



## **GREEN COUNTRY TECHNOLOGY CENTER**

Career Cluster: Transportation, Distribution & Logistics

Pathway: Facility and Mobile Equipment Maintenance

Major: Power Products Technician

Local Name: Mechanical Trades

Instructor: Jeff Wingo

Total Hours: 450

<b>Courses</b>	<b>Hours</b>
Small Engine Shop Safety	30
Internal Combustion Engines and Operation	50
Small Engine Operating Systems	80
Small Multiple Cylinder Engines	30
Troubleshooting Engine Systems	80
Engine Failure Analysis	30
Small Engine Repair Applications	150

Course Descriptions:

### **Small Engine Shop Safety**

This course is the introduction to shop safety, fire safety, hazardous materials, hand and power tools, and safe operation of small engines.

### **Internal Combustion Engines and Operation**

This course is to Identify Engine Classifications. Small Engine History / Engine Components / Four Stroke Cycle and Two-Stroke Cycle Engine Operation.

### **Small Engine Operating Systems**

This course is to identify and understand the major systems of small engines, which include Compression / Fuel / Governor / Electrical / Lubrication and Cooling.

### **Small Multiple Cylinder Engines**

This course is to identify Multiple Cylinder Designs / Multiple Cylinder Engine Systems / Multiple Cylinder Engine Service Procedures.

### **Troubleshooting Engine Systems**

This course is an introduction to Troubleshooting Methods / Trouble shooting Charts / Troubleshooting Major Systems of Engines.

### **Engine Failure Analysis**

This course is to identify causes of engine failure and premature wear of engines.

### **Small Engine Repair Applications**

This course is to give students an opportunity to reinforce skills taught, by the repairing of engines.



## GREEN COUNTRY TECHNOLOGY CENTER

Career Cluster: Manufacturing

Pathway: Welding and Metal Fabrication

Major: GMAW Structural Welder

Local Name: Welding

Instructor: Jeff Wingo

Total Hours: 600

Workforce Staging	30
Welding Detail Drawings	30
Welding Blueprints	15
Fundamentals of Cutting Processes	30
Fundamentals of Welding	30
Oxyfuel Cutting	30
Metal Preparation and Heat Treatments	30
Metal Characteristics and Properties	30
Welding Joint Fit-Up and Adjustment	15
Weld Quality	15
GMAW/FCAW Equipment and Setup	15
GMAW Plate	60
GMAW Pipe	60
SMAW Equipment and Setup	15
SMAW Electrodes	15
SMAW Beads and Fillet Welds	120
CNC Plasma Cutting	30
CNC Plasma Cutting Applications	30

Course Descriptions:

### **Workforce Staging**

This course is designed to be delivered as an integrated component within the courses taken by the individual student. The course is designed for the development of leadership, personal development and employability skills.

### **Welding Detail Drawings**

This course is an introduction to identifying and understanding welding detail drawings. The course describes lines, fills, object views, dimensioning on drawings, use of notes and the bill of materials. Also given is an introduction to the different welding symbols, different types of fillet welds, groove welds, non-

destructive examination symbols, how to read welding symbols on drawings, specifications and welding procedures.

### **Welding Blueprints**

This course is an introduction to basic blueprint terms, components and symbols, types of blueprint drawings (civil, architectural, structural, mechanical, plumbing/piping and electrical), and interpretation of drawing dimensions and specifications.

### **Fundamentals of Cutting Processes**

This course is an introduction to uses of safety equipment, protective clothing, and procedures for cutting metals.

### **Oxyfuel Cutting**

This course is an introduction to safety requirements for oxyfuel cutting. It identifies oxyfuel cutting equipment and setup procedures, how to light, adjust and turn off equipment. Instruction on cutting techniques, straight line piercing, bevels, washing and gouging is also given.

### **Metal Preparation and Heat Treatments**

This course provides information on to how to clean and prepare all types of base metals for cutting and welding. The course explains preheating, interpass temperature control, and postheating procedures that sometimes need to be done to preserve weldment ductility, and weld quality. It introduces students to the equipment used for heat treatment of metals.

### **Metal Characteristics and Properties**

This course is an introduction to physical characteristics, mechanical properties, composition and classification of common ferrous and nonferrous metals. The course covers visual inspection, and x-ray fluorescent spectrometry methods used to identify metals.

### **Welding Joint Fit-Up and Adjustment**

This course is an introduction to identifying and explaining job code specifications, use of fit-up gauges and measuring devices to check fit-up and alignment, the use of plate and pipe fit-up and alignment tools to properly prepare joints. The course introduces steps to check for joint misalignment of poor fit.

### **Weld Quality**

This course is an introduction to codes that govern welding. The course identifies and explains weld imperfections and causes, examination practices, qualification tests and the importance of quality welds.

### **GMAW/FCAW Equipment and Setup**

This course is an introduction to safety procedures for GMAW and FCAW equipment and explains the filler metals and shielding gases used to perform GMAW and FCAW. It also covers equipment setup and operations.

### **GMAW Plate**

This course covers how to build a pad of stringer and weave beads using filler metals and shielding gas. Students will learn how to perform GMAW multi-pass fillet welds on plate in multiple positions.

### **GMAW Pipe**

This course is an introduction to open root V-groove welding of pipe in the 2G, 5G and 6G positions.

### **SMAW Equipment & Setup**

This course is an introduction to SMAW and welding safety, how to connect welding current and set up arc welding equipment. The course covers the importance of tools used to clean welds.

### **SMAW Electrodes**

This course is an introduction to electrode characteristics and different types of filler metals. It describes the role of the American Welding Society (AWS) and the American Society of Mechanical Engineers (ASME). The course covers safety storage and control of filler metals and identifies the use of codes.

### **SMAW Beads & Fillet Welds**

This course is an introduction to the preparation and setup of arc welding equipment and the processes of striking an arc. It also covers how to make stringers, weave, overlapping beads and fillet welds.

### **GMAW Welding Applications**

This course is to give the student an opportunity to reinforce skills taught, by practical applications.

### **CNC Plasma Cutting**

This course is an introduction to CNC Plasma cutting, which includes machine setup, operation, and adjusting machine settings. The course also includes use of Plasma Cam software and applications.

### **CNC Plasma Cutting Applications**

This course is to give students the opportunity to reinforce the skills taught, by practical applications.