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WLDG 285.01: Automation in Welding

Mark T. Raymond

University of Montana - Missoula, mark.raymond@mso.umt.edu

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**MISSOULA COLLEGE
UNIVERSITY OF MONTANA
INDUSTRIAL TECHNOLOGY DEPARTMENT**

WELDING TECHNOLOGY

COURSE SYLLABUS

COURSE NUMBER: WEL 285

REVISED: 2015

COURSE NAME: AUTOMATION IN WELDING

SEMESTER CREDITS: 3

PREREQUISITES:WLDG 180,WLDG 187,WLDG 145, WLDG 150, WLDG 215,CADX 110

COREQUISITE: WLDG 275

FACULTY: Mark Raymond

E-Mail: mark.raymond@mso.umt.edu

Phone: 406-243-7647

Office: West Campus Welding lab

Office Hours: 12:00noon to 1:00p.m. or by appointment

TEXT REFERENCE: The Procedure Handbook of Arc Welding, 13th Edition.

Author: The Lincoln Electric Company

Publisher: The Lincoln Electric Company

COURSE DESCRIPTION: Application of the welding process to automation. Examination of simple automation techniques such as tools, clamping and fixturing to aid in the rapid joining of production runs. Increasing complexity is examined leading into equipment that carries the welding gun, tractors, and carriages to fully-automated systems with the student performing set-up and troubleshooting. (Submerged "Arc Welding) and automated parts processing (PAC CNC). The use of industrial robots studied.

COURSE OBJECTIVES:

- *To develop and awareness of the advantages / disadvantages of automation.
- * To develop an awareness of available equipment used in welding automation.
- * To develop an understanding of how to automate the welding process
- * To develop an understanding of safe operation of the various equipment used.

COURSE OUTLINE:

- Advantages / disadvantages to automation
- Upstream manufacturing
- Off the shelf tooling
- The use of jigs and fixtures to automate welding
- Automating linear welds
- Automating circular welds
- CNC

Industrial robots

GRADING:

Automation practical test.....	50%	A = 94% - 100%
Written tests.....	30%	B = 93% - 82%
Quizzes.....	10%	C = 81% - 70%
Completed Notebook.....	05%	D = 69% - 60%
Professionalism.....	05%	F = 59% or less

Automation practical test: Upon successful completion of lab assignments an automated welding test derived from lab assignments. It will be graded based upon execution ie. fit-up, weld profile, finish, etc. as prescribed by AWS standards and how the automation of the welding process was integrated into the finished product.

Written tests: these tests are derived from reading assignments given in class (homework), notes from class lectures, video presentations, etc.

Quizzes are composed of your name/date and three questions. Name and date are worth 25%. Each question is worth 25%. To receive credit for questions they must be written out and correctly answered. Quizzes may be given at any time during the course scheduled meeting time.

Completed Notebook is a compilation of class notes and handouts. To receive the full 5% the notebook must be neat and organized. It must also be contained or be found contiguous within a three ring binder.

Professionalism is defined as a combination of one's attitude, motivation, participation, organization and work area cleanliness.

No make-up of written tests, written assignments or quizzes.

ATTENDANCE POLICY: Attendance is not taken, although you are required to be in attendance to successfully complete the course.

OTHER POLICIES: Safety is required to be practiced at all times. Eye protection is mandatory at all times in the Lab area. Disregard of safe practices, endangering yourself or others may result in you being denied access to the Lab area.

SUPPLIES:

- Welding helmet
- Lightweight welding gloves (GTAW)
- SMA welding gloves
- Eye protection
- Pliers with wire cutting capabilities
- Wire hand brush
- Chipping hammer
- Coveralls or equivalent
- Tape measure (12' Min)
- Lock for locker

