

## **Welding**

### **2018-2019 Program Syllabus**

#### **Mr. Shawn Golden**

#### **Program Overview**

Welding and metal fabrication is a three year course, beginning in the 10th grade and is designed to teach the basic skills of metal fabrication welding with the major emphasis on welding. Students will learn how to make layouts and blue prints, join metals by the use of S.M.A.W., T.G.A.W., and G.M.A.W. according to the layouts, and cut metal to a given shape and size using gas cutting and plasma burning equipment. Basic elements of the course may include, but are not limited to, the recognition of welding symbols, familiarity with melting and welding characteristics of various types of metals, making different welds from all angles, selecting the proper materials and equipment for the proper and safe operation, and blueprint reading. Students are required to take the National Occupational Competency Test (NOCTI) for welding. If passed, the student will receive a certificate from the State of Pennsylvania for entry level welding, enabling them to make a choice of areas for future employment. Students will also complete an OSHA certification and Forklift training. Students will have the option to take an AWS certification test. The student will be responsible for the cost of the testing. **SkillsUSA membership is a mandatory for this program.**

#### **Instructional Philosophy**

Respect, honesty, safety practices, and professionalism are always expected in this course which will prepare the students for a successful career in welding. The students will build their knowledge of welding mainly through hands-on learning, field experiences, and theory of welding concepts. Field experiences begin during the end of their second year in the program and are based on class performance, attendance, and behavior.

During welding theory students will have rigorous work assignments reading current literature in welding and demonstrating an understanding of the literature through class discussions, presentations, projects, and writings. Students will also be required to maintain, clean, and use welding equipment to perform certain performance based tasks throughout the three years of study.

Students are expected to work at a high-quality level and will be given the opportunity to rework any failing assignments after conferencing with the instructor. It is important that students be involved in *all* aspects of the learning experience. Students will be notified of the minimal number of times they must interact in each discussion and learning situation. However, I expect each student to be hard working, committed, and self-driven and follow all safety procedures and guidelines; these habits are what make a successful career in the welding field.

#### **Course Content**

The following standards will be presented during the course to develop a deeper understanding of Welding based on performance objectives for this course from the Pennsylvania Department of Education:

- Occupational Orientation and Safety
- Principles of Welding

- Welding, Drawing, and Weld Symbol Interpretation
- Visual Examination, Inspection and Testing
- Shielded Metal Arc Welding
- Gas Metal Arc Welding
- Flux Cored Arc Welding
- Gas Tungsten Arc Welding
- Manual Oxyfuel Gas Cutting
- Mechanized Oxyfuel Gas Cutting
- Manual Plasma Arc Cutting
- Manual Air Carbon Arc Cutting
- Brazing and Soldering

\*Other topics may be introduced during the course to enhance individual student learning experiences.

### **Course Objectives**

Upon completion of this course the student should be able to:

- Perform math calculations involving decimals, fractions, angles and also being able to measure and layout parts to be welded.
- Possess knowledge of safe working practices.
- Utilize Welding Skill's book to determine logic to plan jobs, materials required, proper settings such as amps, voltage, gases, and electrodes, and metal.
- Read, understand, and communicate in the language of the welding field.
- Analyze, interpret, and utilize blueprints used in the welding process.
- Prepare to enter into an entry level position in the welding field or proceed to post-secondary training in a college or technical school for advanced instruction.

### **Major Course Performance Assignments**

**Welding Performance Projects:** Throughout the course, the students will be assessed on various welding related tasks as they acquire the skills necessary for entry into the welding trade.

- |                 |                 |              |                            |
|-----------------|-----------------|--------------|----------------------------|
| • Safety        | • Hand tools    | • Layout     | • Math                     |
| • Plasma Burner | • Plasma Burner | • SMAW       | • GTAW                     |
| • Torch Cutting | • Grinding      | • GMAW       | • Maintenance              |
| • Line Burner   | • Blueprints    | • Metallurgy | • CNC Plasma Table Burning |

**Applied Academics Projects:** Throughout this program, students will be assessed on their analytical skills and problem solving abilities, which are necessary to function in the welding field.

- Weekly Journal prompts.
- Analyze and solve math problems necessary for completion of welding projects.
- Generate a notebook of vocabulary words.
- Participate in argumentative classroom debates with the proper research.
- Write a two page essay based on class research and welding field trip.

### **Assignment/Grading Policy:**

- All students will be required to dress professionally and in uniform.
- All personal protective equipment must be worn at all times in the lab.

## Methods of Evaluation:

### A. Daily Grade – 60%

- Attendance 10 points
- Attitude 10 points
- Follow safety procedure 20 points
- Performance 10 points
- Ability to remain on task 20 points
- Ability to follow instructions 10 points
- Care of equipment and tools 10 points
- Clean up 10 points
- **Total 100 points**

### B. Projects and Tasks – 20%

- Task Rubric

### C. Test – 20%

- Quizzes
- Safety Testing
- Blueprint

### D. NOCTI and Choices 360

- (Seniors) NOCTI Test and portfolio-20% of final grade\*  
\*for eligible seniors only
- (Juniors and Sophomores) Career Readiness Grade level requirements-20% of final grade

The final grade will be distributed according to the sending school's grading scale:

Final Grade	CHS	JMHS	MHS	WCHS	WGHS
<b>A</b>	100-93	100-92	100-90	100-90	100-90
<b>B</b>	92-85	91-82	89-80	89-80	89-80
<b>C</b>	84-75	81-70	79-70	79-70	79-70
<b>D</b>	74-65	69-60	69-60	69-60	69-60
<b>F</b>	64 and below	59 and below	59 and below	59 and below	59 and below

## NOCTI Assessment

All eligible seniors completing the program are required by the state of Pennsylvania to take a National Occupational Competency Testing Institute (NOCTI) exam related to their program or study. NOCTI provides occupational competency assessments required by the PA Department of Education (PDE) to measure and evaluate a student's competency in their technical program. Students must take both the written and performance sections. **This test will be used as a cumulative final exam grade of 10% for seniors.**

## Textbooks:

Moniz and Miller (2010). *Welding Skills – Fifth Edition*.

\*Additional articles and texts will be used throughout the course to enrich the learning experience.

## Welding Requirements

Each student is required to have the following:

- Steel toe work boots and
- Long sleeve welding shirt - purchased at GCCTC
- Welding t-shirt – purchased at GCCTC
- Safety glasses –supplied by the school
- Welding jacket – optional purchase
- 16 ft. measuring tape – optional purchase
- Welding gloves - supplied by the school -1<sup>st</sup> Pair
- Ear plugs – supplied by the school
- 18” tool box with lock – supplied by the student
- Welding helmet and lenses – optional purchase
- Soapstone holder – optional purchase
- Chipping hammer – optional purchase

## SkillsUSA Membership

Students must join SkillsUSA as part of their leadership and skill development – membership dues are \$13.00.

## Classroom Discipline

In addition to the GCCTC 2018-2019 Student Handbook Policies and Conduct Expectations students will create a classroom set of discipline guidelines because developing rules together creates a sense of community and accountability and will provide as a model for rule development in a classroom setting. If students violate ANY of the guidelines, whether outlined by the school or teacher, the following interventions will be used:

- **First Offense** - Warning (if a minor offense, offenses of a serious nature will be handled in cooperation with administration)
- **Second Offense** - Phone Call or Email home and/or a referral to guidance counselor
- **Third and Subsequent Offenses** - Referral to Administration

## Technology and Software Use

Students are expected to follow the technology guidelines outlined in the GCCTC Student Handbook at ALL times. Violations of these guidelines could result in indefinite suspension of technology usage in the classroom and/or computer lab during the welding class scheduled sessions.

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## By signing below you acknowledge having read and understand the Welding Program Syllabus.

Parents/ guardians and students will be notified if any changes need to be made to the course policies. If you have additional questions and/or comments you may call the school at (724) 627-3106 to speak with the teacher or email Mr. Golden at [goldens@greenectc.org](mailto:goldens@greenectc.org).

**Guardian/ Parent Signature:**

**Date:**

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**Student Signature:**

**Date:**

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