

Welding Technology

Certificate

- Welding Technology (WEL.CT) (<http://catalog.oaklandcc.edu/programs/welding-technology/welding-technology-certificate>)

Welding Technology Courses

WEL 1000 Introduction to Welding: Theory and Practice

I 3 Credit Hours

Equivalent: ATW 1120,TEW 1100

English/ESL Placement: Placement into ENG 1055 or higher (or placement into ESL1011 or higher for students taking the ESL sequence of courses).

Pre- or Corequisite: WEL 1050 (Recommended)

Students will be introduced to a general overview of welding, and the various processes used in order to prepare them for industry certifications. Lecture topics are to include, but not limited to: safety in welding, basic electricity used in welding, different weld joints and positions, and an introduction to metallurgy. The students are to perform various welds in the flat and horizontal positions using the processes GMAW, GTAW, SMAW, and FCAW. Students will be shown proper machine operation through lecture, homework, notes, and practical demonstrations. BILLABLE CONTACT HOURS: 4

WEL 1050 Defects and Discontinuities in Welding3 Credit Hours

English/ESL Placement: Placement into ENG 1055 or higher (or placement into ESL1011 or higher for students taking the ESL sequence of courses).

Pre- or Corequisite: WEL 1000 (Recommended)

This class will cover the concepts of what makes a weld acceptable or not. Common defects and weld discontinuities will be discussed, along with practical lab demonstrations. Welds will be performed to fail on purpose in order to reinforce the concepts behind the lectures given. Basic troubleshooting of welding techniques will be covered, along with diagnosing common machine/operator errors. BILLABLE CONTACT HOURS: 3

WEL 1100 Introduction to Welding: Theory and Practice

II 3 Credit Hours

English/ESL Placement: Placement into ENG 1060 or higher (or placement into ESL 2510 or higher for students taking the ESL sequence of courses).

Prerequisite: WEL 1000

Pre- or Corequisite: WEL 1050 (Recommended)

Continuing from Introduction to Welding: Theory and Practice I, students will be performing the same welding processes, but in the vertical and overhead positions. In addition to welding performed in the lab, students will gain experience in the OFC, PAC, and CAC-A cutting processes. Lecture topics to include, but not limited to: simple blueprint reading, weld symbols, basic fabrication techniques, and an introduction to metal fabrication equipment used in industry. BILLABLE CONTACT HOURS: 4

WEL 1200 Introduction to Oxygen-Fuel Applications3 Credit Hours

Equivalent: ATW 8220,APW 8220

English/ESL Placement: Placement into ENG 1060 or higher (or placement into ESL 2510 or higher for students taking the ESL sequence of courses).

This course covers uses of the torch in the metal-working industry. Safety will be discussed, along with a basic understanding of the many gases used in the industry. Lab demonstrations and practical exercises will be performed. This is to include, but not limited to OAW, brazing, soldering, cutting, heating and bending, flame-straightening, and annealing.

Exercises will be performed on mild steel, aluminum, copper, and stainless steel. BILLABLE CONTACT HOURS: 4

WEL 1310 Gas Metal & Flux-Cored Arc Welding (GMAW & FCAW) 3 Credit Hours

Equivalent: ATW 8310

English/ESL Placement: Placement into ENG 1060 or higher (or placement into ESL 2510 or higher for students taking the ESL sequence of courses).

Prerequisite: WEL 1000 and WEL 1100.

Students will perform welds using the GMAW (short-circuit and spray transfer modes of transfer) and the FCAW processes on mild steel in all positions. Welding projects will be taken from blueprints, and will be held to standards of the American Welding Society. GMAW on aluminum will be introduced, and the welds performed will be destructively tested. BILLABLE CONTACT HOURS: 5

WEL 1320 Gas Tungsten Arc Welding (GTAW) ..3 Credit Hours

Equivalent: ATW 8320

English/ESL Placement: Placement into ENG 1060 or higher (or placement into ESL 2510 or higher for students taking the ESL sequence of courses).

Prerequisite: WEL 1000 and WEL 1100.

Students will perform welds using the GTAW process on mild steel, stainless steel, and aluminum in all positions. Welding projects will be taken from blueprints, and will be held to standards of the American Welding Society. BILLABLE CONTACT HOURS: 5

WEL 1330 Shielded Metal Arc Welding3 Credit Hours

Equivalent: ATW 8120,APW 8120

English/ESL Placement: Placement into ENG 1060 or higher (or placement into ESL 2510 or higher for students taking the ESL sequence of courses).

Prerequisite: WEL 1000

Students will perform welds using the SMAW process on mild steel in all positions. Welding projects will be taken from blueprints, and will be held to standards of the American Welding Society. Welds will be destructively tested according to industry standards. BILLABLE CONTACT HOURS: 5

WEL 2000 Pipe Layout and Welding 3 Credit Hours

Equivalent: ATW 8410

English/ESL Placement: Placement into ENG 1060 or higher (or placement into ESL 2510 or higher for students taking the ESL sequence of courses).

Prerequisite: WEL 1000 and WEL 1100.

This course introduces the basics of pipe layout and welding. Welds will be performed in the 1G, 2G, 5G, and 6G positions, along with various pipe-to-plate exercises. All processes will be performed, and will be catered to meet the career goals of the student. Lecture topics are to include, but not limited to proper joint preparation, safety in pipe welding, differences between tube and pipe, other methods of pipe welding, and careers in pipe welding. BILLABLE CONTACT HOURS: 4

WEL 2100 Layout Theory and Fabrication 3 Credit Hours

English/ESL Placement: Placement into ENG 1060 or higher (or placement into ESL 2510 or higher for students taking the ESL sequence of courses).

Prerequisite: WEL 1000 and WEL 1100.

Students will be introduced to the fabrication techniques found in various industries today. Topics will cover sheet metal, plate, structural steels, and pipe. Lectures will be given, and practical exercises will reinforce those ideas. Projects will consist of group work and individual work, along with an introduction to more complex blueprints and basic shop mathematics.

BILLABLE CONTACT HOURS: 5