**WILLIAM RAINEY HARPER COLLEGE CAREER AND TECHNICAL PROGRAMS DIVISION**

**GENERAL COURSE OUTLINE**

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| --- | --- | --- | --- |
| Course Prefix | Course Number | Course Title | *Contact Hours* |
| WLD | 211 | WELDING Ill | 1. *2. Lecture/Demonstration*  2 . .1*Lab/Studio*  3. 4 *Credit Hours* |

**Course Description**

Prerequisite: WLD 210 with a grade of C or better, or consent of program coordinator.

Covers advanced welding theory and extensive practice in major arc welding process. Provides experience in advanced GMAW (gas metal arc welding), FCAW (flux cored arc welding), GTAW (gas tungsten arc welding) and other arc welding techniques. Plasma arc and air carbon arc cutting will be included.

**Topical Outline**

1. Safety in Welding
2. Lab Safety

Ill. Lab Set-up Procedure

1. Flux Cored Arc Welding (FCAW)
   1. Advantages
   2. Equipment
   3. Electrode Selection
   4. Shielding Gas Selection
   5. Application
2. Advanced Gas Tungsten Arc Welding (GTAW)
   1. Advantages
   2. Equipment
   3. Electrode Selection
   4. Shielding Gas Selection
   5. Application
3. Gas Metal Arc Welding (GMAW)
   1. Review of
   2. Special Applications
4. Aluminum (Welding of)
   1. Equipment Set Up
   2. Electrode Selection
   3. Cleaning and Preparation of
   4. Procedures
   5. Problems with
   6. Special Considerations
5. Stainless Steel (Welding of)
   1. Equipment Set-up
   2. Electrode Selection
   3. Cleaning and Preparation of
   4. Procedures
   5. Problems with
   6. Special Considerations
6. Cutting Operations
   1. Oxy Fuel

### Plasma Arc

* 1. Air Carbon Arc Cutting

D. Mechanical (Saws, Sheers, Punches)

**Method of Presentation**

1. Lecture
2. Laboratory
3. Other:
   1. Videos where applicable

**Student Outcomes (The student should)**

1. demonstrate knowledge of welding procedures.
2. choose, prepare and set up proper welding equipment.
3. identify type of material and best method of welding.
4. demonstrate advanced skill in all forms of arc welding.
5. demonstrate rudimentary skills in plasma arc and air carbon arc cutting.

**Method of Evaluation**

* 1. *Typical classroom assessment techniques*

### \_Projects

\_Class participation

\_Objective tests

\_Studio/Lab performance

\_Final exam

\_Portfolios

\_Essays/Term papers

\_Oral examination

\_Research report

1. *Course content learning outcomes*

### \_Quizzes

\_Group participation

\_Case study assignments

\_Homework

\_Midterm Exam

\_Exams

1. *Additional assessment information (optional).*

### The following assignments will be considered satisfactorily completed when approved by the instructor.

* 1. Written examinations
  2. FCAW (flat and horizontal position)
     1. fillet
     2. butt
     3. inside corner
     4. outside corner
  3. GTAW aluminum (flat and horizontal position)
     1. fillet
     2. butt
     3. inside corner
     4. outside corner
  4. GMAW aluminum (flat and horizontal position)
     1. fillet
     2. butt
     3. inside corner
     4. outside corner

1. GTAW stainless steal (flat and horizontal position)
   1. fillet
   2. butt
   3. inside corner
   4. outside corner
2. GMAW stainless steal (flat and horizontal position)
   1. fillet
   2. butt
   3. inside corner
   4. outside corner

**Textbook**

1. *Required*

o Item #EW269 GMAW. Gas Metal Arc Welding Aluminum Advanced. Hobart Institute of Welding Technology, 2012

o *Supplementary materials*

***None***

o *Software*

***None***

Prepared by: Kurt Billsten Fall 2012

CID: 3624

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