SYLLABUS

WLDG 2451
ADVANCED GAS TUNGSTEN ARC (TIG)

WELDING
BRAZOSPORT COLLEGE

LAKE JACKSON TEXAS

PREPARED BY: Ken Kaspar DATE: September 2015
INSTRUCTOR

RECOMMENDED BY: _____ DATE: _____
DIVISION CHAIRMAN

RECOMMENDED BY: _____ DATE: _____
DEAN

The Brazosport College District shall not discriminate against, or exclude from participation in any benefits or activities either on the staff or in the student body, any person on the grounds of sex, race, color, religion, national origin, age, or handicap.

Brazosport College
500 College Dr.
Lake Jackson, Texas 77566

WLDG 2451
ADVANCED GAS TUNGSTEN ARC (TIG)

COURSE DESCRIPTION:

Advanced topics in GTAW welding, including welding in various positions and directions.(4 SCH, 2 lectures, 11 labs)

TEXT AND REFERENCES:

NCCER Level 2 & 3

COURSE GOALS:

Demonstrate proficiency in various welding positions; describe safety rules and equipment use; and describe the effects of welding parameters in GMAW; weld various joint designs and diagnose welding problems and perform visual inspection.

Interpret and develop welding detail drawings. Make fillet welds on carbon steel plate in the 1F (flat) position using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 2F (horizontal) position, using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 3F (vertical) position, using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 4F (overhead) position, using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 1F (flat) position, using FCAW with flux cored wire. Make fillet welds on carbon steel plate in the 2F (horizontal) position, using FCAW with flux cored wire. Make fillet welds on carbon steel plate in the 3F (vertical) position, using FCAW with flux cored wire. Make fillet welds on carbon steel plate in the 4F (overhead) position, using FCAW with flux cored wire. Make multiple pass open root V-groove welds on carbon steel plate in the 1G (flat) position, using FCAW and flux cored wire.

Make multiple-pass open-root V-groove welds on carbon steel plate in the 2G (horizontal) position, using FCAW and flux cored wire. Make multiple-pass open-root V-groove welds on carbon steel plate in the 3G (vertical) position, using FCAW and flux cored wire Make multiple-pass open-root V-groove welds on carbon steel plate in the 4G (overhead) position, using FCAW and flux cored wire. Make multiple-pass open-root V-groove welds on carbon steel plate in the 1G (flat) position, using GMAW with short-circuiting transfer. Make multiple-pass open-root V-groove welds on carbon steel plate in the 2G (horizontal) position, using GMAW with short-circuiting transfer. Make multiple-pass open-root V-groove welds on carbon steel plate in the 3G (vertical) position, using GMAW with short-circuiting transfer. Make multiple-pass open-root V-groove welds on carbon steel plate in the 4G (overhead) position, using GMAW with short-circuiting transfer. Make 1F and 2F fillet welds on carbon steel plate using GMAW with spray transfer. Make 1G open-root V-groove welds on carbon steel plate using GMAW with spray transfer.

Select shielding gas. Select filler metal. Connect the shielding gas and set the flow rate. Select and prepare the electrode. Break down and reassemble a GTAW torch.

Set up FCAW equipment for open-root V-grove pipe welds. Make FCAW open-root V-groove pipe welds in the 1G-ROTATED position. Make FCAW open-root V-groove pipe welds in the 2G position. Make FCAW open-root V-groove pipe welds in the 5g position. Make FCAW open-root V-groove pipe welds in the 6G position.

STUDENTS WITH DISABILITIES

BC is committed to providing equal education opportunities to every student. BC offers services for individuals with special needs and capabilities including counseling, tutoring, equipment, and software to assist students with special needs. Please contact Special Populations Counselor, 979-230-3236 for further information.

COURSE EVALUATION

Student grades will be assigned according to the following criteria:

LABS 40%
UNIT TESTS 30%
ATTENDANCE 20%
FINAL 10%

Grades of A through F will be assigned according to the chart below:

100-90 = A
89-80 = B
79-70 = C
69-60 = D
59-0 = F

ATTENDANCE AND WITHDRAWAL POLICIES

CLASS WORK:

Students are responsible for all class work assigned during any absence. Do not ask if you missed anything. If we had a class you missed something. The instructor will accept work without penalty, when, in his judgment an absence could not be avoided.

ABSENCES:

Students not attending class regularly will be administratively withdrawn from class by the instructor. Students will be considered absent if not in class within the first one hour of a five hour class time. Students in this class are subject to withdrawal for accumulating 3 consecutive or 4 total semester absences. The instructor may reinstate the student after withdrawal if, in the judgment of the instructor, the absences do not jeopardize satisfactory course completion or may not reinstate the student.

STUDENT WILL BE DROPPED:

CELL PHONES in the class room or in welding lab will no longer be allowed. If the student is caught using a cell phone 3 times it will be an automatic drop from the class.

COURSE SCHEDULE

UNITS TEST
MODULE
29202-09 READING WELDING DETAIL DRAWINGS
29207-09 GTAW: EQUIPMENT AND FILLER METALS
29208-09 GTAW: PLATE
29304-10 GTAW CARBON STEEL PIPE

UNIT LAB ASSIGNMENT:

Surfacing weld on plate
    Flat, Horizontal, Vertical, and Overhead
Open Butt Welds on Plate
    Flat, Horizontal, Vertical, and Overhead
Open Butt Welds on Pipe
    2G, 5G, and 6G

ACADEMIC HONESTY

Brazosport College assumes that students eligible to perform on the college level are familiar with the ordinary rules governing proper conduct including academic honesty. The principle of academic honesty is that all work presented by you is yours alone. Academic dishonesty including, but not limited to, cheating, plagiarism, and collusion shall be treated appropriately. Please refer to the Brazosport College Student Guide for more information. This is available online at http://www.brazosport.edu. Click on the CATALOGS AND SCHEDULES link under STUDENTS.

Academic dishonesty violates both the policies of this course and the Student Code of Conduct. In this class, any occurrence of academic dishonesty will be referred to the Dean of Student Services for prompt adjudication, and will, at a minimum, result in 0 for that assignment in this course. Sanctions may be imposed beyond your grade in this course by the Dean of Student Services.

CLASS: **WLDG 2451 ADVANCED GAS TUNGSTEN ARC WELD (TIG)**

Class Time: _____

Instructor: _____

Phone: _____

Office Hours: _____

ATTENDANCE POLICY

CLASS WORK: Students are responsible for all class work assigned during any absence. Do not ask if you missed anything. If we had a class you missed something. The instructor will accept work without penalty, when, in his judgment an absence could not be avoided.

ABSENCES: Students not attending class regularly will be administratively withdrawn from class by the instructor. Students will be considered absent if not in class within the first one hour of a five hour class time. Students in this class are subject to withdrawal for accumulating 3 consecutive or 4 total semester absences. The instructor may reinstate the student after withdrawal if, in the judgment of the instructor, the absences do not jeopardize satisfactory course completion or may not reinstate the student.

STUDENT WILL BE DROPPED: CELL PHONES in class room or in welding lab will no longer be allowed. If the student is caught using a cell phone 3 times it will be an automatic drop from the class.

GRADE SYSTEM: A=100-90 B=89-80 C=79-70 D=69-60 F=BELOW 59

GRADES:	LAB ASSIGNMENTS (11)	40%
	UNIT TESTS	30%
	ATTENDANCE	20%
	FINAL	10%

TOPICS: UNITS TEST

MODULE

29202-09 READING WELDING DETAIL DRAWINGS

Interpret and develop welding detail drawings.

29207-09 GTAW: EQUIPMENT AND FILLER METALS

Make fillet welds on carbon steel plate in the 1F (flat) position using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 2F (horizontal) position, using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 3F (vertical) position, using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 4F (overhead) position, using GMAW with short-circuiting transfer. Make fillet welds on carbon steel plate in the 1F (flat) position, using FCAW with flux cored wire. Make fillet welds on carbon steel plate in the 2F (horizontal) position, using FCAW with flux cored wire. Make fillet welds on carbon steel plate in the 3F (vertical) position, using FCAW with flux cored wire. Make fillet welds on carbon steel plate in the 4F (overhead) position, using FCAW with flux cored wire. Make multiple pass open root V-groove welds on carbon steel plate in the 1G (flat) position, using FCAW and flux cored wire.

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29208-09 GTAW: PLATE

Select shielding gas. Select filler metal. Connect the shielding gas and set the flow rate. Select and prepare the electrode. Break down and reassemble a GTAW torch.

29304-10 GTAW CARBON STEEL PIPE

Set up FCAW equipment for open-root V-grove pipe welds. Make FCAW open-root V-groove pipe welds in the 1G-ROTATED position. Make FCAW open-root V-groove pipe welds in the 2G position. Make FCAW open-root V-groove pipe welds in the 5g position. Make FCAW open-root V-groove pipe welds in the 6G position.

UNIT LAB ASSIGNMENT

Surfacing Welds on Plate
Flat, Horizontal, Vertical, and Overhead
Open Butt Welds on Plate
Flat, Horizontal, Vertical, and Overhead
Open Butt Welds on Pipe
2G, 5G, and 6G

Required equipment Welding 2451:

Welding hood with shade 10, 11, or 12 lens

Cotton welding cap

Leather welding gloves appropriate for welding process

Clear safety Glasses (not shaded)

Leather work type shoes or boots

Long sleeve cotton shirt

Channel lock type pliers

4.5” grinder with 5/8” spline and guard

2) 4” C-clamps

BRAZOSPORT WELDING TECHNOLOGY
SAEFTY RULES AND PRACTICES

Safety cannot be overly stressed, especially in the Welding Lab. The lab is very congested and each student will have to do his part by abiding by all safety rules set forth for the welding lab.

1. **Clear safety glasses will be worn in the welding lab at all times.**
2. **Safety glasses with face shield will be worn when grinding or welding hood with flip lens.**
3. **Wear the proper clothes for welding. Cotton type clothing is considered the best, using long sleeves. High top shoes or boots are the safest to use. Raveled or torn clothing is a fire hazard. T-shirts as outside clothing will <u>NOT</u> be worn.**
4. **Compressed gases are dangerous. Handle carefully, and store properly. Oxygen and Acetylene should be stored a minimum of 10 ft. apart, upright, and tied or fastened to a wall or in racks. All combustible gases should be stored in this manner. Be sure all bottles are turned using. Never leave an empty bottle with the value open.**
5. **There are four fire stations in the lab. Be sure to know where these stations are located.**
6. **Never use a piece of welding or cutting equipment until you have been orientated in the safety and proper use.**
7. **Check the area around you before using the cutting torch. Be sure the hose or other flammable and people are not in the way.**
8. **Check all grinding blades for chips or cracks before grinding.**
9. **Check welding helmets regularly for cracked glass or leaks.**
10. **Never handle hot metal with gloves. Use pliers.**
11. **Be sure all metal is secured in the welding stands.**
12. **Never weld with chapter in your book. Abide by all safety rules. Safety is everyone's business.**
13. **No horseplay**

Each company will have their own safety program and a set of rules that govern each particular job or phase of work, and the safest rules will be carried out. Your life and the lives of others depend on safety in the lab and on the job.
I have read and understand the safety rules and will abide by all the rules set forth.

Name **Date**

REGISTRATION AND RELEASE FORM

NATIONAL CENTER FOR CONSTRUCTION EDUCATION AND RESEARCH

Important: Type or print legibly. Any inaccuracies on this form may be reflected on student and instructor transcripts and training records.

Sponsor Name: ABC TX Gulf Coast Chapter

Check One: Student: ✓ Instructor: ____

Name: _____

Social Security # _____

Job Title: _____

Company Name: _____

Company Address: _____

City: _____ State:: _____ Zip: _____

Phone: _____ Fax: _____ Email: _____

I hereby authorize the NCCER Registry Department to verify information in my training records to Sponsor Representatives upon request. I release and hold harmless the National Center for Construction Education and Research for this verification process.

Signature:_____ Date:_____

*OPTIONAL

Address:

_____

City: _____ State: _____ Zip: _____

Phone: _____Fax: _____ Email: _____

*NOTE: To be entered in NCCER's National Training Registry, you must complete this Registration and Release Form. This form must either be forwarded by your Sponsor to NCCER's Registry Department, or the Sponsor may choose to maintain the Release Forms locally and provide the Registry with written notification of Trainees or Instructors, including their names and social security numbers. This written notification must include the signature of the Sponsor Representative or other authorized Officer of the Sponsors.

Return to: NCCER – Accreditation Department
P.O. Box 141104 • Gainesville FL 32614-1104 • 352-334-0911 • Fax 352-334-0932
3600 NW 43rd St. • Blg. G • Gainesville FL 32606

Brazosport College™
The College of Choice

Acknowledgement of NCCER Policy and Award of Certification

After successful completion of a written assessment or performance verification, an individual's qualifications are tracked through NCCER's National Registry. This national registry allows organizations and companies to track the qualifications of their craft professionals and/or check the qualifications of possible new hires. The National Registry also assists craft professionals by maintaining their records in a secure database. In order to maintain this personal information, permission must be obtained from the student.

Please read the following statements regarding NCCER registry policies and sign at the bottom of this form.

1) I understand that any information that is needed to allow my credentials to be posted in the National NCCER Registry is **voluntary**. However, if I do not allow my testing information and/or personal identification information to be released, my credentials will NOT be registered in the national registry.

2) I understand that the $25 charge payable to NCCER is used to purchase an NCCER wallet card. An NCCER wallet card is not representation of certification but rather proof that the card holder has been entered into NCCER's National Registry. The fee, payable to Merit Shop training, Inc., is for non-ABC member companies.

3) I understand that it is the student's responsibility to pick up the NCCER card from the ABC offices. Cards will not be delivered via the instructor or mail. The ABC office is located at 1400North Velasco Blvd., Building C107, Freeport, TX.

4) My signature verifies that I have read and understand the statements made in this Acknowledgement.

_____ _____

NAME DATE

Instructor: _____ Course: _____

Complete this section only if you do not want your information released to the NCCER Registry:

I, _____ do not wish to have my information released to the NCCER National Registry. I understand that my credentials will NOT be registered in the national registry.

_____ _____

SIGNATURE DATE

NCCER/FORMS/ REVISED 2-13

Syllabus Acknowledgement Form

Date:

To: Jay Barr, Course Instructor

Class: WLDG 2451

Acknowledgement of Syllabus and Policies for WLDG 2451

By attaching my signature to this document, I hereby acknowledge that I have read the syllabus and the rules. Furthermore, by attaching my signature below I agree with the following statements:

- I fully understand the policies stated in this syllabus.
- I will abide by all laboratory safety rules.
- I will abide by the dress code for safety reasons.
- I will bring the needed materials to my class as I was instructed by my instructor.
- I accept and acknowledge that failure to abide by these policies may have significant academic consequences for which I am solely responsible.

Student Signature: _____

Student Name (printed): _____

Student Identification Number: _____

Date: _____