

COURSE OUTLINE

Revision: O. Shatunova and R. Downs, April 2008

DEPARTMENT: Academic Programs

CURRICULUM: Mathematics

COURSE TITLE: Applied Math I

COURSE NUMBER: MATH 111

TYPE OF COURSE: Allied Supporting & Vocational General Education
Special Requirement Met: QSR

AREA(S) OF KNOWLEDGE: Basic Requirements - Math

COURSE LENGTH: 1 quarter

CREDIT HOURS: 5

LECTURE HOURS: 55

LAB HOURS: 0

CLASS SIZE: 35

PREREQUISITES: Score of at least 43 on the numerical skills section of the ASSET or instructor's permission

COURSE DESCRIPTION:

Introduction to applied algebra, geometry and trigonometry. Includes algebraic operations, exponents, roots, scientific notation, dimensional analysis, significant digits, metric system, first degree equations, plane and solid geometry, solution of right triangles, functions, statistics, calculator fundamentals, and applications.

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STUDENT LEARNING OUTCOMES ADDRESSED:

1. Computation – Use arithmetic and other basic mathematical operations as required by program of study. Apply quantitative skills for personal, academic and career purposes.
2. Communication – Read and listen actively to learn and communicate.
3. Critical Thinking and Problem Solving – Think critically in evaluating information, solving problems and making decisions.
4. Technology – Select and use appropriate technological tools for personal, academic and career tasks.

GENERAL COURSE OBJECTIVES:

Upon successful completion of this course the student will be expected to:

NUMERICAL CONCEPTS

1. State whether a given number is natural, whole, an integer, rational, irrational, real or imaginary.
2. Read and write decimal numbers that range from trillion to trillionth.
3. State whether a given number is approximate or exact.
4. Determine the number of significant digits contained in a given approximate number.
5. Determine the accuracy of an approximate number.
6. Determine the precision of an approximate number.
7. Read and write measurements to show tolerance.
8. Round a number to a given precision.
9. Truncate a number to a given precision
10. Use symbols of equality, inequality, and approximate equality.
11. Add, subtract, multiply and divide real (signed) numbers that are exact or approximate and round appropriately.
12. Compute powers, roots, absolute values, and reciprocals of real numbers that are exact or approximate.
13. Convert numbers from decimal form to scientific notation, and vice versa.
14. Convert denominate numbers within the metric system (such as, centimeters to kilometers).
15. Convert the English system of measurement into the metric system and vice versa.
16. Solve percentage problems.

ALGEBRA

17. Add, subtract, multiply and divide algebraic expressions
18. Solve linear (first degree) equations in one variable.

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GENERAL COURSE OBJECTIVES CONTINUED:

19. Substitute real numbers into formulas and evaluate them
20. Solve literal equations and formulas.
21. Solve problems using ratios and proportions
22. Use functions notation to evaluate functions
23. Plot points and graph linear equations in a rectangular coordinate system.
24. Solve verbal problems (including electronics, construction and manufacturing design, motion, force and mixture problems) that translate into linear equations.

GEOMETRY

25. Use a protractor to measure angles.
26. Divide a degree into minutes and seconds and then convert them to decimal degree notation and vice versa.
27. Solve problems that involve the perimeter (or circumference) and area of plane geometrical figures (such as triangles, squares, rectangles, parallelograms, trapezoids, and circles).
28. Solve problems that involve the surface area and volume of solid geometrical figures (such as cubes, rectangular solids, cylinders, cones, pyramids and spheres).
29. Convert among degrees, radians, and revolutions.

TRIGONOMETRY

30. Use the Pythagorean Theorem to find the missing side of a right triangle when two sides are known.
31. Define and evaluate the six trigonometric functions of an acute angle contained in a right triangle.
32. Solve problems that involve right triangles using trigonometry.

STATISTICS

33. Organize raw data into ascending and descending order.
34. Organize data into frequency distributions, histograms and polygons.
35. Construct a line, bar or pie graph using data.
36. Calculate the mean, median, mode, variance, standard deviation, and the range from data.

SCIENTIFIC CALCULATOR

37. Use a hand-held scientific calculator to compute numerical solutions to MATH 111 problems.

TOPICAL OUTLINE: APPROX. HOURS 55

- I. Numerical concepts
- II. Algebra
- III. Geometry

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TOPICAL OUTLINE CONTINUED:

- IV. Trigonometry
- V. Graphs
- VI. Statistics
- VII. Functions

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SLO #	Included in Course Objective Number	SSCC Student Learning Outcomes
SLO 1.1	1 – 37	Communication - Read and listen actively
SLO 1.2		Communication - Speak and write effectively
SLO 2.1	1 – 37	Computation - Use mathematical operations
SLO 2.2	1 – 37	Computation - Apply quantitative skills
SLO 2.3	1 – 37	Computation - Identify, interpret, and utilize higher level mathematical and cognitive skills
SLO 3.1		Human Relations - Use social interactive skills to work in groups effectively
SLO 3.2		Human Relations - Recognize the diversity of cultural influences and values
SLO 4.1	1 – 37	Critical Thinking and Problem Solving -
SLO 5.1	1 – 37	Technology - Select and use appropriate technological tools
SLO 6.1		Personal Responsibility - Be motivated and able to continue learning and adapt to change
SLO 6.2		Personal Responsibility - Value one's own skills, abilities, ideas and art
SLO 6.3		Personal Responsibility - Take pride in one's work
SLO 6.4		Personal Responsibility - Manage personal health and safety
SLO 6.5		Personal Responsibility - Be aware of civic and environmental issues
SLO 7.1		Information Literacy - Access and evaluate information
SLO 7.2		Information Literacy - Use information to achieve personal, academic, and career goals, as well as to participate in a democratic society

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