>
<td>MEC 161A</td>
<td>0-3-1</td>
</tr>
<tr>
<td>DFT 154</td>
<td>2-3-3</td>
</tr>
</tbody>
</table>

*Note: Student may substitute CIS 111*
Mechanical Engineering Technology
Credential: Certificate in Computer Aided Drafting C4032001

The rapidly developing age of high technology has brought about a need for people in the fields of architecture, land surveying, manufacturing, drafting, maintenance, engineering and design to update their computer graphics skills.

This certificate is intended for persons with some drafting experience who wish to attend class at night. (Enrollment is by approval of advisor.)

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Mechanical Engineering Technology (Higher entrance standards required); Diploma in Mechanical Engineering Technology; Certificate in Computer Aided Drafting, Certificate in Computer Aided Manufacturing
Program Sites: Lee Campus - Evening Program

Course Requirements for Computer Aided Drafting Certificate
A. Required Major Core Courses (9 SHC) C-L-SHC
   DFT 151 CAD I 2-3-3
   DFT 152 CAD II 2-3-3
   DFT 154 Introduction to Solid Modeling 2-3-3

B. Other Major Hours Required for Graduation (3 SHC)
   DFT 153 CAD III 2-3-3
   DFT 254 Intermed Solid Model/Rend 2-3-3

Total Semester Hours Credit required for graduation: 12

Semester Curriculum for Computer Aided Drafting Certificate
1st Semester (Fall) C-L-SHC
   DFT 151 CAD I 2-3-3
   DFT 152 CAD II 2-3-3

2nd Semester (Spring)
   DFT 152 CAD II 2-3-3
   DFT 154 Introduction to Solid Modeling 2-3-3
   4-6-6

3rd Semester (Fall)
   DFT 153 CAD III 2-3-3
   OR
   DFT 254 Intermed Solid Model/Rend 2-3-3
   2-3-3

Total Semester Hours Credit: 12

Mechanical Engineering Technology
Credential: Certificate in Computer Aided Manufacturing C4032002

The rapidly developing age of high technology has brought about a need for people in the fields of manufacturing, CNC programming, tool and mold making, and engineering and design to develop skills in interfacing CAD/CAM with CNC equipment.

This certificate is intended for persons with some manufacturing experience who wish to attend class at night. (Enrollment is by approval of advisor.)

Program Length: 2 semesters
Career Pathway Options: Associate in Applied Science in Mechanical Engineering Technology (Higher entrance standards required); Diploma in Mechanical Engineering Technology; Certificate in Computer Aided Drafting, Certificate in Computer Aided Manufacturing
Program Sites: Lee Campus - Evening Program

Course Requirements for Computer Aided Manufacturing Certificate
A. Required Major Core Courses (9 SHC) C-L-SHC
   DFT 151 CAD I 2-3-3
   DFT 152 CAD II 2-3-3
   MEC 231 CAM I 1-4-3

B. Other Major Hours Required for Graduation (5 SHC)
   MEC 232 CAM II 1-4-3
   MEC 110 Introduction to CAD/CAM 1-2-2

Total Semester Hours Credit required for graduation: 12

Semester Curriculum for Computer Aided Manufacturing Certificate
1st Semester (Fall) C-L-SHC
   DFT 151 CAD I 2-3-3
   MEC 110 Introduction to CAD/CAM 1-2-2
   3-5-5

2nd Semester (Spring)
   MEC 231 CAM I 1-4-3
   DFT 152 CAD II 2-3-3
   3-7-6

3rd Semester (Fall)
   MEC 232 CAM II 1-4-3
   1-4-3

Total Semester Hours Credit: 14
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 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, and environmental industries. Employment opportunities exist in both the government and private industry sectors where graduates may function as renewable energy technicians, sustainability consultants, environmental technicians, or green building supervisors.

Program Length: 5 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 (16 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  
   Humanities/Fine Arts Elective  3-0-3  
   **MAT 121 Algebra/Trigonometry I  2-2-3  
   Social/Behavioral Science Elective  3-0-3  

B. Required Major Core Courses (12 SHC)  
   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  

Select One Subject Area:  
   Alternative Energy: (9 SHC)  
   ALT 120 Renewable Energy Tech  2-2-3  
   ALT 220 Photovoltaic Sys Tech  2-3-3  
   Or
   ALT 240 Wind and Hydro Power Systems  2-2-3  
   SST 130 Modeling Renewable Energy  2-2-3

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Green Building: (12 SHC)  
   ARC 111 Intro to Arch Technology  1-6-3  
   CMT 210 Prof. Construction Supervision  3-0-3  
   ARC 210 Intro to Sustain Design  1-3-2  
   SST 140 Green Building Concepts  1-3-2  
   SRV 110 Surveying I  2-6-4  
   Or
   SRV 112 Landscape Arch Surveying  2-6-4

C. Other Major Hours Required (31/33 SHC)

For both Green Building and Alternative Energy Tracks (15 SHC)  
   CIS 110 Introduction to computers  2-2-3  
   CMT 224 Statics in Construction  2-2-3  
   ELC 113 Basic Wiring  2-6-4  
   MEC 110 Intro to CAD / CAM  1-2-2  
   SST 250 Sustain Capstone Project  3-0-3

Courses for Alternative Energy Track (Minimum 16 hours)  
   ALT 110 Biofuels I  3-0-3  
   ALT 210 Biofuels II  3-2-4  
   ALT 211 Biofuels Analytics  2-4-4  
   ALT 221 Adv PV Sys Designs  2-3-3  
   ALT 250 Thermal Systems  2-2-3  
   BPR 115 Elc/Fluid Power Diagrams  1-2-2  
   ELC 112 DC/AC Electricity  3-6-5  
   MNT 230 Pumps and Piping Systems  1-3-2

Courses for Green Building Track (16 SHC):  
   ALT 120 Renewable Energy Tech  2-2-3  
   BPR 130 Blueprint Reading-Construction  2-0-2  
   CMT 214 Planning and Scheduling  3-0-3  
   CST 111 Construction I  3-3-4  
   CST 112 Construction II  3-3-4

Total Semester Hours Credit Required for Graduation: 70/71

Semester Curriculum for Sustainability Technologies Degree

Alternative Energy Track (70 SHC):  
1st Semester (Fall)  
   ENG 111 Expository Writing  3-0-3  
   ENG 111A Expository Writing Lab  0-2-1  
   SST 110 Intro to Sustainability  3-0-3  
   ALT 120 Renewable Energy Tech  2-2-3  
   ALT 220 Photovoltaic Sys Tech  2-3-3  
   ELC 112 DC/AC Electricity  3-6-5  
   13-13-18

2nd Semester (Spring)  
   *ENG 114 Professional Research and Reporting  3-0-3  
   ALT 110 Biofuels I  3-0-3  
   MAT 121 Algebra/Trigonometry  2-2-3  
   ENV 110 Environmental Science  3-0-3  
   SST 210 Issues in Sustainability  3-0-3  
   MEC 110 Intro to CAD / CAM  1-2-2  
   15-4-17
### 3rd Semester (Summer)
- **CIS 110** Introduction to computers: 2-2-3
- **BPR 115** Elc/Fluid Power Diagrams: 1-2-2

### 4th Semester (Fall)
- **MNT 230** Pumps and Piping: 1-3-2
- **ALT 210** Biofuels II: 3-2-4
- **SST 120** Energy Use Analysis: 2-2-3
- **SST 250** Sustain Capstone Project: 1-6-3
  - Humanities/Fine Arts Elective: 3-0-3
  - Social/Behavioral Science Elective: 3-0-3

### 5th Semester (Spring)
- **ALT 211** Biofuels Analytics: 2-4-4
- **ALT 221** Adv PV Sys Designs: 2-3-3
- **ALT 250** Thermal Systems: 2-2-3
- **CMT 224** Statics in Construction: 2-2-3
- **SST 130** Modeling Renewable Energy: 2-2-3
- **ELC 113** Basic Wiring: 2-6-4

### Total Semester Hours Credit: 70

### Green Building Track (71 SHC):
#### 1st Semester (Fall)
- **ENG 111** Expository Writing: 3-0-3
- **ENG 111A** Expository Writing Lab: 0-2-1
- **MAT 121** Algebra/Trigonometry I: 2-2-3
- **SST 110** Intro to Sustainability: 3-0-3
- **CST 111** Construction I: 3-3-4
- **ALT 120** Renewable Energy Tech: 2-2-3

### 2nd Semester (Spring)
- **CST 112** Construction II: 3-3-4
- **SST 210** Issues in Sustainability: 3-0-3
- **ENV 110** Environmental Science: 3-0-3
- **MEC 110** Intro to CAD / CAM: 1-2-2
- **ARC 111** Intro to Arch Technology: 1-6-3
- **ENG 114** Professional Research/Reporting: 3-0-3

### 3rd Semester (Summer)
- **CIS 110** Introduction to computers: 2-2-3

### 4th Semester (Fall)
- **CMT 210** Prof. Construction Supervision: 3-0-3
- **BPR 130** Blueprint Reading-Construction: 2-0-2
- **ELC 113** Basic Wiring: 2-6-4
- **SST 120** Energy Use Analysis: 2-2-3
  - Humanities/Fine Arts Elective: 3-0-3

### 5th Semester (Spring)
- **ARC 210** Intro to Design **OR**
- **SST 140** Green Building Concepts: 1-3-2
- **CMT 214** Planning & Scheduling: 3-0-3
- **CMT 224** Statics in Construction: 2-2-3
- **SST 250** Sustain Capstone Project: 1-6-3

### Total Semester Hours Credit: 71
Sustainability Technologies Credential:
Certificate in Green Building
C40370GB

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

Coursework will include an introduction to sustainability as well as trade specific classes in green building.

Graduates should qualify for positions within the construction industries. Employment opportunities exist in both the 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
A. Green Building Certificate
    ALT 120 Renewable Energy Technology 2-2-3
    ARC 111 Intro to Arch Technology 1-6-3
    CST 111 Construction I 3-3-4
    SST 110 Intro to Sustainability 3-0-3
    SST 120 Energy Use Analysis 2-2-3
    SST 140 Green Building Concepts 1-3-2

    Semester Sequence for Sustainability Certificate- Green Building
    1st Semester
    SST 110 Intro to Sustainability 3-0-3
    SST 120 Energy Use Analysis 2-2-3
    CST 111 Construction I 3-3-4

    2nd Semester
    SST 140 Green Building Concepts 1-3-2
    ALT 120 Renewable Energy Technology 2-2-3
    ARC 111 Intro to Arch Technology 1-6-3

    Total Semester Hours Credit 18

Sustainability Technologies Credential:
Certificate in Renewable Energy
C40370RE

The Renewable Energy certificate is designed to prepare individuals for employment in environmental, construction, 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 panel installers, solar thermal 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
B. Renewable Energy Certificate
    ALT 120 Renewable Energy Tech 2-2-3
    ALT 220 Photovoltaic Sys Tech 2-3-3
    ALT 250 Thermal Systems 2-2-3
    ELC 112 DC/AC Electricity 3-6-5
    SST 110 Intro to Sustainability 3-0-3

    Semester Sequence for Sustainability Certificate- Renewable Energy
    1st Semester
    ALT 120 Renewable Energy Tech 2-2-3
    ELC 112 DC/AC Electricity 3-6-5
    ALT 220 Photovoltaic Sys Tech 2-3-3

    2nd Semester
    SST 110 Intro to Sustainability 3-0-3
    ALT 250 Thermal Systems 2-2-3

    Total Semester Hours Credit 17