



BROWARD COMMUNITY COLLEGE COURSE OUTLINE

LAST REVIEW: 2008-2009

(i.e. 2003-2004)

NEXT REVIEW: 2013-2014

(i.e. 2008-2009)

STATUS: A

(A, I, D)

COURSE TITLE: Welding

COMMON COURSE NUMBER: AMT 0140

CREDIT HOURS: 1

CONTACT HOUR BREAKDOWN

(per 16 week term)

CLOCK HOURS: 40

(Voc. Course ONLY)

Lecture: 15

Lab: 25

Clinic:

Other:

PREREQUISITE(S): None

COREQUISITE(S): None

PRE/COREQUISITE(S): None

COURSE DESCRIPTION *(750 characters, maximum):* This course deals with oxyacetylene welding equipment and its use, welding steel and steel alloys, brazing and soldering, principles of electric arc welding, aircraft construction and repair by welding, and welding of aluminum and other non-ferrous metals. Student fee charged.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area

General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

UNIT TITLES

1. Magnesium and Titanium
2. Stainless Steel
3. Tubular Structures
4. Tubular Structures
5. Aluminum and Stainless Steel



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ASSESSMENT:

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.

1. Quizzes, Test, and/or Final Exam (cumulative/comprehensive);
2. Selected faculty may assess homework, projects, class participation/attendance, and/or extra credit projects.
Upon successful completion of this course, the students should be able to recognize airworthy welded components.

**** Complete the following only if course is seeking general education status ****

GENERAL EDUCATION Competencies and Skills*:

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Speak and listen effectively	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. Demonstrate and apply literacy in its various forms: (highlight in green ALL that apply) (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

** General Education Competencies and Skills endorsed by '05-'06 General Education Task Force*



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Common Course Number: AMT 0140

UNITS

Unit 1 Magnesium and Titanium

General Outcome:

- 1.0 The student shall:** The students should be able to weld magnesium and titanium.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 1.1 Describe the method of cleaning magnesium in preparation for welding.
- 1.2 Explain the main function of a flux while welding magnesium.
- 1.3 Describe the types of gases to use when gas-welding magnesium.
- 1.4 Explain the use of butt joints when gas-welding magnesium.



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Unit 2 Stainless Steel

General Outcome:

- 2.0 The student shall:** The students should be able to solder stainless steel.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 2.1** Explain the use of silver soldering as a method of bonding materials.
- 2.2** Describe the preparation of stainless steel for soldering.
- 2.3** Describe the methods of cleaning material after soldering.



Common Course Number: AMT 0140

Unit 3 Tubular Structures

General Outcome:

- 3.0 The student shall:** The students should be able to fabricate tubular structures.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 3.1** List the types of tubing splices.
- 3.2** Describe the proper welding sequence to use when welding fuselage tubes.
- 3.3** Describe the characteristics of a welded tubing joint
- 3.4** Explain the protection of the interior of tubular steel that is to be closed by welding.
- 3.5** Explain the methods used to control distortion of steel tube structures during welding repairs.
- 3.6** Describe the preparation of tube ends for welding.



Common Course Number: AMT 0140

Unit 4 Steel

General Outcome:

- 4.0 The student shall:** The students should be able to solder, braze, gas, and arc-weld steel.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 4.1** Use cleaning operations to prepare sheet steel for welding.
- 4.2** Adjust oxyacetylene welding torch to produce the type flame needed to weld a specified material.
- 4.3** Select and use filler rod.
- 4.4** Show the effect excessive heat on metal.
- 4.5** Operate a portable welding set.
- 4.6** Select the correct size welding torch tip.
- 4.7** Describe the precautions regarding welding over a previously brazed or soldered joint.
- 4.8** Solder a wire or cable to an electrical component.
- 4.9** Sweat-solder a lap joint.
- 4.10** Normalize a steel part after welding
- 4.11** Identify steel parts considered to be repairable by welding.
- 4.12** Describe the preheating required prior to welding.



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Unit 5 Aluminum and Stainless Steel

General Outcome:

5.0 The student shall: The students should be able to weld aluminum and stainless steel.

Specific Measurable Learning Outcomes:

Upon successful completion of this unit, the student shall be able to:

- 5.1** Use a filler rod when welding aluminum with oxyacetylene.
- 5.2** Use flux when welding aluminum.
- 5.3** Explain the purpose and effect of using inert gas to shield the arc in certain types of welding.