



Available Curriculum

TIER I Training

Building Performance & Energy-Efficiency

➤ Building Analysis

- ***Lead Safety for Renovation, Repair and Painting (RRP)***- The US EPA's Renovation, Repair and Painting Final Rule (40 CFR 745) requires that renovations conducted for compensation, must be performed by Certified Firms using Certified Renovators. Renovators seeking to become Certified Renovators must successfully complete an EPA-accredited renovator course or a course accredited by an EPA authorized State or Tribe. This course is the EPA model course for Certified Renovators and as such meets all requirements in 40 CFR 745.90. Course topics include:

- Dangers of Lead Paint
- Regulations
- Before Beginning Work
- Containing Dust During Work
- During the Work
- Cleaning Activities and Checking Work
- Recordkeeping
- Training Non-Certified Renovation Workers

One day course

- ***Green Property Management Certification Course*** –
 - Reducing Energy in Heating, Cooling and Lighting
 - Considering Renewables
 - Reducing Use of Natural Resources (Water, Waste/Improved Recycling)
 - Creating Healthier Housing & Reducing Contaminants
 - Engaging Tenants in Green Practices
 - Core Green Maintenance Procedures, Tools & Forms

One Day Course

- ***Weatherization Fundamentals*** – This course introduces the student to the fundamental concepts of building science and weatherization techniques. The course blends classroom presentations and demonstrations with extensive hands-on training. Course topics include:
 - Introduction to the Department Of Energy Weatherization Program
 - Communication Skills
 - House as a System
 - Building Science Basics
 - Combustion Safety
 - Blower Door Basics
 - Pressure and Thermal Boundaries
 - Worker Safety
 - Materials, Tools, & Equipment
 - Typical Weatherization Measures

Four day course

Building Performance Institute Certifications

The Building Performance Institute (BPI) is a national nonprofit organization dedicated to promoting building science practice in residential contracting trades. BPI achieves this goal via a trade-based certification delivered nationally by their Affiliate network.

➤ *BPI - Building Analyst*

- Principles of Energy and Building Science
- The Energy Audit Process
- Building Shell and Thermal Envelope
- Airflow Basics
- Moisture Management
- Air Quality
- Combustion Safety and CO Monitoring
- Building Systems: HVAC, Lighting, Appliances, and DHW
- Diagnosing Common Building Problems
- Blower Door Testing
- Combustion Testing and Safety

Four Day Course

➤ *BPI – Building Envelope Professional*

Classroom -

- Thermal & Pressure Boundary Evaluation
- Air Sealing & Dense-pack Techniques
- Prioritizing Air Sealing Work
- Insulation Techniques & Applications
- Window & Door Inspections
- Ventilation Requirements and Systems
- Health & Safety

Field Training -

- Testing In and Testing Out Procedures
- Indoor Air Quality Assessment
- Indoor Moisture Sources & Solutions
- Critical Shell Identification & Inspection
- Blower Door Applications
- Duct Diagnostics

Four Day Course

➤ *BPI - Heating Professional*

Classroom -

- Health and Safety
- Heating System Science
- Load & Sizing
- Distribution System Design
- Combustion Safety Science
- Ducted System Diagnostics
- Combustion Gas Analysis
- Duct Repair & Sealing
- Combustion Appliance Vent Repair
- Ventilation System Installation
- Heating Appliance Clean & Tune
- Gas Oven Clean & Tune

Field Training -

- Controls & Electrical Inspection
- Heat Exchanger Inspection
- Post-installation Inspection
- CAZ Testing

Four Day Course

➤ ***BPI - Manufactured Housing:***

- Introduction to Manufactured Housing
- Duct Diagnostics and Repair,
- Belly Retrofit
- Sidewall Retrofit
- Roof Retrofit
- Heating Systems

Four Day Course

Energy Management Systems Technology Introductions

The Renewal Energy Basics Career Studies certificate is designed for individuals who are interested in the foundation skills. The certificate includes an introduction of the fundamentals and safety requirements for alternative energy systems.

ELE 130 Electricity	4
ELE 176 Intro to Alternative Energy	3
SAF 127 Industrial Safety	2

Total Credit: 9

College Placement: Compass Test

The Basic Contractor Business Licensing Class

As of August 21, 2006, a worker applying for initial contractor licensure for the first time (i.e not currently licensed) must successfully complete an eight-hour business class approved by the Board for Contractors. The curriculum for the 8- hour Basic Contractor Business Licensing Class offered by the community college workforce offices has been approved by the Board. Upon successful completion of this class, participants will be provided with a certificate of completion that can be presented upon application for a contractor’s license.

The community colleges worked in conjunction with the Department of Professional and Occupational Regulations to develop and implement a basic education course for candidate contractors. The course is offered by Wytheville Community College and New River Community College. The course is recognized by the Commonwealth of Virginia, Department of Professional and Occupational Regulation, Board for Contractors.

The Basic Contractor Business Licensing Class is an 8-hour (one day) course designed to provide a basic look at the statutes and regulations that govern contractor licensing in Virginia, including a review of the different types of licenses available and the qualifications for each, Standards of Practice, Prohibited Acts and How to Avoid Violations of the Regulations. While this course is not specifically designed to prepare the student to take the contractor licensing exams in Virginia, it is a required pre requisite to application for contractor license. The course is taught each month at one of the education centers in the Wytheville Community College Service Region.

(Offered as a stand alone course in Tier 1 for incumbent workers (employed in green construction, weatherization, energy or as a recommended capstone course to all Construction Technology Certificate and Diploma pathway students in Tiers 2 and 3, the non-credit Basic Contractor Licensing course is pre requisite to and required by the DPOR Board for Contractors for contractor license candidates).

Renewal Energy Basics

The Renewal Energy Basics Career Studies certificate is designed for individuals who are interested in the foundation skills. The certificate includes an introduction of the fundamentals and safety requirements for alternative energy systems.

ELE 176 Intro to Alternative Energy	3
ELE 130 Electricity	4
SAF 127 Industrial Safety	2

Total Credits 9

TIER II Training

Energy Management Systems Technology Technician

The Alternative Energy Career Studies Certificate is designed for individuals who are interested in alternative energy. This program begins with the introduction of the fundamentals and safety requirements for alternative energy systems and then proceeds with the application and study of wind turbines as well as performs system exercises and maintenance on photovoltaic energy systems. The certificate is designed to enhance the awareness of different designs, layouts, wirings, and installations for alternative energy systems.

First Semester (Summer/Fall)

ELE 176 Intro to Alternative Energy	3
ELE 130 Electricity	4
SAF 127 Industrial Safety	2

Second Semester (Spring)

BLD 110 Intro to Construction	3
BLD 111 Blueprint Reading and Bldg Code.....	3
ENE 100 Conventional & Alt Energy Apps	4

Total Credits: 19

Advanced Technology in Mechatronics

This program is designed to provide entry-level skills for an individual to enter into electromechanical field. This will prepare the individual for entry skills for employment as a technicians install, maintain, troubleshoot, and repair a wide range of computer-driven technology or automatic control equipment. Electromechanical equipment technicians must understand basic electronics and computer operating systems in order to work with a wide variety of equipment, systems and processes.

ITE 115 Introduction to Computer Applications	3
ELE 133 Practical Electricity I.....	3
ELE 134 Practical Electricity II.....	3
ETR 123 Electronic Applications I.....	3
ETR 141 Electronics I.....	4
MEC 162 Applied Hydraulics & Pneumatics.....	3

Total Credits: 16

Tier 2-Career Studies Certificates in Solar Installer, Electricity, HVAC and Carpentry

(NEW)The Solar Installer Career Studies Certificate Curriculum and Credentials

The one-year, 24-credit Solar Installer Career Studies Certificate Program (see below) may be taken as a standalone one year career studies certificate or may be “embedded” in an existing an 2-year Construction Technology Diploma Pathway leading to existing specializations in Electrical or HVAC Trades . The opportunity will also exist in the future (Fall 2012 or beyond) to incorporate the Solar Installer career studies certificate program into a new Construction Technology Diploma Specialization in Solar Energy Technology. For the Fall 2010 Semester, the one year Solar Installer Career Studies Certificate Program will be embedded as approved electives into the two year Construction Technology-Electrical Specialization Diploma Program.

Successful completers of the program pathway are potential qualifiers for credentials and certifications that include but are not limited to the Virginia Career Readiness Certificate, Wytheville Community College Solar Installer Career Studies Certificate, OSHA 10/30 Construction Industry Training Completion, North American Board of Certified Energy Practitioners (NABCEP) Entry Level Solar Installer Certification, and Virginia Department of Occupational Regulation (DPOR) Board for Contractors Contractor Class A-B-C Licensure with AES (Alternative Energy Systems) or other License Classification.

ELE 115 (3 credits) Basic Electricity covers basic circuits and theory of fundamental concepts of electricity. The course presents a practical approach to discussion of components and devices.

Lecture 3 hours per week.

SAF 127 (2 credits) Industrial Safety (includes OSHA 10/30 Construction Industry Training) provides a basic understanding of safety and health in an industrial situation. The course includes topics in hazardous materials, substances, conditions, activities and habits as well as the prescribed methods and equipment needed for the apprentice/trainee to protect himself/herself and others. Lecture 2 hours per week.

ENE 100 (4 credits) Conventional and Alternate Energy Applications provides an overview of hydroelectric, coal, and nuclear energy production methods and renewable solar, geothermal, wind, and fuel cell technology. A complete system breakdown of conventional power production methods, efficiency, and sustainability when compared with solar, geothermal, wind, and fuel cell applications. Lecture 3 hours per week. Laboratory 3 hours per week. Total 6 hours per week.

ENE 105 (4 credits) Solar Thermal Active and Passive Technology provides a comprehensive study of thermal technology as it applies to collector types and ratings, open-loop versus closed-loop and system sizing. The course introduces hydronics, hot water, and pool heating applications. Provides an introduction to fluid dynamics and chemistry as it applies to system installation and maintenance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ENE 110 (4 credits) Solar Power Installations covers wiring, control, conversion, and ties to established power systems. The course studies the use of invertors, batteries, and charging systems. Prerequisite: ELE 157 or equivalent. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ENE 120 (4 credits) Solar Power-Photovoltaic and Thermal studies the production and conversion of electrical energy from modular to grid power systems. Course covers the storage of energy, thermal solar capture, and storage for residential and commercial applications. Covers energy conversion and storage equipment based on size and efficiency. Prerequisite: ELE 157 or equivalent. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

One (1) of the following three (3) work-based learning courses to complete certificate:

ENE 197 (3 credits) Cooperative Education is supervised on-the-job training for pay in approved business, industrial and service firms, coordinated by the college. Is applicable to all occupational- technical curricula at the discretion of the college. Credit/work ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

BLD 198 (3 credits) Seminar and Project requires completion of a project or research report related to the student's occupational objectives and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

BLD 190 (3 credits) Coordinated Internship is supervised on-the-job training in selected business, industrial or service firms coordinated by the college. Credit/practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.
 (Existing) The Electrical, HVAC and Carpentry Career Studies Certificates

*Heating, Ventilation and
 Air Conditioning (HVAC) Career Studies Certificate*

- ELE 115 Basic Electricity
- AIR 121 Air Cond. & Refrigeration I
- AIR 122 Air Cond. & Refrigeration II
- AIR 126 Electrical and Control Systems
- AIR 158 Mechanical Codes
- AIR 159 Heating and Cooling Safety
- AIR 165 Air Conditioning Systems I
- Core Elective (SAF 127 2 cr)
- Core Elective (Solar 4cr)
- Total 24 credits

Carpentry Career Studies Certificate

- BLD 126 Basic Carpentry Principles
- BLD 131 Framing I
- BLD 132 Framing II
- BLD 133 Framing III
- BLD 190 Coordinated Internship

Core Elective (Solar or SAF 127)

Total 24 credits

Alternative Energy

The Alternative Energy Career Studies Certificate is designed for individuals who are interested in alternative energy. This program begins with the introduction of the fundamentals and safety requirements for alternative energy systems and then proceeds with the application and study of wind turbines as well as performs system exercises and maintenance on photovoltaic energy systems. The certificate is designed to enhance the awareness of different designs, layouts, wirings, and installations for alternative energy systems.

- First Semester (Summer/Fall)
- ELE 176 Intro to Alternative Energy3
 - ELE 130 Electricity4
 - SAF 127 Industrial Safety2

- Second Semester (Spring)
- ELE 178 Wind Turbine Technology I3
 - ELE 177 Photovoltaic Energy System I4

Total Credits 16

Targeted Occupations: Solar Photovoltaic Installer, Wind Turbine Installer/Service Technician

Additional Occupations: Solar Sales Representative and Assessor

Electricity

This program is designed to provide entry-level skills for an individual to enter into the electrical technician field. This will prepare the individual for entry skills for employment as assistant technicians who can assist in the installation and maintenance of electrical equipment.

ETR 113 D.C. and A.C. Fundamentals I.....	4
ETR 114 D.C. and A.C. Fundamentals II.....	4
ETR 203 Electronic Devices I.....	4
ELE 127 Residential Wiring Methods.....	2
ELE 138 National Electric Code Review I.....	2
SAF 127 Industrial Safety.....	2

Total Credits 18

Additional Occupations: Helpers–Installation, Maintenance, and Repair Worker; Helpers–Electrician

TIER III Training

Energy Management Systems Technology Installer/Technician

The Refrigeration and Air Conditioning program is designed for those individuals wanting to get into the alternative energy technology industry. Emphasis of the program is in mechanical design, construction of refrigeration and air conditioning equipment, and theoretical concepts.

Prerequisites: Each student will be expected to have basic plumbing, electrical, and roofing skills. (Specifically, knowledge of basic plumbing tasks such as soldering pipe joints, gluing pipe joints, sealing fittings, testing for plumbing leaks, etc. In regards to electrical, the installer should be familiar with basic electrical concepts and terms and with the operation of a multimeter. Also included is the ability to connect wiring, create weather sealed connections, etc. Regarding roofing knowledge, the installer should be familiar with basic roof materials, terminologies as well as flashing and sealing methods.)

First Semester (Fall/Summer)

ELE 176 Intro to Alternative Energy.....	3
ELE 130 Electricity.....	4
SAF 127 Industrial Safety.....	2

Second Semester (Spring)

BLD 110 Intro to Construction.....	3
BLD 111 Blueprint Reading and Bldg Code.....	3
MEC 155 Mechanisms.....	2

Third Semester (Summer)

MTH 115 Technical Mathematics.....	3
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- And -

(Photovoltaic Installation Pathway)

ELE 147 Electrical Power and Controls.....	3
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ELE 177 Photovoltaic Energy Systems.....	4
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- OR -

(Wind Energy Installation Pathway)

ELE 147 Electrical Power and Controls.....	3
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ELE 178 Wind Turbine Technology.....	4
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- OR -

(Solar & Geo Thermal Installation Pathway)

ENE 105 Solar Thermal Active & Passive Tech.....	4
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MEC 205 Piping and Aux. Systems3

Total Credits: 28

College Placement: Compass Test

Credentialing Agency Information

NABCEP:

The North American Board of Certified Energy Practitioners (NABCEP) is a volunteer board of renewable energy stakeholder representatives that includes representatives of the solar industry, NABCEP certificants, renewable energy organizations, state policy makers, educational institutions, and the trades. Each member of the board was chosen because of his or her experience and involvement in the solar energy industry. NABCEP’s mission – to support, and work with, the renewable energy and energy efficiency industries, professionals, and stakeholders – is intended to develop and implement quality credentialing and certification programs for practitioners.

The NABCEP process has been developed and designed carefully following professional credentialing guidelines. Standards, developed by subject matter experts, have been set and the eligibility requirements are reasonably achievable being based on extensive input from stakeholders and deliberation among installers. NABCEP has built a transparent, non-discriminatory program implemented with fair procedures and due process.

Benefits of certification exist for both installers and consumers:

For installers:

- Identifies installers as professionals, instilling consumer confidence in their work
- Validates extra resources spent on training and gaining experience
- Allows for installer mobility as the market moves from state to state
- Allows installers to distinguish their skills and experience in the field

For consumers:

- Provides a means to identify qualified installers, promoting confidence in the work performed

Preserves consumer choice, maintaining access to both certified and uncertified installers

Construction Technology Diploma, Electrical Specialization

Length: Five semesters

Purpose: A shortage of qualified workers in the electrical field has created the need for trained personnel as helpers, repair technicians and electricians in residential and industrial fields. The Diploma program is designed for individuals currently working in electrical trades, and for those seeking entry level positions. The program is offered primarily in the evening.

Occupational Objectives: Electrical Helper, Maintenance Helper, Electrical Repair, Electrician

Admission Requirements: Proficiency in English and math. (COMPASS or ASSET tests will be administered to determine math and English course placements); MTH 02.

The following list is a suggested sequence in which students may plan their class schedules to ensure graduation in two years.

First Semester

ELE 149 Wiring Methods in Industry 2 2 3
BLD 110 Introduction to Construction 3 0 3
BLD 111 Blueprint Reading and
Building Code 2 2 3
ELE 115 Basic Electricity 3 0 3
BLD 135 Building Construction
Carpentry 3 0 3
SDV 100 College Success Skills 1 0 1
Suggested Credits & Hours for Semester 14 4 16

Second Semester

BLD 105 Shop Practices and Procedures 2 3 3
ELE 127 Residential Wiring Methods 2 3 3
BLD 231 Construction Estimating I 3 0 3
EEE* Core Elective 3 0 3
ITE 115 Introduction to Computer
Applications & Concepts 3 0 3
Suggested Credits & Hours for Semester 13 6 15

Summer Semester

BLD 190 Cooperative Education 0 3 3

Third Semester

BLD 101 Construction Management I 3 0 3
DRF 231 Computer Aided Drafting 2 3 3
ELE 173 Commercial Wiring Methods 2 2 3
EEE* Core Elective 3 0 3
ENG 137 Communication Processes I 3 0 3
Suggested Credits & Hours for Semester 13 5 15

Fourth Semester

ELE 245 Industrial Wiring 2 2 3
ELE 131 National Electrical Code I 3 0 3
MTH 103 Applied Technical
Mathematics I 3 0 3
BLD 290 Internship/Seminar and Project 0 3 3
Suggested Credits & Hours for Semester 8 5 12
Total Minimum Credits Required for this Curriculum.....61
* Consult your faculty advisor to select core electives

Construction Technology Diploma, HVAC Specialization

Length: Five semesters

Purpose: A shortage of qualified workers in heating, ventilation and air conditioning (HVAC) has created the need for trained personnel. The Diploma program is designed for those individuals currently in the trade seeking licensure and those seeking entry-level positions. The program is offered primarily in the evening.

Occupational Objectives: HVAC Technician and HVAC Helper

Admission Requirements: Proficiency in English and math (COMPASS or ASSET tests will be administered to determine math and English course placements); MTH 02.

The following list is a suggested sequence in which students may plan their class schedules to ensure graduation in two years.

First Semester

AIR 121 Air Conditioning and
Refrigeration I 2 3 3
BLD 110 Introduction to Construction 3 0 3

BLD 111 Blueprint Reading and Building Code 2 2 3
 ELE 115 Basic Electricity 3 0 3
 SDV 100 College Success Skills 1 0 1
 Suggested Credits & Hours for Semester 11 5 13
 Second Semester
 AIR 122 Aid Conditioning and Refrigeration II 2 3 3
 AIR 165 Aid Conditioning Systems I 2 3 4
 BLD 105 Shop Practices and Procedures 2 3 3
 BLD 231 Construction Estimating 3 0 3
 MTH 103 Applied Technical Math 3 0 3
 Suggested Credits & Hours for Semester 16 0 16
 Summer
 BLD 190 Internship/Project and Seminar 0 3 3
 Third Semester
 BLD 101 Construction Management I 3 0 3
 DRF 231 Computer Aided Drafting I 2 3 3
 ENG 137 Communication Processes I 3 0 3
 ITE 115 Intro to Computer Applications 3 0 3
 Elective Core Elective 3 0 3
 Suggested Credits & Hours for Semester 14 3 15
 Fourth Semester
 AIR 126 Electrical and Control Systems 1 3 2
 AIR 158 Mechanical Codes 2 0 2
 AIR 159 Heating and Cooling Safety 1 0 1
 BLD 135 Building Construction Carpentry 3 0 3
 BLD 290 Internship/Seminar and Project 0 3 3
 Elective Core Elective 3 0 3
 Suggested Credits & Hours for Semester 10 6 14
 Total Minimum Credits Required for this Curriculum.....61

Diploma: Construction Technology– Carpentry Specialization

Length: Five semesters

Purpose: A shortage of qualified workers in carpentry has created the need for trained personnel in the construction industry. The Diploma program is designed for those individuals seeking employment in carpentry or the construction industry. The program is offered primarily in the evening.

Occupational Objectives: Carpenter's Helper and Carpenter

Admission Requirements: Proficiency in English and math. (COMPASS or ASSET tests will be administered to determine math and English course placements); MTH 02.

The following list is a suggested sequence in which students may plan their class schedules to ensure graduation in two years.

First Semester

BLD 110 Introduction to Construction 3 0 3

BLD 111 Blueprint Reading and

Building Code 2 2 3

BLD 135 Building Construction

Carpentry 3 0 3

MTH 103 Applied Technical

Mathematics I 3 0 3

SDV 100 College Success Skills 1 0 1

Suggested Credits & Hours for Semester 12 2 13
 Second Semester
 BLD 105 Shop Practices and Procedures 2 3 3
 BLD 231 Construction Estimating I 3 0 3
 DRF 231 Computer Aided Drafting 2 3 3
 EEE* Core Elective 3 0 3
 ITE 115 Introduction to Computer Applications & Concepts 3 0 3
 Suggested Credits & Hours for Semester 13 6 15
 Summer Semester
 BLD 190 Cooperative Education 0 3 3
 or
 BUS 197
 Third Semester
 BLD 103 Principles of Residential Building Inspection 2 2 3
 BLD 101 Construction Management I 3 0 3
 BLD 131 Carpentry Framing I 3 4 5
 EEE* Core Elective 3 0 3
 ENG 137 Communication Processes I 3 0 3
 Suggested Credits & Hours for Semester 14 6 17
 Fourth Semester
 BLD 132 Carpentry Framing II 3 4 5
 BLD 133 Carpentry Framing III 3 4 5
 BLD 290 Internship/Seminar and Project 0 3 3
 Suggested Credits & Hours for Semester 6 11 13
 Total Minimum Credits Required for this Curriculum.....61 Tier 3

Refrigeration and Air Conditioning

The Refrigeration and Air Conditioning program is designed for the in-service technician and others who want a background in basic air conditioning and refrigeration fundamentals. Emphasis of the program is in mechanical design, construction of refrigeration and air conditioning equipment, and theoretical concepts.

First Semester (Fall/Summer)
 AIR 121 Air Conditioning and Refrigeration I.....4
 ELE 130 Electricity4
 SAF 127 Industrial Safety2

Second Semester (Spring)
 AIR 122 Air Conditioning and Refrigeration II.....3
 ELE 127 Residential Wiring Methods.....2
 ELE 138 National Electrical Code Review I.....2

Third Semester (Summer)
 AIR 235 Heat Pumps.....3
 AIR 199 Review & Certification Course1

Total Credits 21

Targeted Occupations: HVAC/R Mechanic and Installer
 Additional Occupations: Installation, Maintenance, and Repair Worker; Testing Adjusting and Balancing (TAB) Technician

TIER IV Training

Energy Management Systems Technology

The Energy Management Systems Technology degree program is designed to prepare students for the challenges of designing, promoting, auditing, managing, and implementing renewable energy systems in society's rapidly-changing energy-related industries and residential structures. Alternative energy students study wind, solar, geothermal, energy efficiency, and energy production systems to develop an understanding of the challenges and opportunities in developing a renewable energy economy. VWCC's Heating, Ventilation, and Air Conditioning (HVAC), Electrical and Mechanical Engineering, and Mechatronic students also learn energy management and alternative methods for energy management. VWCC's Energy Management Systems Technology program offers:

First Semester (Fall)

BLD 111 Blueprint Reading and Bldg Code.....	3
ELE 130 Electricity	4
ELE 176 Introduction to Alternative Energy I.....	3
ENG 111 College Composition I.....	3
MTH 115 Technical Mathematics II(or MTH 163).....	3
SAF 127 Industrial Safety.....	2
SDV 100 College Success Skills.....	<u>1</u>
	19

Second Semester (Spring)

BLD 110 Intro to Construction	3
ELE 138 National Electric Code.....	2
ENE 100 Conventional & Alt Energy Apps.....	4
MEC 155 Mechanisms	2
ITE 115 Intro to Computer Applications and Concepts.....	3
___ ___ Communication Elective I	<u>3</u>
	17

Third Semester (Fall)

AIR 281 Energy Management I	3
DRF 201 Computer Aiding Drafting and Design I.....	3
ELE 147 Electrical Power and Controls Systems	3
ENE 200 Power Monitoring	4
PHY 201 Applied Physics I.....	4
___ ___ Humanities Elective I	<u>3</u>

Fourth Semester (Spring)

AIR 282 Energy Management II	3
ELE 239 Programmable Controllers.....	4
PHY 202 Applied Physics II.....	4
ARC 221 Architectural CAD Application Software I.....	2
___ ___ Social Science Elective I	3
___ ___ Health or Physical Education.....	<u>1</u>
	17

Total Minimum Credits: 73

College Placement: Compass Test

Electrical Engineering

The Electrical Technology program has been designed to emphasize practical applications of the theory of AC and DC electricity. Courses in specialized areas concentrate on the generation and distribution of electric power as well as the theory of rotating electromechanical equipment. Approximately 50 percent of the course work is in the specialized area of Electrical Engineering Technology and approximately 25 percent in supporting or related courses. The remainder of the program is composed of general education courses. All individuals must complete the requirements for the common core courses before entering the second year. The rapid rate of change in current technologies requires that course content in technical areas reflect this change. Therefore, courses completed and submitted for acceptance toward an Associate of Applied Science degree in this program should have been completed no longer than seven years prior to graduation. Courses completed more than seven years prior to graduation must be evaluated by the department for content agreeable to current academic and technological standards.

First Semester (Fall)

ITE 115 Intro. to Computer Applications & Concepts	3
ENG 111 College Composition I(or ENG 115).....	3
ETR 113 DC & AC Fundamentals I	4
MTH 115 Technical Mathematics I(or MTH 163).....	3
SAF 127 Industrial Safety.....	2
SDV 100 College Success Skills	1
	16

Second Semester (Spring)

ELE 149 Wiring Methods in Industry.....	3
ETR 114 DC & AC Fundamentals II.....	4
ETR 167 Logic Circuits & Systems I.....	4
ETR 203 Electronic Devices I.....	4
PHY 131 Applied Physics I.....	3
	18

Third Semester (Fall)

ELE 127 Residential Wiring Methods	2
ELE 211 Electrical Machines I	4
ELE 233 PLC System I	4
MEC 155 Mechanisms	2
CAD 231 Computer Aided Drafting	2
___ ___ Social Science Elective I	3
	17

Fourth Semester (Spring)

ELE 138 National Electrical Code Review I.....	2
ELE 212 Electrical Machines II.....	4
ETR 249 Electrical Control Systems.....	4
CST 137 Oral Interpretation.....	3
(or CST 100 & Humanities/Fine Arts2)	
___ ___ Social Science Elective 1	3
___ ___ Health or Physical Education.....	1
	17

Total Minimum Credits 68

Targeted Occupations: Electrician; Electrical Engineer

Additional Occupations: Electrical Engineering Technician; Electro-Mechanical Technician; Electrical Engineering Technologist; Electrical and Electronics Repairer; Commercial and Industrial Equipment, Maintenance and Repair Worker; General, Electrical and Electronic Equipment Assembler; Computer-Controlled Machine Tool Operator; Metal and Plastic, Hydroelectric Plant Technician; Solar Thermoelectric Plant/Concentrating Thermal Power (CSP) Plant Operator

Instrumentation and Control Automation

The Instrumentation and Control Automation Technology program provides a core of electrical and electronic courses which must precede any specialized work in instrumentation. About one fourth of this curriculum is composed of general education courses; one fourth, of supporting and related technical work; and one half, of specialized courses. The rapid rate of change in current technologies requires that course content in technical areas reflect this change. Therefore, courses completed and submitted for acceptance toward an Associate of Applied Science degree in this program should have been completed no longer than seven years prior to graduation. Courses completed more than seven years prior to graduation must be evaluated by the department for content agreeable to current academic and technological standards.

First Semester (Fall)

ITE 115 Introduction to Computer Applications	3
& Concepts	
ENG 111 College Composition I (or ENG 115).....	3
ETR 113 DC & AC Fundamentals I.....	4
MTH 115 Technical Mathematics I (or MTH 163)	3
SAF 127 Industrial Safety.....	2
SDV 100 College Success Skills	<u>1</u>
	17

Second Semester (Spring)

ELE 149 Wiring Methods in Industry.....	3
ETR 114 DC & AC Fundamentals II.....	4
ETR 167 Logic Circuits and Systems.....	4
ETR 203 Electronic Devices I.....	4
PHY 131 Applied Physics I.....	<u>3</u>
	18

Third Semester (Fall)

ELE 233 PLC Systems I.....	4
CAD 231 Computer Aided Drafting.....	2
MEC 155 Mechanisms.....	2
INS 220 Introduction to Fluid Power.....	2
INS 230 Instrumentation I.....	4
___ ___ Social Science Elective 1.....	<u>3</u>
	17

Fourth Semester (Spring)

INS 231 Instrumentation II.....	4
INS 232 System Troubleshooting	2
INS 233 Process Control Integration.....	4
CST 137 Oral Interpretation.....	3
(or CST 100 & Humanities/Fine Arts2)	
___ ___ Social Science Elective 1.....	3
___ ___ Health or Physical Education.....	<u>1</u>
	17

Total Minimum Credits 69

Targeted Occupations: Mechanical Engineer

Additional Occupations: Electro-Mechanical Technician; Robotics Technician; Electrical Engineering Technologist; Boilermaker; Geothermal Technician; Computer-Controlled Machine Tool Operator; Metal and Plastic, Nuclear Power Reactor Operator; Power Distributors and Dispatcher; Power Plant Operator; Stationary Engineer and Boiler Operator; Methane/Landfill Gas Generation System Technician; Hydroelectric Plant Technician; Solar Power Plant Technician; Solar Thermoelectric Plant/Concentrating Thermal Power (CSP) Plant Operator