# SYLLABUS

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<th>02/2013</th>
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<td>COURSE TITLE:</td>
<td>GMAW</td>
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<td>INSTRUCTOR:</td>
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<td>EMAIL:</td>
<td>KCKCC issued email accounts are the official means for electronically communicating with our students.</td>
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<td>PREREQUISITES:</td>
<td>WELD0100</td>
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**REQUIRED TEXT AND MATERIALS:** Please check with the KCKCC bookstore, www.kckccbookstore.com/ for the required texts for your particular class.

**COURSE DESCRIPTION:**
Through classroom and/or shop/lab learning and assessment activities, students in this course will: explain gas metal arc welding process (GMAW); demonstrate the safe and correct set up of the GMAW workstation; correlate GMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes in the flat position; build pads of weld beads with selected electrodes in the horizontal position; produce basic GMAW welds on selected weld joints; and conduct visual inspection of GMAW welds.

**METHOD OF INSTRUCTION:**
A variety of instructional methods may be used depending on content area. These may include but are not limited to lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.
COURSE OUTLINE:
I. GMAW Processes and equipment
   A. GMAW equipment
      1. Welding station components
      2. Power sources
      3. Wire feeders
      4. Welding guns
   B. GMAW process theory
      1. Machine settings
      2. Electrode specifications
      3. Metal transfer
      4. Shielding gasses
II. GMAW welding in the flat position
   A. Fillet welds (1F)
   B. Groove welds (1G)
III. GMAW welding in the horizontal position
    A. Fillet welds (2F)
    B. Groove welds (2G)
IV. Weld inspection
    A. GMAW visual inspection
       1. Visual inspection criteria
       2. Common discontinuities in flat and horizontal positions
    B. GMAW destructive weld testing
       1. Weld test joint set up
       2. Preparing test specimens
       3. Destructive test criteria

EXPECTED LEARNER OUTCOMES:
Upon successful completion of this course:
A. The student will be able to explain gas metal arc welding process (GMAW).
B. The student will be able to demonstrate the safe and correct set up of the GMAW workstation.
C. The student will be able to correlate GMAW electrode classifications with base metals and joint criteria
D. The student will be able to demonstrate proper electrode selection and use based on metal types and thicknesses
E. The student will be able to build pads of weld beads with selected electrodes in the flat position
F. The student will be able to build pads of weld beads with selected electrodes in the horizontal position
G. The student will be able to produce basic GMAW welds on selected weld joints
H. The student will be able to conduct visual inspection of GMAW welds

COURSE COMPETENCIES:
Explain gas metal arc welding process (GMAW).
1. Describe different modes of transfer
2. Differentiate between types and uses of current
3. Identify the advantages and disadvantages of GMAW
4. Identify types of welding power sources
5. Identify different components of a GMAW station
6. Describe basic electrical safety

Demonstrate the safe and correct set up of the GMAW workstation.
7. Demonstrate proper inspection of equipment
8. Demonstrate proper use of PPE
9. Demonstrate proper placement of workpiece connection
10. Check for proper setup of equipment
11. Inspect area for potential hazards/safety issues
12. Troubleshoot the GMAW equipment and perform minor maintenance

Correlate GMAW electrode classifications with base metals and joint criteria
13. Explain the AWS electrode nomenclature
14. Determine proper electrode for given joint based on material and position of weld
15. Determine proper type of electrodes to be used in a variety of industry applications
16. Identify proper electrode storage and handling
17. Identify consumables

Demonstrate proper electrode selection and use based on metal types and thicknesses
18. Identify consumables for various electrode sizes
19. Select the proper electrode type and size relative to metal size, type and thickness
20. Select the proper electrode type and size based on material specifications

Build pads of weld beads with selected electrodes in the flat position
21. Implement safety procedures and PPE
22. Implement proper equipment setup
23. Use the proper metal transfer
24. Create a pad of beads using GMAW
25. Weld exhibits proper uniformity and profile

Build pads of weld beads with selected electrodes in the horizontal position
26. Implement safety procedures and PPE
27. Implement proper equipment setup
28. Use the proper metal transfer
29. Create a pad of beads using GMAW
30. Weld exhibits proper uniformity and profile

Produce basic GMAW welds on selected weld joints.
31. Implement safety procedures and PPE
32. Implement proper equipment setup
33. Perform fillet weld in flat position
34. Perform a fillet weld in horizontal position
35. Perform a groove weld in a flat position
36. Perform a groove weld in a horizontal position
37. Use tools appropriate for the task

Conduct visual inspection of GMAW welds
38. Identify common visual discontinuities and defects on welds
39. Determine causes of discontinuities and defects of welds
40. Inspect welds for pass/fail ratings according to industry standards
41. Use appropriate tools for inspection

**ASSESSMENT OF LEARNER OUTCOMES:**
Student progress is evaluated by means that include, but are not limited to, exams, written assignments and class participation.

**SPECIAL NOTES:**
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome at any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty and staff that is free of bigotry and discrimination. KCKCC is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

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