

DELAWARE TECHNICAL & COMMUNITY COLLEGE
COLLEGEWIDE COURSE SYLLABUS



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| Campus: | Terry |
| Department: | Mathematics |
| Course Number and Title: | MAT 202 – Mathematics for Teachers II |
| Instructor Name: | |
| Telephone: | |
| E-mail: | |
| Prerequisites: | MAT 201 |
| Corequisites: | None |
| Course Hours and Credits: | 4:0:4 |
| Course Description: | This course is a continuation of MAT 201. Topics include areas and volumes of geometric figures, geometric constructions, measurement, introductory probability, and statistics. |
| Required Text: | <u>Mathematical Ideas, A Custom Version for Delaware Technical and Community College</u> , Pearson Custom Publishing. |
| Materials: | Scientific calculator Metric/English ruler Compass Protractor Manipulative Kit (Optional) |
| Method of Instruction: | Lecture |
| Manuals: | Dolan, D.; Williamson, J.; & Muri, M. (2004). <u>Mathematics Activities for Elementary School Teachers: A Problem Solving Approach</u> , (5 th ed.) Reading, MA; Addison-Wesley Publishing. |
| Disclaimer: | None |

CORE COURSE PERFORMANCE OBJECTIVES

The student will be able to:

1. Calculate areas and volumes of geometric figures. (CCC 7)
2. Construct geometric figures. (CCC 2, 6, 7)
3. Perform conversions involving metric and English measurements. (CCC 7)
4. Compute basic probabilities. (CCC 7, 9)
5. Compute, analyze and interpret statistical data. (CCC 2, 6, 7)

MEASURABLE PERFORMANCE OBJECTIVES

1. Calculate areas and volumes of geometric figures. (CCC 7)

- 1.1 Identify, describe, compare, and classify a variety of plane figures and their properties, including curves, polygons, congruent figures, types of triangles and quadrilaterals and their angles, and circles.
- 1.2 Identify and use theorems involving angles, and demonstrate understanding by solving application problems.
- 1.3 Identify, describe, compare and classify a variety of three-dimensional figures and their properties, including polyhedron, prism, pyramid, regular polyhedra, cylinders, cones, and spheres.
- 1.4 Identify and use properties and terms relating to the area of polygons and circles, using units of measures of both English and metric systems, and solve related application problems.
- 1.5 Demonstrate knowledge of the Pythagorean Theorem, its historical development, and its relationship to right triangles and squares. Identify special right triangles, and demonstrate understanding by solving related application problems.
- 1.6 Using both English and metric units, and given formulas, calculate the surface area of three-dimensional figures, such as prisms, cylinders, pyramids, cones, and spheres.
- 1.7 Using both English and metric units of volume, and given formulas, calculate the volumes of right prisms and cylinders, right circular cones, and of spheres.
- 1.8 Identify, describe, compare and classify concepts of weight and mass, English and metric units of mass, scientific, metric, and English base units of temperature, convert units within the same system, convert Fahrenheit to Celsius temperatures, and solve related application problems.

2. Construct geometric figures. (CCC 2, 6, 7)

- 2.1 Identify congruencies of planar elements and figures, especially triangle inequality, SSS, and SAS congruency.

- 2.2 Demonstrate an understanding of congruent triangles using a compass and straight-edge to construct congruent figures.
- 2.3 Identify parallel and perpendicular lines, angle bisectors and perpendicular line bisectors, and properties of bisectors.
- 2.4 Demonstrate an understanding of parallel and perpendicular lines and angle bisectors by using a compass and straight-edge to construct them.
- 2.5 Identify, describe, and compare similar figures, scale factor, similar triangles and related constructions, properties of proportion and indirect measurement.

3. Perform conversions involving metric and English measurements. (CCC 7)

- 3.1 Identify the standard units of measures of length in both English and metric systems, as well as acquire some historical perspective for the development of these standard units.
- 3.2 Identify the base unit of length of the metric system, and be able to convert units of measure within the same system.
- 3.3 Identify and use metric prefixes, symbols, and factors, and relate these to names of the metric units of length, symbols and relationships to the base unit. Identify the three basic properties of distance, perimeter, circumference, π (pi), arc length, and solve related application problems.

4. Compute basic probabilities. (CCC 7, 9)

- 4.1 Identify, describe and compare terms, symbols, properties, and formulas relating to theoretically and empirically determined probability, frequency tables, and solve related application problems.
- 4.2 Identify, describe, and compare terms relating to multi-stage experiments, and be able to use tree diagrams and geometric probabilities to solve related application problems.
- 4.3 Identify, describe, and compare terms related to using simulations in probability, demonstrate problem-solving techniques using simulations in application problems.
- 4.4 Identify, describe, and compare terms related to computing odds and expected value. Solve related application problems.
- 4.5 (Optional) Identify and describe terms and example problems related to permutations and combinations of like objects.

5. Compute, analyze and interpret statistical data. (CCC 2, 6, 7)

- 5.1 Read and construct statistical graphs.

- 5.2 Identify, describe and use terms related to measures of central tendency and variation and solve related application problems.
- 5.3 Identify, describe and use normal or bell curves, normal distribution, z-scores, scatter grams and trend lines, in conjunction with your instructor, to understand related demonstration problems.
- 5.4 Identify and describe several ways in which statistics and statistical graphs can be misused.

EVALUATION CRITERIA

Students will demonstrate proficiency on all Measurable Performance Objectives at least to the 75% level. The final grade will be determined using the College Grading System:

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| 92 – 100 | A |
| 83 – 91 | B |
| 75 – 82 | C |
| 0 – 74 | R |

Students should refer to the Student Handbook for information on Academic Standing Policy, Academic Honesty Policy, Students Rights and Responsibilities and other policies relevant to their academic progress.

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