

## Course Syllabus

### Welding

Billy Poling, Instructor/Advisor

Fred Eberle Technical Center

Edge Credit Available

### Concentration Description:

The Welding concentration focuses on careers that will build a knowledge base and technical skills in all aspects of the Welding industry. Students will have the opportunity to earn both NCCER certification and the WV Welding Certification for each skill set mastered and be exposed to skills to develop positive work ethics.

### *Courses:*

*1862 Welding I*

*1863 Welding II*

*1864 Welding III*

*1865 Welding IV*

*1982 Ornamental Metalwork*

*1983 Blueprint Reading & Metallurgy*

*1987 Gas Metal Arc Welding*

*1989 Gas Tungsten Arc Welding*

### *Course Descriptions:*

#### ***1862 Welding I***

This course is designed to introduce the student to the knowledge base and technical skills of the Welding industry. Welding I begins with the NCCER Core curriculum which is a prerequisite to all Level I completions. The students will complete modules in Basic Safety; Introduction to Construction Math; Introduction to Hand Tools; Introduction to Power Tools; Introduction to Construction Drawings; Basic Rigging; Basic Communication Skills; Basic Employability Skills; and Introduction to Materials Handling. Students will then begin developing skill sets in the fundamentals of Welding such as Welding Safety; Oxyfuel Cutting; and Plasma Arc Cutting.

Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

### **1863 Welding II**

Welding II will continue to build student skill sets in areas of Air Carbon Arc Cutting and Gouging; Base Metal Preparation; Weld Quality; SMAW-Equipment and Setup; Shielded Metal Arc Electrodes; SMAW-Beads and Fillet Welds; Joint Fit Up and Alignment; SMAW-Groove Welds with Backing; and SMAW-Open V-Groove Welds. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

### **1864 Welding III**

Welding III will continue to build student skill sets in areas of Welding Symbols; Reading Welding Detail Drawings; Physical Characteristics and Mechanical Properties of Metals; Preheating and Postheating of Metals; GMAW and FCAW-Equipment and Filler Metals; and GMAW and FCAW-Plate. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

### **1865 Welding IV**

Welding IV will continue to build student skill sets in areas of GTAW-Equipment and Filler Metals; and GTAW-Plate. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organizations, WV SkillsUSA. The West Virginia Standards for Global 21 Learning include the following components: Global 21 Content, Literacy and Numeracy, Entrepreneurship, and Technology Standards. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

### **1982 Ornamental Metalwork**

This course introduces the student to the knowledge base and technical skills for concepts in the ornamental metal work. Areas of study include measurement, metal layout and bending, operation of the drill press, band saw, and the iron worker. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem solving techniques and participate in laboratory activities to develop an understanding of course concepts and teachers should provide each student with real world learning opportunities and instruction related to welding occupations. Students are encouraged to become active members of SkillsUSA for additional co-curricular opportunities that enhance student achievement, develop student leadership, and support experimental learning. Course components also address the 21<sup>st</sup> century learning skills and technology tools. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

### **1983 Blueprint Reading & Metallurgy**

This course introduces the student to the knowledge base and technical skills for concepts in Blueprint Reading and Metallurgy. Areas of study include drawing fundamentals, sketching and fabricating, basic welding symbols, properties of metals and alloys. Emphasis will be placed on career exploration, job seeking skills, and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in laboratory activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction related to welding occupations. Students are encouraged to become active members of SkillsUSA for additional co-curricular opportunities that enhance student achievement, develop student leadership, and support experiential learning. Course components also address the 21<sup>st</sup> Century Learning Skills and Technology Tools. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

### **1987 Gas Metal Arc Welding**

This course introduces the student to the knowledge base and technical skills for concepts in Gas Metal Arc Welding. Emphasis will be placed on GMAW equipment, GMAW spray and short circuiting metal transfer methods and Flux Cored Arc Welding (FCAW). Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in laboratory activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction related to welding occupations. Students are encouraged to become active members of Skills USA for additional co-curricular opportunities that enhance student achievement, develop student leadership, and support experiential learning. Course components also address the 21<sup>st</sup> Century Learning Skills and Technology Tools. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

## 1989 Gas Tungsten Arc Welding

This course introduces the student to the knowledge base and technical skills for concepts in Gas Tungsten Arc Welding. Areas of study include set up and operation of GTAW equipment and performing welds on carbon steel and aluminum. Emphasis will be placed on career exploration, job seeking skills, and personal/professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in laboratory activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction related to welding occupations. Students are encouraged to become active members of Skills USA for additional co-curricular opportunities that enhance student achievement, develop student leadership, and support experiential learning. Course components also address the 21st Century Learning Skills and Technology Tools. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and content standards and objectives.

### Prerequisites

None

### Textbooks and Curriculum

NCCER

Core, Welding Level 1, Welding Level 2

### Instructional Philosophy

I believe as an instructor it is my duty to do my very best in teaching the students in all types of welding. I believe the student should be assisted to develop problem solving skills, self-discipline, good attitude, and have individual responsibility as an employee and citizen. The welding shop has the most modern up to date equipment available to the student. When the student has completed the program, he or she will be proficient in all types of welding. SMAW, GMAW, GTAW, Oxy-Acetylene Welding, Oxy-Acetylene Cutting, Plasma Arc Cutting, Carbon Air Arc cutting, and also Blueprint reading and fabrication. The education program for welding is not only for secondary school students but also for adults. Welding is a great career with high paying jobs for those students who want to pursue in the field.

### General Course Objectives

1. Gainful Employment: To prepare the student for entry level positions in welding for industry.
2. Responsible Citizenship: To provide the opportunity for development of an attitude of themselves, their employer, and their community.
3. Skill Craftsmanship: To provide an opportunity for the students to learn all the skills of the welding field. Their work should be of an acceptable quantity and quality.
4. Creative Tendencies: To develop problem solving capabilities.

### Classroom Management Plan

#### **Rules**

- Once you arrive at FETC, come directly to the classroom, gather your supplies, find your seat and be ready to work.
- Show respect and common courtesy to the instructor, peers, and any visitors to our classroom.
- Do not talk while the instructor or anyone else is speaking.
- Raise your hand to be called on when wanting to contribute to discussion or asking a question.
- Request permission to leave your seat or work area.
- Food and drinks are prohibited in the shop.
- Sleeping is not tolerated. If your head is down, you are considered sleeping.
- Music players, cell phones and electronic devices are prohibited.
- Break time is a privilege that can be taken away if the class is not making adequate progress or for behavioral reasons.
- In addition, all rules in the Fred W. Eberle Handbook are expected to be followed.
- Equipment is not allowed to be utilized without instructor permission.
- There must be a signed acceptable use policy in your file before computer use is allowed.
- Students will be required to clean up their work area daily.

#### **Dress Code**

- No obscene language, drug, sex or alcohol references allowed on any items.
- No revealing shirts or extremely short skirts/shorts.
- Instructor has the right to request that you cover up or change for violations of the dress code.

**Attendance Policy & Make-Up Work**

- Students are expected to attend class daily unless ill.
- Appointments should be made after school hours if at all possible.
- Excessive absenteeism may affect your progression in or graduation from the program.
- The student is responsible for obtaining make-up work during break and completing in a timely manner to the satisfaction of the instructor.

**Consequences**

Refer to school handbook for disciplinary policy.

Contact Information

Steve Adkins

Welding Instructor

304-472-1259

stephen.adkins@k12.wv.us