

**Major and Related Course Requirements**

	Class	Lab	Hours Clinical	Work Exper.	Credits
CIV 110 Statics & Strength of Materials	2	6	0	0	4
CIV 211 Hydraulics and Hydrology	2	3	0	0	3
CIV 215 Highway Technology	1	3	0	0	2
SRV 111 Surveying II	2	6	0	0	4
<b>Total Credits</b>					<b>13</b>

**Surveying Technology Certificate with a Specialization in Boundary Surveying (C40380-C3)**

This certificate prepares individuals for entry-level positions in boundary surveying. Course work includes fundamental Mathematics, principles of surveying, fundamentals of boundary surveying, field practices and procedures associated with boundary surveying, legal aspects of boundary location and CAD drafting. Course work will apply toward the Associates in Applied Science – Surveying Technology.

**Certificate Awarded** - A certificate is awarded in Boundary Surveying upon completion of this program.

**Admissions**

- Completion of a high school diploma or equivalent is required.
- CPCC placement test is required in mathematics. Developmental courses are available for students to build basic skills and knowledge.
- Students should see a faculty advisor before registration.
- Many courses have prerequisites or co-requisites; check the Course Descriptions section for details.

**Prerequisite For Enrollment** - The Surveying Fundamentals Certificate, C40380-C1, must be completed prior to enrolling in this certificate.

**Contact Information** - The Surveying Technology program is in the Engineering Technologies Division. For more information, call 704.330.6578.

**Major and Related Course Requirements**

	Class	Lab	Hours Clinical	Work Exper.	Credits
MAT 122 Algebra/Trigonometry II	2	2	0	0	3
SRV 210 Surveying III	2	6	0	0	4
SRV 220 Surveying Law	2	2	0	0	3
SRV 260 Field and Office Practices	1	3	0	0	2
<b>Total Credits</b>					<b>12</b>

**Surveying Technology Certificate with a Specialization in Land Development (C40380-C4)**

This certificate prepares individuals for entry-level positions in the development of land for residential use. Course work includes fundamental Mathematics; fundamentals of pressure and open channel hydraulics; fundamentals of hydrology with applications of the Rational Method; principles of boundary, topographic and site surveying; field practices and procedures associated with boundary, topographic and site surveying; fundamentals of residential subdivision layout; and CAD drafting. Course work will apply toward the Associates in Applied Science – Surveying Technology.

**Certificate Awarded** - A certificate is awarded in Land Development upon completion of this program.

**Admissions**

- Completion of a high school diploma or equivalent is required.
- CPCC placement test is required in mathematics. Developmental courses are available for students to build basic skills and knowledge.
- Students should see a faculty advisor before registration.
- Many courses have prerequisites or co-requisites; check the Course Descriptions section for details.

**Prerequisite for Enrollment** - Surveying Fundamentals Certificate, C40380-C1 and Boundary Surveying Certificate, C40380-C3, must be completed prior to enrolling in this certificate.

**Contact Information** - The Surveying Technology program is in the Engineering Technologies Division. For more information, call 704.330.6578.

**Major and Related Course Requirements**

	Class	Lab	Hours Clinical	Work Exper.	Credits
CIV 110 Statics & Strength of Materials	2	6	0	0	4
CIV 211 Hydraulics and Hydrology	2	3	0	0	3
SRV 230 Subdivision Planning	1	6	0	0	3
SRV 240 TOPO/Site Surveying	2	6	0	0	4
SRV 250 Advanced Surveying	2	6	0	0	4
<b>Total Credits</b>					<b>18</b>

**Surveying Technology Certificate Specialization in Mapping (C40380-C5)**

This certificate prepares individuals for entry-level positions in the mapping of land. Course work includes fundamental mathematics; principles of boundary and topographic surveying; field practices and procedures associated with boundary and topographic surveying; fundamentals of mapping and map development; and CAD drafting. Course work will apply toward an Associates in Applied Science Surveying Technology degree.

**Certificate Awarded** - A certificate is awarded in Mapping upon completion of this program.

**Prerequisite for Enrollment** - The Surveying Fundamentals Certificate, C40380-C1, must be completed prior to enrolling in this certificate.

**Admissions**

- Completion of a high school diploma or equivalent is required.
- CPCC placement test is required in mathematics. Developmental courses are available for students to build basic skills and knowledge.
- Many courses have prerequisites; check the Course Descriptions section of the catalog for details.

**Major and Related Course Requirements**

	Class	Lab	Hours Clinical	Work Exper.	Credits
MAT-122 Algebra/Trigonometry II	3	0	0	0	3
SRV-210 Surveying III	4	0	0	0	4
SRV-240 TOPO/Site Surveying	4	0	0	0	4
SRV-250 Advanced Surveying	4	0	0	0	4
<b>Total Credits</b>					<b>15</b>

**Sustainability Technologies (A40370)**

The Sustainability Technologies Associates Degree curriculum is based on a core of required science and engineering courses and feature four specialty tracks that will prepare technicians to meet workforce demands for highly skilled workers. The required, core courses will include math, biology, ecology, sustainability, CAD, GIS and alternative energy courses. Students will also be required to master technical training courses with topics including energy, environmentalism, engineering and their economic and social impacts.

**Degree Awarded** - The Associate in Applied Science Degree – Sustainability Technologies will be awarded by the College upon completion of this program.

**Admissions**

- A high school diploma or equivalent is required.
- CPCC placement tests are required in English and mathematics. Developmental classes in mathematics and

English courses are available for students to build basic skills and knowledge.

- A counseling/orientation appointment follows placement testing.
- Students should see a faculty advisor before registration.
- Many courses have prerequisites or corequisites; check the Course Descriptions section for details.

**Note** - Students who do not take program-related courses for a one-year period must reenter the program under the Catalog in effect at the time of reentry.

**Contact Information** - Sustainability Technologies is in the Geomatics & Sustainability Division. For more information, contact Matt Miller at 704.330.6836 or visit our website at www.cpc.edu/gc.

**Major and Related Course Requirements**

	Class	Lab	Hours Clinical	Work Exper.	Credits
ENV 110 Environmental Science	3	0	0	0	3
ENV 110A Environmental Science Lab	0	1	0	0	1
SST 110 Intro. to Sustainability	3	0	0	0	3
SST 120 Energy Use Analysis	2	2	0	0	3
SST 210 Issues in Sustainability Techn	3	0	0	0	3
CIS 110 Introduction to Computers	2	2	0	0	3
GIS 111 Intro. to Geo Info Systems	2	2	0	0	3
OR					
GIS 240 Airphoto Interpretation	2	2	0	0	3
GIS 249 Remote Sensing	2	2	0	0	3
DFT 151 CAD I	2	3	0	0	3
OR					
CIV 125 Civil Surveying CAD	1	6	0	0	3
BIO 110 Principals of Biology	3	3	0	0	4
ENV 226 Environmental Law	3	0	0	0	3
SST 250 Sustainability Capstone Project	1	6	0	0	3

**Select One Subject Area:**

**Alternative Energy**

ALT 120 Renewable Energy Tech	2	2	0	0	3
SST 130 Modeling Renewable Energy Systems	2	2	0	0	3
ALT 220 Photovoltaic Sys Tech	2	3	0	0	3

**Environmental Engineering**

CIV 110 Statics/Strengths of Materials	2	6	0	0	4
CIV 211 Hydraulics and Hydrology	2	3	0	0	3
CIV 212 Environmental Planning	2	3	0	0	3

**Sustainable Manufacturing**

ISC 120 Industrial Ecology	2	2	0	0	3
ISC 220 Lean Manufacturing Systems	2	2	0	0	3
MEC 155 Environmentally Benign Manufacturing	2	2	0	0	3

**Green Building**

SRV 112 Landscape Arch Surveying	2	6	0	0	4
SST 140 Sustainable Building Design	1	3	0	0	2
CMT 210 Professional Construction Supervision	3	0	0	0	3

**Technical Electives: Select 2-5 credit hours from the list below:**

DBA 110 Database Concepts	2	3	0	0	3
CIV 212 Environmental Planning	2	3	0	0	3
DFT 119 Basic CAD	1	2	0	0	2
ENV 120 Earth Science	3	2	0	0	4
ENV 224 Land Resource Management	3	2	0	0	4
ENV 218 Environmental Health	3	0	0	0	3
ENV 232 Site Assessment and Remediation	2	3	0	0	3
BPR 130 Blueprint Reading/Construction	1	2	0	0	3
ARC 230 Environmental Systems	3	3	0	0	4
BUS 139 Entrepreneurship	3	0	0	0	3
BUS 230 Small Business Management	3	0	0	0	3
COE 112 Co-op Work Experience I	0	0	0	0	2
COE 122 Co-op Work Experience II	0	0	0	0	2

ENV 220 Applied Ecology	3	2	0	0	4
ENV 242 Land Quality	3	2	0	0	4
GEO 131 Physical Geography I	3	2	0	0	4
GEL 120 Physical Geology	3	2	0	0	4
GEL 230 Environmental Geology	3	2	0	0	4
GIS 121 Georeferencing & Mapping	2	2	0	0	3
ALT 220 Photovoltaic Systems	2	3	0	0	3
ALT 221 Adv Photovoltaic Systems	2	3	0	0	3
ALT 240 Wind & Hydro Power Systems	2	2	0	0	3
ALT 250 Thermal Systems	2	2	0	0	3
ALT 110 Biofuels I	3	0	0	0	3
ARC 111 Intro. to Arch Technology	1	6	0	0	3
ARC 112 Construction Materials & Methods	3	2	0	0	4
ARC 210 Intro. to Sustain Design	1	3	0	0	2
CIV 110 Statics/Strength of Materials	2	6	0	0	4
CIV 111 Soils and Foundations	2	6	0	0	4
CIV 210 Engineering Materials	1	3	0	0	2
CIV 230 Construction Estimating	2	3	0	0	3
CMT 214 Planning and Scheduling	3	0	0	0	3
CMT 216 Cost and Productivity	3	0	0	0	3
LAR 120 Sustainable Development	2	2	0	0	3
LAR 113 Res Landscape Design	1	6	0	0	3
LAR 111 Intro. to Landscp Arc Tech	3	2	0	0	4
EGR 120 Engineering & Design Graphics	2	2	0	0	3
MEC 111 Machine Processes I	1	4	0	0	3
MEC 161 Manufacturing Processes I	3	0	0	0	3
MEC 180 Engineering Materials	2	3	0	0	3
MEC 250 Statics & Strength of Materials	4	3	0	0	5
MEC 265 Fluid Mechanics	2	2	0	0	3
MEC 267 Thermal Systems	2	2	0	0	3
MEC 270 Machine Design	3	3	0	0	4
MEC 275 Engineering Mechanisms	2	2	0	0	3
ISC 212 Metrology	1	2	0	0	3
BIO 110 Principles of Biology	3	3	0	0	4
BIO 140 Environmental Biology	3	0	0	0	3
BIO 140A Environmental Biology Lab	0	3	0	0	1
CHM 131 Introduction to Chemistry	3	0	0	0	3
CHM 131A Intro. to Chemistry Lab	0	3	0	0	1
CHM 132 Organic and Biochemistry	3	3	0	0	4
PHY 131 Physics-Mechanics	3	2	0	0	4
PHY 132 Physics-Elec & Magnetism	3	2	0	0	4
SRV 110 Surveying I	2	6	0	0	4
SRV 111 Surveying II	2	6	0	0	4
SRV 230 Subdivision Planning	1	6	0	0	3
SRV 240 Topo/Site Surveying	2	6	0	0	4
SRV 210 Surveying III	2	6	0	0	4
AHR 111 HVACR Electricity	2	2	0	0	3
AHR 112 Heating Technology	2	4	0	0	4
AHR 113 Comfort Cooling	2	4	0	0	4
CAR 110 Introduction to Carpentry	2	0	0	0	2
CAR 114 Residential Bldg Codes	3	0	0	0	3
ELC 112 DC/AC Electricity	3	6	0	0	5
ELC 113 Basic Wiring I	2	6	0	0	4
ELC 118 National Electrical Code	1	2	0	0	2
WLD 112 Basic Welding Processes	1	3	0	0	2

**General Education Core Requirements**

ENG 111 Expository Writing	3	0	0	0	3
ENG 114 Pro Research & Reporting	3	0	0	0	3
COM 110 Intro. to Communications	3	0	0	0	3
MAT 121 Algebra/Trigonometry I	2	2	0	0	3

Students must choose a minimum of 3 credit hours from the list of approved Social/Behavioral Sciences courses listed at the end of this section of the catalog: 3  
 Students must choose a minimum of 3 credit hours from the list of approved humanities courses listed at the end of this section of the catalog: 3

**Total Credit Hours: 69-72**

## Sustainability Technology Certificates (C40370)

### Sustainability Technologies Certificate – Specialization in Renewable Energy (C40370-C1)

#### Major and Related Course Requirements

	Class	Lab	Hours Clinical	Work Exper.	Credits
SST 110 Introduction to Sustainability	3	0	0	0	3
SST 120 Energy Use Analysis	2	2	0	0	3
SST 130 Modeling Renewable Energy Systems	2	2	0	0	3
ALT 120 Renewable Energy Technology	2	2	0	0	3
ALT 220 Photovoltaic Systems Technology and Design	2	2	0	0	3
<b>Total Credit Hours</b>					<b>15</b>

### Sustainability Technologies Certificate - Specialization in Environmental Engineering (C40370-C2)

#### Major and Related Course Requirements

	Class	Lab	Hours Clinical	Work Exper.	Credits
SST 110 Introduction to Sustainability	3	0	0	0	3
CIV 110 Statics/Strengths of Materials	2	6	0	0	4
CIV 111 Soils and Foundations	2	6	0	0	4
CIV 211 Hydraulics and Hydrology	2	3	0	0	3
CIV 212 Environmental Planning	2	3	0	0	3
<b>Total Credit Hours</b>					<b>17</b>

### Sustainability Technologies Certificate – Specialization in Sustainable Manufacturing (C40370-C3)

#### Major and Related Course Requirements

	Class	Lab	Hours Clinical	Work Exper.	Credits
SST 110 Introduction to Sustainability	3	0	0	0	3
ISC 120 Industrial Ecology	2	2	0	0	3
ISC 220 Lean Manufacturing Systems	2	2	0	0	3
MEC 155 Environmentally Benign Manufacturing	2	2	0	0	3
MEC 161 Manufacturing Processes I	3	0	0	0	3
<b>Total Credit Hours</b>					<b>15</b>

### Sustainability Technologies Certificate – Specialization in Geospatial Technology (C40370-C4)

#### Major and Related Course Requirements

	Class	Lab	Hours Clinical	Work Exper.	Credits
SST 110 Introduction to Sustainability	3	0	0	0	3
GIS 111 Introduction to GIS	2	2	0	0	3
GIS 225 Advanced Methods in GIS	2	2	0	0	3
GIS 240 Air Photo Interpretation	2	2	0	0	3
GIS 249 Remote Sensing	2	2	0	0	3
<b>Total Credit Hours</b>					<b>15</b>

### Sustainability Technologies Certificate – Specialization in Energy and the Environment (C40370-C5)

#### Major and Related Course Requirements

	Class	Lab	Hours Clinical	Work Exper.	Credits
SST 110 Introduction to Sustainability	3	0	0	0	3
SST 120 Energy Use Analysis	2	2	0	0	3
ENV 110 Environmental Science	3	0	0	0	3
ENV 110A Environmental Science Lab	0	1	0	0	1
ENV 226 Environmental Law	3	0	0	0	3
ALT 120 Renewable Energy Technology	2	2	0	0	3
<b>Total Credit Hours</b>					<b>16</b>

## Turfgrass Management Technology (A15420)

The Turfgrass Management Technology Curriculum is designed to provide skills necessary to perform duties related to management of golf courses, sports fields, lawn care, irrigation design and sod production.

Course work includes turfgrass management, irrigation, ornamental horticulture, soil science, entomology and plant pathology, as well as courses in communications, computers and the social sciences.

Graduates should qualify for employment at golf courses, local, state and national parks; sports complexes; highway vegetation and turf maintenance companies; and private and public gardens. Graduates should be prepared to take the North Carolina Pesticide Applicator’s Examination.

**Degree Awarded** - The Associate in Applied Science in Turfgrass Management Technology is awarded by the College upon completion of this program.

#### Admissions

- A high school diploma or equivalent (available through CPCC) is required.
- CPCC placement tests are required in English and Mathematics. Developmental Studies Mathematics and English courses are available for students to build basic skills and knowledge.
- A counseling/orientation appointment follows placement testing.
- Students entering this program should take courses in bold print first if at all possible.
- Many courses have prerequisites or corequisites; check the Course Descriptions section for details.

**Contact Information** - The Turfgrass Management Technology program is in the Professional Careers Division. For more information call 704.330.4827.

#### Major and Related Course Requirements

	Class	Lab	Hours Clinical	Work Exper.	Credits
<b>TRF 110 Intro. to Turfgrass Culture and Identification</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>
TRF 210 Turfgrass Equipment Management	1	4	0	0	3
<b>TRF 230 Turfgrass Management Applications</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>
TRF 260 Advanced Turfgrass Mgmt.	3	2	0	0	4
TRF 152 Landscape Maintenance	2	2	0	0	4
TRF 220 Turfgrass Calculations	2	0	0	0	2
TRF 120 Turfgrass Irrigation and Design	2	4	0	0	4
HOR 164 Horticulture Pest Mgmt.	2	2	0	0	3
<b>HOR 166 Soils and Fertilizers</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>
HOR 112 Landscape Design I	2	3	0	0	3
HOR 160 Plant Materials I	2	2	0	0	3
HOR 162 Applied Plant Science	2	2	0	0	3
HOR 273 Horticulture Management and Marketing	3	0	0	0	3
CIS 111 Basic PC Literacy	1	2	0	0	2
COE 111 Co-Op Work Experience I	0	0	0	10	1
<b>Technical Electives</b> (9 credit hours selected from the following courses)					
TRF 250 Golf/Sports Field Construction	2	4	0	0	4
HOR 114 Landscape Construction	2	2	0	0	3
HOR 116 Landscape Management I	2	2	0	0	3
HOR 215 Landscape Irrigation	2	2	0	0	4
HOR 257 Arboriculture Practices	1	3	0	0	2
HOR 265 Advanced Plant Materials	1	2	0	0	3
TRF 130 Native Flora ID	1	3	0	0	2
TRF 240 Turfgrass Pest Control	2	2	0	0	3
COE 112 Co-op Work Experience II	0	0	0	20	2