WLD - WELDING

WLD 100 Introduction to Welding
This course introduces students to the fundamentals of welding technology. Classroom instruction includes the proper selection of A.C and D.C. power sources and their applications. Oxy-fuel welding and cutting equipment and safety procedures are covered. Also discussed is proper set-up, use of GMAW and GTAW power sources and how to correctly set up and use them. All requirements and safety procedures are covered.
Upon successful completion of this course, students should be able to:
State the power sources associated with welding and their application.
Select the correct welding equipment for the job.
Set up and use oxy-fuel welding and cutting equipment.
Follow safety requirements and regulations.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 101 Introduction to Oxy-Fuel Welding and Cutting
This course introduces students to the basic techniques used in oxy-fuel welding and cutting operations. Course emphasis is on fuel gases, welding and cutting equipment.
Upon successful completion of this course, students should be able to:
List the major advantages and disadvantages of different fuel gases.
Maintain an oxy-fuel welding set.
Demonstrate lighting, adjusting, and extinguishing an Oxy-Fuel flare.
Use an Oxy-Fuel cutting torch.
Demonstrate the safety practices within the work environment.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 102 Oxy-Fuel Welding
This course provides instruction in welding of mill steel. Emphasis is placed on showing correct torch size and angle welding rod size, flame effects on metal, characteristics of the weld, welding in different positions.
Upon successful completion of this course, students should be able to:
Utilize correct method of welding mill steel.
Cite the effects of flame on metal.
Demonstrate ability to weld a variety of joints in any position.
Demonstrate an understanding of safety issues as they pertain to shop safety, occupational safety and personal safety.
Prerequisites: WLD 101.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 103 Shielded Metal Arc Welding I
This course is designed to enable student learn the fundamentals of Shield Metal Arc Welding. The course covers the principles of electric arc welding, using electrodes 6010, 6011, 6012, 6013 in the flat position, correct angles and methods.
Upon successful completion of this course, students should be able to:
Set correct amperage for welding.
Explain and calculate effects of changing arc length, angle and travel speed on a weld.
Weld in the flat position.
Demonstrate ability to control undercut, overlap, porosity, and slag inclusion when welding.
Demonstrate job safety in the set-up and operation of arc welding equipment.

2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 104 Shielded Metal Arc Welding II
This course covers effects of current settings, arc lengths, electrode angles and electrode manipulation on the quality of weld joint. Students also learn to weld in horizontal, vertical and overhead positions.
Upon successful completion of this course, students should be able to:
State the effects of current settings on the weld.
Control electrodes in the correct manner.
Weld in vertical, overhead, and horizontal positions using 6010 and 6011, 6012 and 6013 electrodes.
Demonstrate the proper handling and storage of electrodes.
Prerequisites: WLD 103.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 105 Intermediate Shielded Metal Arc Welding I
This course reviews the theories related to Shielded Metal Arc Welding. Students continue to learn and use the proper welding processes and procedures. Various joint designs are emphasized for the various positions using such electrodes as 7018 and 8018.
Upon successful completion of this course, students should be able to:
Detail various joint designs.
Identify joint designs.
Weld joints from designs.
Weld in various positions using E7018 and E8018 electrodes.
Prerequisites: WLD 104.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 106 Intermediate Shielded Metal Arc Welding II
This course continues the theories covered in Intermediate SMAW 1. Students are taught how to weld typical joints in both flat and horizontal positions using various electrodes. Students are introduced to A.W.S., A.S.M.E. and A.P.I. Welding codes.
Upon successful completion of this course, students should be able to:
Prepare, set up and design tee joints for welding.
Demonstrate procedures for fillet welds in the flat and horizontal positions.
Create E6010 and E6011 fillet welds in flat and horizontal positions.
Prerequisites: WLD 105.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 111 Printing Reading and Shop Math for Fabricators
This course provides the student with an introduction and review of basic mathematical concepts and applications required to accomplish standard fabrication functions. Students also learn to use common ruled measuring tools and scales in order to perform linear measurements. Students are taught how to locate, interpret and utilize information found in working drawings, blueprints and technical documents.
Upon successful completion of this course, students should be able to:
Perform mathematical calculations required to complete fabrication tasks.
Identify common measurement units in both English (US Convention) and Metric standards.
Demonstrate how to locate and utilize data on blueprints.
Interpret technical drawings, sketches, blueprints.
Demonstrate an understanding of the techniques and design-drafting practices used to create working drawings.
3 Credits 3 Weekly Lecture Hours

WLD 150 Welding Design
This course emphasizes the use of basic drafting skills for lay out of plate steel, sheet metal, and patterns and the selection of welding processes and joint design. Students will calculate and estimate weldment and weld metal, and will learn how to allow for distortion and the use of jigs, fixtures and positioners.
Upon successful completion of this course, students should be able to:
Calculate material costs.
Demonstrate the layout of plate and sheet metals.
Demonstrate the use of fixtures and jigs for design purposes.
Identify and apply approved methods to control distortion.
Prerequisites: WLD 202 and WLD 205.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 151 Testing and Inspection of Welds
This course introduces the principles and applications of non destructive testing using liquid penetrant, magnetic particles, and ultrasonic and radiographic testing methods. Emphasis is placed on non-destructive procedures and interpretation of code specifications and standards.
Upon successful completion of this course, students should be able to:
Cite the principles of non-destructive testing.
Explain the use of liquid penetrant, mag positive and ultrasonic and radiographic testing.
Work with welding and safety codes and standards.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 152 Welding Codes and Specifications
This course is designed to assist students in understanding welding industry codes and specifications. Students also learn to properly apply the codes and specifications.
Upon successful completion of this course, students should be able to:
Demonstrate an understanding of welding codes and their use.
Use welding specifications.
Apply proper use of API, AWS, and ASME codes.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 153 Brazing and Brace Welding
This course discusses the advantages of Soldering and Brazing. Soldering and Brazing methods including building up surfaces, filling holes, filler metals and fluxes are covered.
Upon successful completion of this course, students should be able to:
Explain the use of soldering and brazing.
Use methods involved in soldering and brazing.
Demonstrate basic soldering and brazing of varied joint designs.
Explain the weldability of commercial alloys.
Describe the function of fluxes in making proper liquid-solid paased bonded joints.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 154 Welding Metallurgy
As an introduction to metallurgy, this course helps students develop an understanding of basic metallurgical principles as they apply to fusion welding to improve quality of workmanship in the field of welding. The course material will cover the chemical, physical and mechanical properties of metals as applied to welding applications. Welding metallurgy for welders will cover heat treating processes for metals, physical and mechanical properties of metals, metal identification, carbon equivalency, filler metal selection, heat input and its effects on the weld zone (HAZ) and the effects of heat treating and stress relieving applications within the welding field.
Upon successful completion of this course, students should be able to:
Define the practical aspects of metallurgy.
Identify the fundamental principles and practices of welding metallurgy.
Identify the composition and classification of base metals.
Explain the physical characteristics and mechanical properties of metals.
Identify grain structures and hardfacing of a weldment.
Demonstrate field identification methods of base metals.
Demonstrate preheat, postheat and postweld heat treatment of metals.
Identify hydrogen cracking and its effect on welds.
Identify metallurgical considerations for welding ferrous and non-ferrous metals.
Identify various heat treating processes and their effects on metals.
Corequisites: (ENG 050 and REA 050) or ENG 099 or REA 075.
3 Credits 3 Weekly Lecture Hours

WLD 190 Welding Internship (1 credit)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 60 hour internship will earn 1 college credit for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
1 Credit

WLD 194 Welding Internship (2 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 120 hour internship will earn 2 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
2 Credits

WLD 199 Welding Internship (3 credits)
College-Sponsored Experiential Learning (CSEL) is designed to integrate on-the-job learning experiences with classroom studies. These experiences are structured either to explore career options or to prepare for a specific occupation. Students participating in the Cooperative Education and Internship Program gain college credit and are graded for their learning/work experience by the appropriate faculty. Students participating in this 180 hour internship will earn 3 college credits for this experience. Upon successful completion of this hands-on work experience, the student should be able to satisfy instructionally selected competencies from those below according to the number of credits to be awarded. NOTE To be eligible for an internship, students must: Have completed a minimum of 18 or more credits within the last 5 years. Have begun course work in their major (at least 9 credits). Have an overall grade point average (GPA) of 2.5. Obtain a written recommendation by a DCCC faculty within the discipline of the internship. Submit a current resume to the Office of Student Employment Services.
Upon successful completion of this course, students should be able to:
Explain three program-related concepts that have been applied during the work experience.
Describe the ways that technology is utilized in the work experience.
Analyze the culture of the host organization.
Analyze an operational process within the work experience.
Demonstrate how assigned tasks depend on successful communication.
Describe how time and activity are managed to meet work-imposed deadlines.
Describe an instance where problem-solving skills were needed to analyze a situation in the work experience.
Formulate a self-assessment for career growth and personal satisfaction.
Satisfy the competencies of the chosen CSEL placement (to be developed in consultation with the CSEL instructor).
Work closely with a faculty mentor in the student's program/major to complete a project which articulates how the experience helps the student achieve program outcomes.
3 Credits

WLD 200 Gas Metal Arc I
This course covers GMAW equipment set-up and operation. The theory of gas metal arc welding is applied to mild steel and plate steel in all positions. Students are introduced to single and multi phase welds using a variety of electrode (wire) diameters.
Upon successful completion of this course, students should be able to:
Explain GMAW as applied to nonferrous metals.
Demonstrate different modes of metal transfer.
Practice welding sheet and plate steel in all positions.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 201 Gas Metal Arc II
This course covers the application of gas metal arc welding theory to non-ferrous materials and their alloys. Different modes of metal transfer are addressed.
Upon successful completion of this course, students should be able to:
Show proper GMAW equipment set-up.
Demonstrate threading GMAW wire.
State how to set appropriate gas flow rate and current.
Describe the various methods of metal transfer.
Explain the effect of slope and inductance in gas metal arc welding.
Perform welds in all positions using the short-circuiting metal transfer method.
Weld in the IF, 2F and IG positions using the globular metal transfer method.
Perform welds in the IF and IG positions using the axial spray metal transfer method.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 202 Advanced Shielded Arc Welding I
The Advanced Shielded Metal Arc course continues the theory covered in Shielded Metal Arc Welding II. A variety of electrodes are discussed. The American Welding Society (A.W.S.) numbering system is emphasized. Specifications of A.S.M.E., A.W.S. and A.P.I codes are covered. Students learn mild steel with E6010 in all positions. Students will learn A.W.S. welding symbols and how they are used.
Upon successful completion of this course, students should be able to:
Depict the variety of electrodes in SMAW and their uses.
Explain the AWS numbering system.
Work with ASME, ASTM and API codes.
Weld with E6010 on heavy plate in all positions.
Prerequisites: WLD 106.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 203 Advanced Shielded Arc Welding II
Students practice all positions, applications and weldments to the specifications of A.W.S., A.S.M.E., A S.T.M. and A.P.I. codes. Also covered is blueprint reading for welding and its uses. Students test welds using non-destructive tests.
Upon successful completion of this course, students should be able to:
Weld in all positions using a variety of electrodes.
Weld in accordance with AWS, ASME, ASTM and API specifications.
Interpret welding blueprints.
Interpret technical information used on industrial working and assembly drawings.
Perform non-destructive testing procedures.
Prerequisites: WLD 202.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 204 Gas Tungsten Arc Welding I
This course emphasizes the set up and operation of the GTAW process. Various types of tungsten electrodes are covered, along with tolerances and color codes. Welding machines and polar lines that are commonly used are discussed.
Upon successful completion of this course, students should be able to:
Differentiate GTAW welding equipment.
Set up and operate GTAW equipment for welding.
List the types of tungsten and their uses.
Depict the different torches used in GTAW.
Explain the polarities used in GTAW processes.
Prerequisites: WLD 106.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours

WLD 205 Gas Tungsten Arc Welding II
Gas Tungsten Arc Welding is covered in various positions, using ferrous and non-ferrous sheet and plate. Different welding gases are also used with GTAW processes.
Upon successful completion of this course, students should be able to:
Perform gas tungsten arc weld in various positions.
Use different welding gases in the GTAW process.
Demonstrate gas tungsten arc weld on ferrous and non-ferrous metals.
Prerequisites: WLD 204.
2 Credits 1 Weekly Lecture Hour
2 Weekly Lab Hours