DATE OF LAST REVIEW: 02/2013

CIP CODE: 48.0501

SEMESTER: Departmental Syllabus

COURSE TITLE: Bench work

COURSE NUMBER: MACH0103

CREDIT HOURS: 1

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

E-MAIL: Departmental Syllabus

PREREQUISITES: Quality Control and Inspection MACH0105, Fundamentals of Mathematics w/ a grade of "C" or higher or appropriate score on the Math assessment test.

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckcc.bookstore.com, for the required texts for your particular class.

COURSE DESCRIPTION:
This course will introduce layout and bench work procedures that will provide the learner with the principles of locating, analyzing and performing techniques used for machining process to be performed, and the common tools that can be associated with the procedures. It will also cover some repair procedures that may be needed, common to the industry.

METHOD OF INSTRUCTION:
Several varieties of classroom and/or lab methods will be implemented. Methods used may include and 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 the student’s needs.
COURSE OUTLINE:
I. Intro to common machine shop practices
   A. Safety associated with tools.
   B. Selection of proper tools for variety of work.
   C. Common hazards found in industries.
   D. Basic machine shop equipment maintenance.
   E. Identify parts of equipment. (nomenclature)
II. Layout procedures
    A. Safely use layout tools.
    B. Selecting layout tools.
    C. Create lines, points and radians.
    D. Application methods to clearly mark lines in layout.
III. Intro To Basic Print Reading
     A. Identifying types of prints.
     B. Locating information on blue prints.
     C. Tolerance
     D. Calculations to determine size, shapes and tolerance.
IV. Tools and Tooling.
    A. Define cutting tools.
    B. Prescribe correct cutting tools.
    C. Select and repair hardware fasteners.
    D. Locate information in machinery’s handbook.
    E. Grinds and sharpen tools.
    F. Performs tasks on grinders and drill press.
    G. Use hand presses to remove, assemble mating parts.
    H. Operate pneumatic and electric hand tools.
    I. Operate hand and power saws.

EXPECTED LEARNER OUTCOMES:
A. The student will be able to conduct safety inspections.
B. The student will be able to identify hazards that may be in the workplace.
C. The student will be able to document daily maintenance on equipment.
D. The student will be able to perform mathematical calculations to determine correct solutions for tasks.
E. The student will be able to select hand tools for proper use of a given job.
F. The student will be able to perform grinder procedures and safety.
G. The student will be able to perform drill press procedures and safety.
H. The student will be able to perform power sawing equipment and safety.
I. The student will be able to use hand tools and safety.

COURSE COMPETENCIES:
Upon successful completion of this course:

   The student will be able to conduct safety inspections.

   1. The student will be able to conduct a job hazard analysis for a machine tool shop.
2. The student will be able to apply precautions needed to minimize hazards for work with drills and grinders.
3. The student will be able to apply safety precautions for hand and hydraulic presses.
4. The student will be able to locate fire extinguishers within work area.
5. The student will be able to participate in disaster control exercises.

*The student will be able to identify hazards that may be in the workplace.*

6. The student will be able to evaluate P.M. condition of equipment and document daily.
7. The student will be able to properly store tools and equipment.

*The student will be able to document daily maintenance on equipment.*

8. The student will be able to document daily equipment logs.

*The student will be able to select hand tools for proper use of a given job.*

9. The student will be able to select proper layout dyes, coatings, inks used in layout procedures.
10. The student will be able to identify and use scoring, scribing, punching tools to create visible lines used in layouts.
11. The student will be able to demonstrate techniques for laying out parts using semi and precision lay out procedures.

*The student will be able to perform mathematical calculations to determine correct solutions for tasks.*

12. The student will be able to compute layout dimensions.
13. The student will be able to create a job analyses.

*The student will be able to perform grinder procedures and safety.*

14. The student will be able to perform bench grinder maintenance.
15. The student will be able to inspect and change grinding wheels.
16. The student will be able to identify common grinding wheel marking used for identification.
17. The student will be able to properly dress grinder wheels.
18. The student will be able to demonstrate hand sharpening drill bits.
19. The student will be able to recondition, sharpen hand punches and chisels.
20. The student will be able to grind lathe turning tool left and right on ½ tool steel blank.

*The student will be able to perform drill press procedures and safety.*

21. The student will be able to identify parts of the drill press (sensitive and radial).
22. The student will be able to define safety for drilling equipment.
23. The student will be able to create holes to a specified size using electric, pneumatic hand drills.
24. The student will be able to maintain PMI data sheet for drill presses.
25. The student will be able to demonstrate drill press maintenance.
26. The student will be able to select proper drill press for application.
27. The student will be able to safely use drill press to perform operations.
28. The student will be able to identify tool holding methods.
29. The student will be able to adjust equipment for speed and feeds.
30. The student will be able to demonstrate work holding devices for the drill press.
31. The student will be able to apply cutting fluids using distribution methods.
32. The student will be able to select proper cutting tools for counter boring, counter sink, reaming, drilling and tapping.
33. The student will be able to demonstrate hole forming procedures listed in 29.
34. The student will be able to demonstrate proper care for drilling cutters.

The student will be able to perform power sawing equipment and safety.
35. The student will be able to identify parts of sawing equipment. (vertical, horizontal)
36. The student will be able to define safety for sawing procedures.
37. The student will be able to maintain PMI data sheet for sawing equipment.
38. The student will be able to demonstrate sawing equipment maintenance.
39. The student will be able to select proper blade for sawing different materials.
40. The student will be able to adjust equipment for correct speed and Feed.
41. The student will be able to apply and mix cutting fluids for application. (Refact meter)
42. The student will be able to cut and weld band saw blades.
43. The student will be able to install band saw blades, hand and power saws.
44. The student will be able to stack saw stock to specified size.
45. The student will be able to demonstrate straight sawing procedures. (vertical and horizontal)
46. The student will be able to demonstrate circular sawing procedures. (vertical contour)
47. The student will be able to demonstrate angular sawing procedures. (vertical and horizontal)
48. The student will be able to perform hand hack sawing procedures.
49. The student will be able to explain internal sawing procedures.

The student will be able to use hand tools and safety.
50. The student will be able to identify proper hole size for tapping procedures.
51. The student will be able to identify proper hole size for reaming procedures.
52. The student will be able to identify taps and dies.
53. The student will be able to define proper holding devices for tap and dies.
54. The student will be able to properly ream and tap holes.
55. The student will be able to properly thread rod using dies.
56. The student will be able to identify files and there uses.
57. The student will be able to demonstrate proper care for files, taps and dies, broaches.
58. The student will be able to perform hand broaching procedures for creating a keyway.
59. The student will be able to install heli-coil, rosan thread repair inserts.
60. The student will be able to demonstrate removing broken or seized fasteners.
61. The student will be able to list practices to perform installation of bearings, pins, bushings with the use of arbor and hydraulic methods.

ASSOCIATION 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 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. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college’s policy on non-discrimination be administered without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the director of the Academic Resource Center, in Rm. 3354 or call at: 288-7670.