WELD 101 Gas Tungsten ARC WELDING On Plate

IMPERIAL VALLEY COLLEGE DISTRICT
IMPERICAL VALLEY COLLEGE
INDUSTRIAL TECHNOLOGY DIVISION
WELDING TECHNOLOGY DEPARTMENT

COURSE SYLLABUS

WELD 101, Fall Semester 2012
Instructor: **Samuel Colton, Sr.**
COURSE TITLE: WELD 101 Gas Tungsten ARC WELDING On Plate
COURSE NUMBER: WELD 101
UNITS: 3
LECTURE HRS: 36 LAB HRS 72
CLASS SCHEDULE:

| Type | Time | Days | Where | Date Range | Schedule Type | Instructors |
|---|---|---|---|---|---|---|
| Class | 3:05 pm - 4:55 pm | F | Bldg 1200 - Room 1201 | August 24, 2012 – December 7, 2012 | Lecture/Discussion | COLTON |
| Class | 5:05 pm - 8:55 pm | F | Bldg 1200 - Room 1201 | August 24, 2012 – December 7, 2012 | Laboratory | COLTON |

INSTRUCTOR CONTACT INFORMATION:
SAMUEL COLTON SR
Samuel.colton@imperial.edu
Office Location: N/A (Adjunct Faculty Do Not Have Offices)
Department Office 1100 Building
Department Phone Number 760-355-6262
Department Chair Mr. Jose Lopez
Division Secretary Frances Arce-Gomez

COURSE DESCRIPTION
IVC Catalog Description: Theory, practice, and application of Gas Tungsten Arc Welding process on mild steel plate, aluminum, and stainless material. Safe equipment set up, welding symbols, and its application in GTAW process is taught and applied. (Formerly WELD 160) (CSU)

PREREQUISITE:
None. Recommended Preparation: WELD 100 (formerly WELD 130).

1. COURSE GOAL(S): WELD 101, FALL Semester 2012
   1.1 Develop understanding of safe practices associated with the set up and use of GTAW welding equipment as it relates to welding of mild steel, stainless steel and aluminum plate.

1.2 Develop understanding of safe practices associated with use of related equipment for cutting, grinding and preparation of materials for plate welding.
1.3 Develop skills in the use of GTAW (GAS TUNGSTEN ARC WELDING) equipment for application in the welding of mild steel, stainless steel and aluminum plate.
1.4 Develop understanding of qualification and certification under the requirements of the A.W.S. (American Welding Society) -D1.1 Structural Welding Code and other applicable welding standards.

## 2. COMPETENCIES

Upon satisfactory completion of this course, students will be able to:

2.1 Demonstrate safe working habits in the laboratory component.
2.2 Initiate the set-up of welding equipment while demonstrating safety protocols.
2.3 Illustrate and utilize the theory behind Gas Tungsten Arc Welding (GTAW).
2.4 Demonstrate the GTAW process by welding mild steel, aluminum, and stainless steel plates.
2.5 Identify and apply the proper filler material to the base material.
2.6 Identify and interpret welding symbols in accordance with blueprint drawings.

## 3. STUDENT RESPONSIBILITIES

3.1 Under IVC policy, students are expected to attend every session of class in which they are enrolled.

3.2 If a student is unable to attend the course or must drop the course for any reason, it will be the responsibility of the student to withdraw from the course. The instructor will not drop him or her from the course. If the student does not withdraw from the course and fails to complete the requirements of the course, the student will receive a failing grade.

3.3 Americans with Disabilities Act Accommodations: Imperial Valley College provides academic accommodations to students with disabilities through the Office of Student Services. Disabled Student Programs and Services (DSPS) provide reasonable and appropriate accommodations to students who have documented disabilities. It is the responsibility of the student to make the Coordinator of DSPS aware of the need for accommodations in the classroom prior to the beginning of the semester. Students should follow up with their instructors once the semester begins. Please contact the Coordinator of DSPS at (760) 355-6312, (760) 355-4174 (TDD), and in the College Counseling Center (Building 100).

3.4 Academic Integrity: Any student participating in acts of academic dishonesty including, but not limited to, copying the work of other students, using unauthorized “crib notes”, plagiarism, stealing tests, or forging an instructor’s signature—will be subject to the procedures and consequences outlined in the IVC Student Code of Conduct.

4. METHODS OF INSTRUCTION FOR LEARNING

4.1 Lecture
4.2 Instructional Technology Presentations
4.3 Group and Individual Discussions
4.4 Demonstration
4.5 Outside Assignments

5. LEARNING ACTIVITIES

5.1 Individual and Group Learning Activities
5.2 Individual and Group Discussions
5.3 Individual and Group Oral Presentations
5.4 Individual and Group Classroom/Lab Demonstrations
5.5 Other, as the instructor may determine appropriate i.e. out of class learning assignments, use of computer technology, writing assignments and library research assignments

6. EVALUATION

6.1 Class participation required
6.2 Written and practical test
6.3 Quizzes/Exams
6.4 Group and individual projects
6.5 Assignments (written reports, class/lab exercises and homework)
6.6 Scale for Grades Based on cumulative points earned for the semester, the grade assigned will be as follows;

90-100%→A and represents EXCELLENT work and outcomes
80%-89%→B and represents GOOD work and outcomes
70%-79%→C and represents SATISFACTORY work and outcomes
60%-69%→D and represents LESS THAN SATISFACTORY work and outcomes
Below 59%→F and represents UN-SATISFACTORY work and outcomes

Note: COURSE OUTLINE-OF-RECORD ATTACHED SEPERATELY

**WELD 101**
**Imperial Valley College**
**Welding Technology**
**Text Books and Course requirements**

As provided or required, all students and faculty will bring, make use of at each class such (PPE) personal protective equipment as to provide personal protection for the work being performed. All students will secure use of as provided or required an OSHA/ANSI approved:

- Welding Helmet for arc welding
- A pair of OSHA/ANSI approved clear safety glasses with side shields
- A pair of welding gloves
- A pair of over the ankle leather work boots (Ideally with Safety Toe)
- A welding jacket with leather sleeves or other flame resisting material
- A welding cap
- A pair of ear/hearing protection type ear plugs or other OSHA/ANSI approved hearing protection
- Wear a denim type all cotton pant and sleeved shirt in good repair and tuck in the shirt tail for safety reasons.
- Such other personal safety equipment, materials, and supplies as needed and keep in a well maintained condition to contribute to the learning process and success in the course.

Additionally:

- A pair of pliers for handling hot metal and other such tools as will facilitate student learning activities
- If available secure a locker if so desired and provide a lock (contents must be removed at end of semester or lock will be removed and contents disposed of)
- A three ring binder, paper and such writing tools as needed.
- Purchase the required text book available in the IVC book store
- Follow all other IVC policies and guidelines etc…

**Text:**
Hobart Institute of Welding Technology Gas Tungsten Arc Welding ; Available in the IVC Book Store
***Required: Yes***

IMPERIAL VALLEY COLLEGE DISTRICT
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INDUSTRIAL TECHNOLOGY DIVISION
WELDING TECHNOLOGY DEPARTMENT

# WELD 101 Gas Tungsten ARC WELDING On Plate

WELD 101, Fall Semester 2012
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LECTURE HRS: 36 LAB HRS 72

INSTRUCTOR CONTACT INFORMATION:
SAMUEL COLTON SR
E-MAIL: Samuel.colton@imperial.edu
Office Location: N/A (Adjunct Faculty Do Not Have Offices)
Department Office 1100 Building
Department Phone Number 760-355-6262
Department Chair Mr. Jose Lopez
Division Secretary Frances Arce-Gomez
WEB PAGE: None

TEXTBOOK: Available in the IVC Bookstore. Required

HOMEWORK: The student is expected to read the section(s) to be covered prior to each class. Assignments will be given at various times throughout the semester and will be due when indicated for each. Failure to meet due dates will result in reduced awarded points.

GRADES: Grades are calculated as a percent of total possible for course. Points will be given for completion during class/lab projects, lab assignments, additionally homework as assigned, exams and the final. Tests, including the cumulative exam and quizzes will be administered as outlined on the tentative lecture schedule. **Any changes that need to be made to this schedule will be announced in class.** Missed tests will count as a zero (0).

Grades calculated as a percent of total possible for course: Approximately

Safety: 10%
GTAW Process Set Up 10%
GTAW Theory 20%
GTAW Applications 40%
Filler Metal Selection 10%
Blue Print Interpretation 10%
Total: 100%

90-100%→A
80%-89%→B
70%-79%→C
60%-69%→D
Below 59%→F

MAKE-UPS: There will be no make-ups except for **serious and unavoidable** circumstances. Inform the instructor as soon as possible (on or before the missed day or activity) to arrange for a makeup. Since this class is heavily dependent on participation, the possibility of make ups even in the event of **serious and unavoidable** circumstances has limitations.

CHEATING: Cheating will not be tolerated and will be dealt with as per IVC college policy. As a personal opinion, cheating in this class should be the last thing anyone wants to do. The only reason for this class is to prepare the student for future opportunity in a chosen field. This cannot be done by cheating.

ATTENDANCE: Student is expected to arrive on time for the full class period. Students are expected to attend all classes per IVC policy. **If you miss a class, the consequences are yours to deal with.** As a courtesy to the other students (and to yourself), please make every effort to arrive and be in your seat and ready for class at the scheduled time. If you are late, slip quietly into the class with a minimal amount of disturbance (and remember to inform the instructor **at the end of the class** that you were there).

WITHDRAWAL POLICY: If a student is unable or no longer desires to attend the course or must drop the course for any reason, **it will be the responsibility of the student to withdraw from the course**. The "W" or withdrawal grade will be awarded only to those students who officially withdraw from the course by filling out and submitting to the registrar's office a withdrawal form per IVC policy.

AVAILABLE RESOURCES: Please feel free to contact the Instructor and ask questions regarding this course. For other questions, one of your best sources of information is the IVC web page and the IVC Student Services Department.

CONTACTING PROFESSOR: The professor is available before or after class for **brief** exchanges. In the event that a face-to-face meeting isn't possible or necessary, students may email the professor or call the phone number listed. When emailing the professor, the student needs to use an IVC email account and put in the subject line the first and last name and course section number (i.e. Joe Pipewelder , WELD103). **Any message from a non-IVC account or missing information in the subject line will be deleted unopened.**

IMPERIAL VALLEY COLLEGE DISTRICT
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WELDING TECHNOLOGY DEPARTMENT

First Day Handout Supplement to Syllabus
WELD 101,Fall Semester 2012
Instructor: Samuel Colton, Sr.

INSTRUCTOR CONTACT INFORMATION:
SAMUEL COLTON SR
Samuel.colton@imperial.edu
Office Location: N/A (Adjunct Faculty Do Not Have Offices)
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Mr. Colton welcomes you to this course in welding. As most of his students realize he is available to them immediately before or after class. Mr. Colton provides his cell phone number to his students so they can call him. Please keep in mind that your teacher will not answer your cell phone call at all times, as he turns it off when he is in class, meetings or attending family functions. Should your call go to voice mail please speak your message slowly and clearly so that he will have every chance to return your call.

Welcome to our course of study at Imperial Valley College. You are part of a program of study that has a long history of success in welding education. As part of a job training, workforce development program you will be expected to participate fully in the activities of this course. Each part of the program strives to help the student develop as a complete person capable of working in today's skilled workforce.

Your Professor will expect you to arrive on time for class, participate fully and complete the assigned homework in preparation for success in this course and employment as a member of the professional welding workforce. You will be evaluated throughout this course on; completion of tasks requested and ability complete these assigned tasks to the industry standards listed in the text or as assigned to you by your Professor. You can expect to have home work as part of this course.

**Hints for Success:**
Show up on time every class ready to learn, complete all class assignments on time with a high degree of accuracy and completeness. Dedicate yourself to becoming one of the best welding students at our college. Horse play or unsafe acts are not conducive to a professional learning environment and will not be tolerated. Safety is everyone's business!

**Electronic Devices:**
Cell phones are to be off during the lecture portion of the class. No MP3 or IPOD type recording devices are to be worn or used during any portion of the class as they pose a safety risk to the wearer and a potential distraction to the Instructor and other students.

**Dress Code:**
Neatness of appearance, use of proper personal protective equipment which is to be worn at all times when in the lab will be required during this course for safety reasons. Clothing should be in good repair and reflect work cloths as would be worn in the professional work place, with shirt tails tucked in and pants worn above the hip to avoid tripping or other accidents. Though fashionable elsewhere much of today's casual wear is unsafe or inappropriate for the working environment. Caps and hats are to be removed while in the classroom so as not to pose a distraction to the Instructor.

Approved welding caps or hats should be worn in the lab. Use and wear of all PPE especially safety glasses and ear plugs is mandatory at IVC in this course. Students who arrive unprepared with improper dress or inadequate PPE will not be allowed to participate in that class session for safety reasons until safety requirements at met. Student will have the option to work to coordinate with Instructor to secure such items and return for the balance of that class period. Be advised that missed instructional material or lab time is the responsibility of the student. We are all here to learn and make the most of our time together, please plan ahead so that we can maintain a safe and productive learning environment. During use of some equipment removal of jewelry i.e. rings, watches, necklaces etc… will be required as these items can pose an unacceptable risk of injury. Please speak with the Instructor regarding questions you may have.

**Work Ethic:**
The welding industry places high emphasis on work ethic. During the classes taught by your Instructor we will place high value on the time and resources being dedicated to the class time by all participants and ask you to make the most of our time together. Students will be expected to demonstrate respect for others by arriving on time for class, prepared to learn, returning from the breaks in the time allowed and working together to make for a safe and productive learning environment. Students are encouraged to secure a copy of the IVC code of student conduct and adhere to it. Please recognize the diversity of our community and respect the differences of others as we all learn together.

Vulgar, offensive or threatening language has no place in an adult professional learning environment.

**Attendance:**
The college policy for attendance is to attend all scheduled class sessions. Mr. Colton realizes that emergencies do arise and it will be your responsibility to contact him or your fellow students regarding course materials covered if you miss a class. Therefore do not miss class. You cannot participate and learn if you are not here. Do to the nature of our classes and the team work required students should plan to attend every class.

**Missed Exams/Late Work:**
As a rule your Professor will not accept late work and has few options regarding missed exam days. All work is due at the start of the class requested. All work must be done on a computer and printed as a paper copy as requested or turned in as an e-mail attachment as a word document. Use black ink, font size 12, Times New Roman.

Exams are standardized by your instructor for use in this course. Students will have the opportunity to review their graded exams but will not be allowed to keep copies of the exams.

**Getting the grade:**
Your Professor has detailed on the weekly task sheet the areas used for grading. This system presents a well rounded approach to measuring your total performance. Our classes are competency based and you must achieve a passing standard to receive credit for the course. More important to us than the grade is that learning has occurred.

You are training for an industry that demands the ability to think and to act. You can calculate your grade any time during the semester in each area listed and then your total grade score. Your Professor will do all he can to help you know how you are doing on a weekly basis. Please ask any time. At the Mid-Term grading period your Instructor will make an effort to visit with each student individually (if not before) to review their performance and discuss ways in which they can improve going into the final half of the course.

Keep in mind you are responsible to yourself, your fellow students and your Instructor to do your best. A simple rule of thought is “Something of something is better than nothing of nothing”. In other words if you do nothing you will get nothing out of our time together. The Instructor will tell you it takes as much effort to fail a course as it does to pass one. Work hard and be a success. Communicate fully during the semester with all your Instructors, you are the reason we are here.

**Assessment and Student Learning Outcomes:**
Imperial Valley College places high importance on assessing student learning outcomes. As part of your welding education you must demonstrate learning that reflects what is expected of a college educated adult. Embedded are numerous ways of achieving the general assessment goals of the college in your welding course. Besides learning to weld you will also be required to demonstrate learning and ability in several main areas.

These are:

- Communication Skills; both written and oral: Student will complete a written and oral report.
- Critical Thinking Skills: Student will demonstrate ability to select setup and operate welding equipment to perform weldments in GTAW.
- Personal Responsibility: Student will demonstrate personal responsibility in the safe performance of their duties and through professional conduct and timely arrival for class.
- Information Literacy: Student will demonstrate ability to use the Internet and other information media to increase their understanding of GTAW and its applications.
- Global Awareness: Student through written, oral communication as a group and individually will demonstrate their awareness of issues in the world that effect their lives in their specific location.

**One final note:**
These syllabus and first day handouts help set the general direction of our course and will serve as a guide to our course together. Be flexible, focus on learning and let's work together to make this a safe, welcoming and secure place for each of us to come.

Welcome to Imperial Valley College and your course. You are now part of a long and proud legacy of Imperial Valley welding professionals.

**WELD 101**
**Weekly Task and Exam Schedule**
**Subject to Change**

**Grading:**
Total % Average = Grade
Mid Term Grade = Total % of participation, projects, lab assignments, homework, and exams as of the midterm grade period.

**Week 1 (August 24):** Orientation to course materials, syllabus and other first day handouts. Participate in first day safety Lecture/Discussion and completion of first safety exam. First reading and out of class home work assignment.

***Task:*** *Send to the instructor an e-mail with your brief comments about what your goal is for this course of study. Read TOPICS 1-5 from your TEXT book and prepare for a "Safety" Test at our next class. Student will prepare a resume and practice for a job interview with performance review.*

**Lab:** Tour lab and discuss the weekly expectation for maintaining classroom and lab organization, removal of scrap and debris, securing of equipment as it relates to general safety and class performance. Perform such activities as needed to achieve lab organization and equipment orientation.

**Week 2 (August 31):** Discussion and Review of assigned reading. Complete "safety" exam.
***Task:*** Out of class reading as assigned.

**Lab:** Review of lab equipment operation and safe use practices; perform pipe welding activity per instruction.

**Week 3 (September 7):** Discussion of GTAW process and equipment use and set up, review of assigned reading.

**Task:** Out of class reading as assigned. Notice of Exam I week 5 as announced in class.

**Lab:** First Instructor lead demonstration of set up and adjustment of GTAW Equipment, grinding equipment for materials preparation. Students will practice safe set up and adjustment of GTAW equipment and perform cutting operations and material preparation practice on plate as instructed. Perform plate welding activity per instruction using
(STUDENT MUST SATISFACTORIALY COMPLETE EACH PERFORMANCE PRACTICE ACTIVITY AND BE SIGNED OFF BY INSTUCTOR BEFORE BEGINNING NEXT PRACTICE ACTIVITY SEQUENCE)

**Week 4 (September 14):** Discussion of GTAW process and equipment use and set up, review of assigned reading.

**Task:** Out of class reading as assigned.

**Lab:** Second Instructor lead demonstration of set up and adjustment of GTAW Cutting Equipment, grinding equipment for materials preparation. Students will practice safe set up and adjustment of GTAW equipment and perform cutting operations and material preparation practice on plate and pipe as instructed. Perform plate welding activity per instruction.
(STUDENT MUST SATISFACTORIALY COMPLETE EACH PERFORMANCE PRACTICE ACTIVITY AND BE SIGNED OFF BY INSTUCTOR BEFORE BEGINNING NEXT PRACTICE ACTIVITY SEQUENCE)

**Week 5 (September 21):** Discussion and review before exam. Complete Exam I Announce Exam II for week 7 (two weeks).

***Task:*** Out of class reading as assigned.

**Lab:** Third Instructor lead demonstration of set up and adjustment of GTAW Cutting Equipment, grinding equipment for materials preparation. Students will practice safe set up and adjustment of GTAW equipment and perform cutting operations and material preparation practice on plate as instructed. Perform plate welding activity per instruction using.

Student performance evaluations for materials preparation and GTAW equipment set up and operation.

**Week 6 (September 28th):** Discussion and review of assigned reading. Reminder Exam II next class. Discussion and review of plate preparation and welding to set procedure (WPS) specifications as set forth in the text or as modified/assigned by instructor for:
(STUDENT MUST SATISFACTORIALY COMPLETE EACH PERFORMANCE PRACTICE ACTIVITY AND BE SIGNED OFF BY INSTUCTOR BEFORE BEGINNING NEXT PRACTICE ACTIVITY SEQUENCE)

**Task:** Out of class reading as assigned.

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 7(October 5):** Lecture/Discussion on metal selection for GTAW applications in industry. Complete Exam II. Discuss and assign internet GTAW welding video search assignment and student oral reports for next class.

**Task:** Student using internet will search for appropriate content GTAW welding video and review content contrasting what has been learned from text. Student will select at least one web link and e-mail it to the instructor with brief comments of what they learned and prepare to present in class the following week as an oral report.

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 8 (October 12):** Oral reports.

**Tas**k*:* Lincoln Electric Literature Request for GTAW Guide Book. Read and study book upon receipt.

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 9 (October 19):** Lecture/Discussion GTAW.

**Task:** Read/study as assigned from text for next class.

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 10 (October 26):** Discussion and review of GTAW topics and job opportunities.

Task: Read/study from the text for next class.

Lab: Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 11(November 2):** Discussion and review of GTAW related text.

**Task:** Read/study from text previous assigned materials for next class.

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 12 (November 9):** Lecture/Discussion GTAW from text complete Exam III.

**Task:** Read/study text

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 13 (November 16):**

Discussion and assignment of student written paper on career opportunities in GTAW pipe welding in the Imperial Valley region. Paper will be turned in to instructor by e-mail no later than April 23.

**Task:** *Prepare paper for next class after holiday break.*

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission.

**Week 14 ( November 23):** Campus Closed for Thanksgiving Holiday

**Week 15 (November 30):** *Students will present assigned paper to class. Review for Exam IV. Read and review all lecture notes and other reading.*

**Task:** Review/study for Exam IV**:** *Final Review for Exam IV. Read and review all lecture notes and other reading.*

**Lab:** Student will set up and perform assigned weld competencies as outlined in text and as approved per Instructor permission (*lab activities will terminate early to allow sufficient time to evaluate final weldments, secure lab and equipment for end of semester).*

**Week 16 (December 7**

**Task:** Exam IV Comprehensive Written GTAW Final Exam

**Have a safe recess!**

**IMPERIAL COMMUNITY COLLEGE DISTRICT**
**IMPERIAL VALLEY COLLEGE**
**COURSE OUTLINE-OF-RECORD**

**DIVISION:** Economic and Workforce Development **DATE:** September 03,

**COURSE TITLE:** Gas Tungsten Arc Welding on Plate **COURSE NO.:** WELD 101 **UNITS:** 3

**LEC HRS.** 36.00 **LAB HRS.** 72.00

If cross-referenced, please complete the following

**COURSE NO.(s)** **COURSE TITLE**

## I. COURSE/CATALOG DESCRIPTION:

Theory, practice, and application of Gas Tungsten Arc Welding process on mild steel plate, aluminum, and stainless material. Safe equipment set up, welding symbols, and its application i GTAW process is taught and applied. (Formerly WELD 160) (CSU)

## II. A. PREREQUISITES, if any:

**B. COREQUISITES, if any:**

**C. RECOMMENDED PREPARATION, if any:**

WELD 100

## III. GRADING CRITERIA:

Letter Grade Only

## IV. STUDENT LEARNING OUTCOMES:

Upon course completion, the successful student will have acquired new skills, knowledge, and attitudes as demonstrated by being able to:

## V. MEASURABLE COURSE OBJECTIVES AND MINIMUM STANDARDS FOR GRADE OF "C"

Upon satisfactory completion of the course, students will be able to:
1. Demonstrate safe working habits in the laboratory component.
2. Initiate the set-up of welding equipment while demonstrating safety protocols.
3. Illustrate and utilize the theory behind Gas Tungsten Arc Welding (GTAW).
4. Demonstrate the GTAW process by welding mild steel, aluminum , and stainless steel plates
5. Identify and apply the proper filler material to the base material.
6. Identify and interpret welding symbols in accordance with blueprint drawings.

## VI. CORE CONTENT TO BE COVERED IN ALL SECTIONS:

| CORE CONTENT | APPROX. % OF COURSE |
|---|---|
| A. Safety<br>1.1 Shop Safety<br>1.2 Electrical Safety<br>1.3 Personal Protective Equipment (PPE)<br>1.4 Equipment Safety<br>1.5 Safe proper tool usage | 10.00% |
| B. Safe GTAW welding equipment set up<br>2.1 Set welding machine for mild steel welding<br>2.2 Set welding machine for aluminum welding<br>2.3 Set welding machine for stainless steel welding<br>2.4 Apply proper welding parameter determined by metal thickness | 10.00% |
| C. Gas Tungsten Arc Welding theory<br>3.1 Introduction to Gas Tungsten Arc Welding<br>3.2 Identify components and understand their functions<br>3.3 Gas shield and its function<br>3.4 Filler metals and its applications<br>3.5 Base metals and its melting points | 20.00% |
| D. Gas Tungsten Arc Welding application<br>4.1 Set up welding machine in a safe manner for mild steel, aluminum, and stainless steel welding<br>4.2 Clean and prepare 2"x 4"x 1/8" mild steel, aluminum, and stainless steel coupons<br>4.3 Fit and tack the coupons in a lap joint, butt joint , and T joint design<br>4.4 Weld the coupons in a 1F, 2F, 3F position | 40.00% |

| | |
|---|---|
| E. Identify and apply proper filler material to base metal<br>5.1 Study and identify tensile strength for filler metal<br>5.2 Identify and select proper filler rod for base metal<br>5.3 Understand and apply filler metal to the weld puddle | 10.00% |
| F. Blueprint interpretation and welding symbols in GTAW<br>6.1 Identify the information for GTAW process in a bubble drawing<br>6.2 Comprehend the basic welding symbols that apply to welding<br>6.3 Study the difference between weld symbol and welding symbol | 10.00% |
| TOTAL | 100% |

## VII. METHOD OF EVALUATION TO DETERMINE IF OBJECTIVES HAVE BEEN MET BY STUDENTS:

Class Activity

Mid-Term/Final Exam(s)

Objective

Oral Assignments

Problem Solving Exercise

Quizzes

Skill Demonstration

## VIII. INSTRUCTIONAL METHODOLOGY:

Audio Visual

Demonstration

Discussion

Group Activity

Individual Assistance

Lab Activity

Lecture

Simulation/Case Study

Two (2) hours of independent work done out of class per each hour of lecture or class work, or hours lab, practicum, or the equivalent per unit is expected.

## IX. ASSIGNMENTS:

## X. TEXTBOOK(S) AND SUPPLEMENT(S):

HIWT Gas Tungsten Arc Welding EW369 GTAW