SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 48.0501

SEMESTER: Departmental Syllabus

COURSE TITLE: Mathematics for Manufacturing

COURSE NUMBER: MACH0111

CREDIT HOURS: 3

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

PREREQUISITES: 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 to the step by step approach to mastering the mathematical skills needed by today’s technicians. This course will enable the learner to relate basic math concepts and operations specific to today’s industry.

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.

COURSE OUTLINE:
I. Whole Numbers:
   A. Understanding of computed measures of the use of whole numbers
   B. Determining word problems with the use of whole numbers
   C. Applying the use of whole numbers
   D. Computing whole numbers
II. Common Fractions:
A. Understanding common fractions
B. Determining word problems with the use common fractions
C. Applying uses for fractions
D. Computing fractional numbers

III. Decimal Fraction:
A. Understanding common decimal fractions
B. Determining word problems with the use common decimal fractions
C. Applying uses for decimal fractions
D. Computing decimal fractional numbers

IV. Direct Measure:
A. Tools used to measure within 1/32”
B. Tools used to measure within .0001”
C. Units of measurement
D. Tools used to measure angularity

V. Computed Measure:
A. Computing squares
B. Calculating areas of common shapes
C. Volumes of solids and cylinders
D. Understanding mass (weight) measures

VI. Percents and Graphs:
A. Percentage numbers
B. Graphs and their uses

VII. Ratio and Proportion:
A. Understanding ratios
B. Relationships between direct and indirect proportions

VIII. Shop Formulas:
A. Calculations for threads
B. Calculations for gears
C. Calculations for speeds and feeds
D. Calculations for tapers

IX. Powers, roots, and equations:
A. Understanding powers and exponents
B. Using square roots
C. Applying expressions and equations

X. Trigonometry:
A. Industrial trigonometry
B. Application of right triangles
C. Understanding types of angles
D. Uses for sine bar calculations
E. Disk measuring for angles
F. Helix angles for cutters and gears
G. Supplement and compliments angles
EXPECTED LEARNER OUTCOMES:
A. The student will be able to understand the importance of using whole numbers.
B. The student will be able to apply the use of fractions in the shop environment.
C. The student will be able to combine operations with the use of decimal fractions.
D. The student will be able to implement the use of measuring tools.
E. The student will be able to combine the use of measuring formulas.
F. The student will be able to implement the use of graphs and charts.
G. The student will be able to implement the use of ratios and proportions.
H. The student will be able to apply shop formulas.
I. The student will be able to implement powers, roots and equations.
J. The student will be able to apply trigonometry formulas in a shop environment.

COURSE COMPETENCIES:

The student will be able to understand the importance of using whole numbers.
1. The student will be able to understand the importance of using whole numbers.
2. The student will be able to perform the addition of whole numbers.
3. The student will be able to perform the subtraction of whole numbers.
4. The student will be able to perform the multiplication of whole numbers.
5. The student will be able to perform the division of whole numbers.

The student will be able to apply the use of fractions in the shop environment
6. The student will be able to perform the addition of common fractions.
7. The student will be able to perform the subtraction of common fractions.
8. The student will be able to perform the multiplication of common fractions.
9. The student will be able to perform the division of common fractions.
10. The student will be able to combine operations with common fractions.

The student will be able to combine operations with the use of decimal fractions
11. The student will be able to perform the addition of decimal fractions.
12. The student will be able to perform subtraction of decimal fractions.
13. The student will be able to perform multiplication of decimal fractions.
14. The student will be able to perform division of decimal fractions.
15. The student will be able to perform combined operations with decimal fractions.

The student will be able to implement the use of measuring tools
16. The student will be able to perform length measuring with instruments.
17. The student will be able to perform OD ID measuring with proper devices.
18. The student will be able to identify units of measurement.
19. The student will be able to measure angularity with proper tools.
20. The student will be able to calculate cycle times.

The student will be able to combine the use of measuring formulas.
21. The student will be able to compute square measurements
22. The student will be able to calculate areas of squares and odd shapes.
23. The student will be able to find areas of forms and odd shapes.
24. The student will be able to calculate volume of forms and shapes.
25. The student will be able to calculate of mass (weight) measures.

*The student will be able to implement the use of graphs and charts*

26. The student will be able to calculate percents. Computes square measurements.

27. The student will be able to create graph to recognize time management.

*The student will be able to implement the use of ratios and proportions*

28. The student will be able to calculate ratios.

29. The student will be able to calculate proportions.

30. The student will be able to calculate indirect proportions.

31. The student will be able to calculate indirect proportions.

*The student will be able to apply Shop formulas*

32. The student will be able to calculate thread formulas.

33. The student will be able to calculate gear computations.

34. The student will be able to calculate tapers.

35. The student will be able to calculate speed and feeds per load vs. horsepower.

*The student will be able to implement powers, roots and equations*

36. The student will be able to use powers in formulas.

37. The student will be able to apply the use or square roots in formulas.

38. The student will be able to use expressions and equations’ to provide solutions to equations.

*The student will be able to apply trigonometry formulas in a shop environment*

39. The student will be able to apply right angle trig to solve equations.

40. The student will be able to calculate sine bar calculations.

41. The student will be able to measure cord lengths utilizing trig.

42. The student will be able to calculate cordial segments for key seat depths.

43. The student will be able to compute angles with measuring disks.

44. The student will be able to calculate helix angles to find cutter or thread angles.

**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.

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.

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