

Providence Career & Technical Academy

“Maritime Welding and Pipefitting Program - Years 1-4” Syllabi

Year 2 - “Level 1”

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Time Frame: 2021-2022

Course Description:

The Maritime Welding Program’s, “Level 1” course, is the second year of instruction received in the four year Maritime Welding and Pipefitting Program and it is taught in alternating weeks from Pipefitting. Meeting one period per day, in alternating weeks, this course will serve as an introduction into the principles and fundamentals of maritime welding, and it will begin a more in-depth look into the metal cutting processes of Oxy-Fuel Cutting (OFC), Plasma Arc Cutting (PAC) and Carbon Arc Cutting (CAC), Base Metal preparation, Weld Quality analysis, as well as preliminary exposure to the Shielded Metal Arc Welding (SMAW) process. Emphasis will continue on safety in the workplace, construction math, employability skills, communication skills and material handling skills, as well as reinforcement of key scientific theories and principles that include electricity, metallurgy, physics, chemistry, and other fundamental concepts that surround cutting and metal joining technologies. **Prerequisite: Maritime Welding and Pipefitting Program - “Exploratory.”**

Students will obtain basic knowledge of the following, in no specific order:

- Introduction to the Maritime Industry
- Introduction to Welding Processes
- Shop Practices
- Employability Skills
- Safety, Tools & Equipment
- Electrical Safety
- Basic Blueprint Reading
- Basic Employability Skills
- Basic Communication Skills
- Material Handling Skills
- Introduction to hand Tools
- Introduction to Construction Math

Common Core Standards Addressed:

- GMP 1.6: Connect mathematical ideas and representations to one another.
- GMP 2.2: Explain the meanings of the numbers, words, pictures, symbol, gestures, tables, graphs, and concrete objects you and others use.
- GMP 3.1: Explain both what to do and why it works.
- GMP 4.1: Apply mathematical ideas to real-world situations.
- GMP 5.3: Estimate and use what you know to check the answers you find using tools.
- GMP 6.1: Communicate your mathematical thinking clearly and precisely.
- GMP 8.3: Reflect on your thinking before, during, and after you solves a problem.
- W.9-10.2: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
- W.9-10.3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
- W.9-10.7: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate;

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synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

Required Textbooks, Reading and Supplementary Materials

Textbook: *NCCER - “Core Curriculum: Introductory Craft Skills, Fifth Edition;” NCCER - “Introduction to the Maritime Industry;” NCCER – “Welding, Level - 1, Fifth Edition;” NCCER – “Welding, Level - 2, Fifth Edition;”* along with a variety of online resources.

Assignment and Examination Schedule:

LESSON NAME	MODULE #	BOOK	TIME
INTRODUCTION INTO WELDING		WELDING LEVEL-1	9 HRS
THE WELDING TRADE	29101-15	WELDING LEVEL-1	2 HRS
PERSONAL PROTECTIVE EQUIPMENT	29101-15	WELDING LEVEL-1	5 HRS
WELDING SAFETY PRACTICES	29101-15	WELDING LEVEL-1	2 HRS
OXYFUEL CUTTING		WELDING LEVEL-1	20 HRS
OXY-FUEL CUTTING BASICS	29102-15	WELDING LEVEL-1	2 HRS
OXY-FUEL CONSUMABLES AND EQUIPMENT	29102-15	WELDING LEVEL-1	2 HRS
OXYFUEL EQUIPMENT SETUP AND SHUTDOWN	29102-15	WELDING LEVEL-1	2 HRS
PERFORMING CUTTING PROCEDURES	29102-15	WELDING LEVEL-1	2 HRS
PERFORMANCE ACCREDITATION TASKS	29102-15	WELDING LEVEL-1	12 HRS
MARITIME OSHA SAFETY TRAINING		OSHA REGULATIONS	10 HRS
MARITIME OSHA-10 TRAINING	OSHA	OSHA REGULATIONS	10 HRS
PLASMA ARC CUTTING		WELDING LEVEL-1	7.5 HRS

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PLASMA ARC CUTTING PROCESSES	29103-15	WELDING LEVEL-1	1.5 HRS
PLASMA ARC CUTTING EQUIPMENT	29103-15	WELDING LEVEL-1	1.5 HRS
PLASMA ARC CUTTING EQUIPMENT OPERATION AND CARE	29103-15	WELDING LEVEL-1	1.5 HRS
PERFORMANCE ACCREDITATION TASKS	29103-15	WELDING LEVEL-1	3 HRS
AIR-CARBON ARC CUTTING AND GOUGING		WELDING LEVEL-1	10 HRS
AIR-CARBON ARC CUTTING (A-CAC)	29104-15	WELDING LEVEL-1	1.5 HRS
A-CAC SETUP, OPERATION AND CARE	29104-15	WELDING LEVEL-1	1.5 HRS
PERFORMANCE ACCREDITATION TASKS	29104-15	WELDING LEVEL-1	7 HRS
BASE METAL PREPARATIONS		WELDING LEVEL-1	14.5 HRS
BASIC WELDING SAFETY AND CLEANING	29105-15	WELDING LEVEL-1	1.5 HRS
JOINT DESIGN AND WELD TYPES	29105-15	WELDING LEVEL-1	3 HRS
WELDING JOINT PREPARATIONS	29105-15	WELDING LEVEL-1	4 HRS
PERFORMANCE ACCREDITATION TASKS	29105-15	WELDING LEVEL-1	6 HRS
WELD QUALITY		WELDING LEVEL-1	12 HRS
WELDING CODES AND PROVISIONS	29106-15	WELDING LEVEL-1	3 HRS
WELDING DISCONTINUITIES AND THEIR CAUSES	29106-15	WELDING LEVEL-1	3 HRS
WELD EXAMINATION PRACTICES	29106-15	WELDING LEVEL-1	3 HRS
WELDER PERFORMANCE QUALIFICATION TESTS	29106-15	WELDING LEVEL-1	3 HRS
SMAW - EQUIPMENT AND SETUP		WELDING LEVEL-1	6 HRS
SMAW SAFETY	29107-15	WELDING LEVEL-1	2 HRS

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SMAW EQUIPMENT	29107-15	WELDING LEVEL-1	2 HRS
SMAW EQUIPMENT SETUP AND STARTUP	29107-15	WELDING LEVEL-1	2 HRS
SMAW - ELECTRODES		WELDING LEVEL-1	4 HRS
SMAW ELECTRODES	29108-15	WELDING LEVEL-1	2 HRS
ELECTRODE SELECTION AND CARE	29108-15	WELDING LEVEL-1	2 HRS
SMAW - BEADS AND FILLET WELDS		WELDING LEVEL-1	100 HRS
SMAW PREPARATIONS	29109-15	WELDING LEVEL-1	20 HRS
SMAW TECHNIQUES	29109-15	WELDING LEVEL-1	80 HRS

Grading Policy:

We encourage all students to come to class prepared, do their homework and participate in all class activities. In an effort to measure students' true knowledge of the course content and their employability skills, assessments, tests, quizzes, attendance, class/shop conduct will all be factored in the grades of all students.

Student's final grades will be broken down as follows:

1. Summative Assessments{ 45%
 2. Formative Assessments: 35%
 3. Employability Skills: 20%
- Total: 100%

Any student who obtains a score of less than 70% in any classroom summative assessment will be qualified to retake the assessment only after he/she completes all necessary preparatory assignments. Tests that are re-taken can receive a maximum score of 90%.

EXPECTATIONS:

Safety

The electric arc and oxy-fuel welding and cutting processes are inherently dangerous processes that require strict safety practices to ensure the safety of everyone. The dangers of welding include, but are not limited to:

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electric shock; burns; exposure to arc rays; exposure to fumes; and other general construction safety hazards. Therefore, to ensure student safety, we expect that all students will thoroughly understand and adhere to the safety procedures established. Due to the inherent and associated risks, safety training will take place at the beginning of each school year. Horseplay and not adhering to proper safety will affect not only the “Employability Skills” portion of the grade, but will also limit the amount of in-shop, hands-on work a student is able to perform and may result in students not being allowed to perform certain assessments.

*****Students who are found to pose a persistent danger to themselves or others, will be removed from the Maritime Welding program. *****

*****We strongly caution students from performing any work outside of school that is learned in this course, without the proper supervision of a qualified professional, until they are deemed professionally upon successful completion of this course.*****

Effort

We expect all students to give 100% and always try their hardest. Our responsibility is to make sure this effort is rewarded with learning.

Conduct

We expect all students to adhere to the school’s handbook regarding classroom conduct. It is important for student learning and student safety that the learning environment be safe and free from physical and emotional dangers. **Teasing, bullying, hurtful, disrespectful and unsafe behaviors will NOT be tolerated.**

PCTA Maritime Welding Program Prior to RTI (Response to intervention)

1. The Welding Department shall identify on a monthly basis any student who has frequent absences, several missed assignments, and lack of productivity in the lab area.
2. Upon identifying a student with needs, a meeting shall be made with the student, guidance and the director of CTE to evaluate the student’s lack of performance when attending Maritime Welding classes. This meeting will allow the student and instructor to produce a comprehensive plan with the help of a guidance counselor and the CTE director to get the student to the appropriate performance level. This gives the student the opportunity to be a part of his or her education and redirection of their Career and Technical Education Training.
3. If the student does not comply with the agreement within 2 weeks, a representative from the Welding Department will contact the guidance department to make an appointment for a second conference including the parent to discuss any issues or concerns about their child.
4. If student performance continues to decline the student will be referred to RTI (see below for RTI plan)

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RTI Plan

1. The welding department will review student performance and identify any potential students who are in the “at risk” category. The “at risk” category is defined as any freshmen or sophomore student missing more than 22 days in one quarter, also any student who fails one full module from the curriculum. The above will also apply to juniors and seniors, with the more stringent requirement that the student not miss more than 11 days per quarter.
2. Once “at risk” students have been identified, a spreadsheet shall be forwarded to guidance and special education. The spreadsheet will be filed permanently in the welding department.
3. A meeting shall be scheduled with the RTI team to discuss further actions to create a comprehensive plan for the students to succeed.
4. Upon the student’s completion of RTI, the Welding Department shall contact the RTI team to discuss whether the student shall be referred to special education, or if they can be dismissed from the Response to Intervention (RTI) plan.