SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 48.0501

SEMESTER: Departmental Syllabus

COURSE TITLE: Machining II

COURSE NUMBER: MACH0109

CREDIT HOURS: 3

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

PREREQUISITES: MACH0101, Safety, MACH0103 Bench Work, MACH0105 Quality Control and Inspection, MACH0107 Machine Tool Processes, MACH0108 Machining Fundamentals II and 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 the learner with the skills to properly identify, set-up, and operate metal turning and milling equipment safely. This course will emphasize hands on approach as well as classroom activities to familiarize the student with the process to complete job task analysis. This course will also cover common mathematical formulas that will be implemented into the curriculum to achieve expected learner outcomes.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These 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. Performances and learning experiences outside the classroom. Methodology will be selected to best meet the student’s needs.
COURSE OUTLINE:

I. Hazards of Association.
   A. Analyze hazards of lathes and mills.
   B. Equipment nomenclature.
   C. Equipment safety.
   D. Application of cutting fluids
   E. Recordkeeping.
   F. Job planning.

II. Work holding devices and tooling.
   A. Identifies methods of work holding.
   B. Determines correct tool holding methods.
   C. Plan tooling lists and selects proper tooling.
   D. Plan sequence of operations.
   E. Equipment adjustments to maintain accuracy
   F. Identify backlash and corrective actions.
   G. Proper cleanliness of shop and related equipment.
   H. Properly identify chuck mounting systems.

III. Lathe Operations.
   A. Adjust equipment for speeds and feeds
   B. Machine parts to proper tolerances.
   C. Sets-up equipment for operations.
   D. Machine maintenance.
   E. Perform PMI on engine lathes.
   F. Identify types and classification for fits.
   G. Calculation of formulas for common mathematic problems used in lathe operations

IV. Vertical milling machine operations.
   A. Adjust equipment for speeds and feeds
   B. Machine parts to proper tolerances.
   C. Sets-up equipment for operations.
   D. Machine maintenance.
   E. Perform PMI on vertical mills.
   F. Identify types and classification for fits.
   G. Calculation of formulas for common mathematic problems used in milling operations

EXPECTED LEARNER OUTCOMES:

A. The student will be able to identify safety for lathes and mills.
B. The student will be able to analyze blueprints to produce parts.
C. The student will be able to select tooling for job planning.
D. The student will be able to select and dilute cutting fluids.
E. The student will be able to identify and use carbide inserts.
F. The student will be able to conduct operations with lathes for part producing.
G. The student will be able to conduct operations with vertical mill for part producing.
H. The student will be able to correctly use the machinery’s handbook.
I. The student will be able to perform mathematical calculations to determine correct solutions for tasks.
J. The student will be able to correctly select and use hand tools.

COURSE COMPETENCIES:
Upon completion of this course

The student will be able to identify safety for lathes and mills.
1. The student will be able to conduct a job hazard (JHA) for lathes and mills.
2. The student will be able to recite safety rules for lathe and mills.
3. The student will be able to apply precautions needed to minimize shop hazards with equipment.
4. The student will be able to adhere to safety of equipment.

The student will be able to analyze blueprints to produce parts.
5. The student will be able to create job analysis for production of parts from blueprints.
6. The student will be able to create job analysis for one off replication of parts.
7. The student will be able to analyze blueprints to select correct tooling and layout.
8. The student will be able to conduct job analysis.

The student will be able to select tooling for job planning.
9. The student will be able to maintain log for tooling used.
10. The student will be able to select tooling for a given job.
11. The student will be able to set-up tooling and apply proper holding methods.
12. The student will be able to record preventative maintenance log.
13. The student will be able to create job procedure list for sequence of operations.

The student will be able to select and dilute cutting fluids
14. The student will be able to select and dilute cutting fluids.
15. The student will be able to select and apply cutting fluids.

The student will be able to identify and use carbide inserts.
16. The student will be able to select carbide inserts for application.
17. The student will be able to identify carbide insert holders.

The student will be able to conduct operations with lathes for part producing.
18. The student will be able to identify part holding chucks, collets, and centers.
19. The student will be able to install chucks on lathe.
20. The student will be able to adjust equipment for speed and feeds for different materials.
21. The student will be able to describe chatter and possible remedies.
22. The student will be able to check accuracy of equipment.
23. The student will be able to adjust equipment to maintain accuracy.
24. The student will be able to demonstrate knowledge of the uses of dro’s.
25. The student will be able to identify graduations marked on machine dials.
26. The student will be able to set-up and select tooling.
27. The student will be able to set-up tool holders and tool blocks.
28. The student will be able to align tailstock.
29. The student will be able to face parts in chucks.
30. The student will be able to straight and shoulder turn parts in chucks.
31. The student will be able to set-up and machine parts utilizing collets chucks.
32. The student will be able to set-up and machine parts utilizing face plates.
33. The student will be able to indicate parts utilizing 4-Jaw chuck.
34. The student will be able to machine parts between centers.
35. The student will be able to describe the uses of steady rest and follower rests.
36. The student will be able to drill, ream, and tap holes with lathe.
37. The student will be able to counter sink, counter bore holes with lathe.
38. The student will be able to bore holes with the lathe.
39. The student will be able to machine parts to specified size.
40. The student will be able to perform machine maintenance.
41. The student will be able to record maintenance performed on lathes.

*The student will be able to conduct operations with vertical mill for part producing.*
42. The student will be able to identify part holding devices for milling procedures.
43. The student will be able to adjust equipment for speed and feeds for different materials.
44. The student will be able to describe chatter and possible remedies.
45. The student will be able to describe cutter loading.
46. The student will be able to correct common milling problems.
47. The student will be able to check accuracy of equipment.
48. The student will be able to adjust equipment to maintain accuracy.
49. The student will be able to demonstrate knowledge of the uses of dro’s.
50. The student will be able to identify graduations marked on machine dials.
51. The student will be able to describe climb milling.
52. The student will be able to describe conventional milling.
53. The student will be able to identify types of collets and tool holders.
54. The student will be able to set-up and select tooling.
55. The student will be able to set-up tool holders and collets.
56. The student will be able to align machine head to table or fixtures.
57. The student will be able to indicate vise to milling table.
58. The student will be able to perform Face milling operations.
59. The student will be able to perform peripheral milling operations.
60. The student will be able to perform fly cutting operations.
61. The student will be able to perform slotting operations.
62. The student will be able to perform form milling operations.
63. The student will be able to drill, ream, and tap holes with vertical mill.
64. The student will be able to counter sink, counter bore holes with vertical mill.
65. The student will be able to machine parts in vise.
66. The student will be able to machine parts square.
67. The student will be able to machine angles using vertical mill.
68. The student will be able to machine parts to specified size.
69. The student will be able to perform machine maintenance.
70. The student will be able to record maintenance performed on mills.

*The student will be able to correctly use the machinery’s handbook.*
71. The student will be able to locate tolerances within machinery’s handbook.
The student will be able to locate tolerances for fits within machinery’s handbook.

The student will be able to identify classes of fits for threading.

The student will be able to locate taper tolerances within machinery’s handbook.

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

The student will be able to identify fits and calculate parts for final machining.

The student will be able to calculate feed and speeds with chip load per tooth.

The student will be able to calculate trigonometric functions.

The student will be able to convert metric to American and back to mm.

The student will be able to calculate depth of cuts.

The student will be able to calculate angles and tapers.

The student will be able to measure threads.

The student will be able to perform cordial segment formulas.

The student will be able to correctly select and use hand tools.

The student will be able to locate hand tools for set-up operations of lathes and mills.

The student will be able to correctly store hand tools.

The student will be able to identify spanner wrenches.

The student will be able to identify collets wrenches.

The student will be able to correctly use collets and spanner wrenches.

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 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.

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