COURSE OUTLINE : WELD 117
D Credit – Degree Applicable
COURSE ID 001545
Cyclical Review: September 2020

COURSE DISCIPLINE : WELD

COURSE NUMBER : 117

COURSE TITLE (FULL) : Introduction to Welding

COURSE TITLE (SHORT) : Introduction to Welding

CATALOG DESCRIPTION

WELD 117 consists of oxyacetylene welding, flame cutting, (manual and automatic), bronze and silver brazing and soldering. These processes are discussed and demonstrated. The student is given experience in applying the principles by individual practice on a sequence of selected plates and manipulative exercises on various metals.

Total Lecture Units: 1.00

Total Laboratory Units: 1.00

Total Course Units: 2.00

Total Lecture Hours: 18.00

Total Laboratory Hours: 54.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 72.00

Total Out-of-Class Hours: 36.00

Recommended Preparation: ENGL 100 or ESL 141.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ENGL	100	Writing Workshop	Read, analyze, and evaluate contemporary articles and stories to identify topic, thesis, support, transitions, conclusion, audience, and tone;	Yes
2	ENGL	100	Writing Workshop	write a summary of a contemporary article or story with correct citation techniques;	Yes
3	ENGL	100	Writing Workshop	write compositions (e.g., summaries and argumentative essays) that are easy to read and follow, though some errors in grammar, mechanics, spelling, or diction may exist;	Yes
4	ESL	141	Grammar And Writing IV	compose a 400 to 450-word thesis-based essay which:	Yes
5	ESL	141	Grammar And Writing IV	d. shows clear organization into an introduction, body and conclusion;	Yes
6	ESL	141	Grammar And Writing IV	demonstrate control of verb tenses in active and passive voice, gerunds and infinitives, conditionals real and unreal, adjective, noun, and adverb clauses, and transitional expressions;	Yes
7	ESL	141	Grammar And Writing IV	comprehend multi-paragraph reading passages in textbooks.	Yes

EXIT STANDARDS

1 Perform oxy-fuel welding in all positions and oxy-fuel cutting and brazing, plasma arc cutting;
2 identify and apply safety precautions involved in the proper use of oxy-fuel and related equipment;
3 evaluate and critique the finished welding exercises;
4 perform destructive and non-destructive testing on specific weld joints done in all positions;
5 communicate a working knowledge of the use of general shop equipment such as: band saw, drill press, metal cutting shears, radiograph cutter, pedestal and portable grinders, electric wire brush, and various hand tools.

STUDENT LEARNING OUTCOMES

1 demonstrate proper safety and set-up of welding equipment when working in a welding environment;
2 identify various types of personal protection used with equipment and limitations;
3 perform basic manipulative techniques used in oxy-fuel welding and cutting operations.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Welding Methods • Methods classified as forge or fire-resistance arc, metallic arc, shielded gas, fusion	4	0	4
2	Oxyacetylene • Definition and procedure • Oxyacetylene flame and types and uses • Torch maintenance, regulators • Welding rods , types and alloys • Common defects, gas inclusion, blow holes • Various position, flat, overhead, fillets, tubing • A.W.S. safety rules • A.W.S. welding rod code	10	0	10
3	Thermit Welding • Definition and uses • Reaction of thermit, procedure, allowance for contraction	4	0	4
4	Unionmelt Welding • Definition and uses • Application	0	6	6
5	Welding Sheet Metal • Arc welding, gas, resistance • Fluxes, bronze welding	0	6	6
6	Spot Welding • Types, procedures • Ignition control minimum current	0	6	6
7	Electric welding • Classification, electrodes, tables • Current determination, selection of polarity, damp electrodes • Position of the weld, types of welding joints • Recommended safety rules • Preparation of the work, arc blow	0	6	6

8	Welding aluminum • Commercial methods and practices • Oxyacetylene, oxy-hydrogen • Casting, sheets	0	6	6
9	Oxyacetylene Cutting • Cutting torch, cutting procedure • Cutting cast iron, machine cutting	0	6	6
10	Brazing • Definition, codes • Process of brazing, heating methods • Hard soldering (silver brazing) • Induction brazing, definition	0	6	6
11	Metals • Study of metals commonly used in industry • Physical properties, tensile, elongation, elastic malleable, hardness • Testing of plates on Power equipment	0	6	6
12	Test plates • 20 test plates in various positions	0	6	6
				72

OUT OF CLASS ASSIGNMENTS

1 lab simulations;
2 written assignments (e.g. welding log);

METHODS OF EVALUATION

1 five regularly scheduled one-hour examinations;
2 one two-hour final examination (written and objective);
3 nineteen regularly scheduled practical tests for each area covered in class.

METHODS OF INSTRUCTION

- [x] Lecture
- [x] Laboratory
- [ ] Studio
- [ ] Discussion
- [x] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [ ] Collaboratory Learning
- [x] Demonstration
- [ ] Field Activities (Trips)
- [ ] Guest Speakers
- [ ] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Welding Fundamentals	Required	Goodheart-Willcox	5	print	Bowditch, Willam A.	978-1-63126-328-6	2017