COURSE: MATH 1024 Mathematics of Measurement

INSTRUCTOR: 

CREDITS: 2

CLASS HOURS PER WEEK: 3 (1 lecture, 2 lab)

PREREQUISITES: Placement score of 26 or higher (or cougar edge equivalent), or C or better in DEV 0114, or permission of program

DESCRIPTION OF COURSE:
MATH 1024 is a developmental level mathematics course designed specifically as a prerequisite for MATH 1101 and MATH 1115. MATH 1024 introduces the fundamentals of measurement, including the operation of tools for obtaining measurements. MATH 1024 provides an elementary understanding of the basic structure of measurements including types, arithmetic, accuracy, precision, representations, and application of measurements.

STUDENT LEARNING OUTCOMES:

Unit 1: Linear Measurements
1.1: Decimal Review
   • Students will understand the connections between decimals and linear measurement.
1.2: Fraction Review
   • Students will understand the connections between fractions and linear measurement.
1.3: What is Linear Measurement?
   • Students will understand the definition of a linear measurement.
1.4: Unit Systems: English
   • Students will be able to convert measurements within the English system.
1.5: Obtaining English Measurements
   • Students will be able to find measurements within the English system using rulers, micrometers, and calipers.
1.6: Unit Systems: Metric
   • Students will be able to convert measurements within the Metric system.
1.7: Obtaining Metric Measurements
   • Students will be able to find measurements within the metric system using rulers, micrometers, and calipers.
1.8: Conversion between Systems
   • Students will be able to convert measurements between systems.
1.9: Ratios and Proportions
   • Students will be able to use ratios and proportions.
Unit 2: Angular Measurements
2.1: What is Angular Measurement?
   • Students will understand the definition of angular measurement.
2.2: Obtaining Angular Measurements
   • Students will be able to find angles and create angles using a protractor.
2.3: Unit Systems: Degrees (DMS)
   • Students will understand the degree-minute-second system.
2.4: Arithmetic of Angular Measurements
   • Students will be able to perform arithmetic with angular measurements.
2.5: Conversion between Systems
   • Students will be able to convert angular measurements between systems.

Unit 3: Two Dimensional Linear Measurements
3.1: Linear Equation Review
   • Students will be able to solve basic linear equations.
3.2: Formula Rearrangement
   • Students will be able to solve for the given variable.
3.3: Rectangular Coordinate System
   • Students will understand 2-dimensional rectangular coordinates.
3.4: Pythagorean Theorem
   • Students will be able to apply the Pythagorean Theorem to calculate distances.

Unit 4: Geometry of Measurements
4.1: 2D Shapes – Rectangle, Triangle, Polygon, Circle
   • Students will understand basic 2-dimensional measurement properties.
4.2: 3D Shapes – Prisms, Cylinders, Polyhedron
   • Students will understand basic 3-dimensional measurement properties.

Unit 5: Introduction to Microsoft Excel
5.1: Microsoft Excel
   • Students will understand the basic properties and some applications of Excel.

INSTITUTIONAL LEARNING GOALS:
Columbus State Community College's Institutional Learning Goals are an integral part of the curriculum and central to the mission of the college. For this course, students are expected to demonstrate the skills associated with the Institutional Learning Goals identified below:
   Critical Thinking
   Quantitative Skills
   Communication Competence

In class, students are assessed on achievement of these outcomes. Names will not be used when reporting results. Outcomes-based assessment is used to improve
instructional planning and design and the quality of student learning throughout the college.

COURSE MATERIALS REQUIRED:
- Scientific Calculator
  o TI-30XS Multiview
- Computer/internet access

TEXTBOOK, MANUALS, REFERENCES, AND OTHER READINGS:
- All materials provided in the Blackboard course

GENERAL INSTRUCTIONAL METHODS:
This course may include a variety of instructional methods including, but not limited or restricted to: on-line notes and practice exercises, interactive web applications, lesson videos, discussion boards, hands-on activities, and Excel labs.

STANDARDS AND METHODS FOR EVALUATION:
This course may include a variety of assessment methods including, but not limited or restricted to: exercises, labs, quizzes, tests, exams, and projects.

GRADE SUMMARY:
8 Quizzes (10 points/quiz) = 25%
Final project (20 points) = 15%
Daily Class Grade = 60%
- A daily class grade will be given to each student. The class grade will be assessed as follows:
  o A student will receive a daily grade of 3 for attending class on time, actively participating in the lab activity, and coming to class prepared, bringing completed homework assigned in previous class period.
  o A student will receive a daily grade of 2 for attending class on time, and actively participating (Missing homework).
  o A student will receive a daily class grade of 1 for attending class on time, but NOT actively participating in the course – meaning that you don’t follow all the instructions that are given for the class labs.
  o A student will receive a daily class grade of 0 for not attending

GRADING SCALE:
90% - 100% = A
80% - 89% = B
70% - 79% = C
60% - 69% = D
0% - 59% = E

UNITS OF INSTRUCTION

Week 1
- Unit of Instruction: Unit 1 - Course Introduction, Calculator Competency, Decimal Review
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read sections 1.1 & 1.2; Homework Section 1.1
- **Assessment Methods:** Group activities/Labs & Homework Completion

**Week 2**
- **Unit of Instruction:** Unit 1 - Fraction Review, What is Linear Measurement?
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Sections 1.3 & 1.4; Homework Section 1.2
- **Assessment Methods:** Group activities/Labs & Homework Completion

**Week 3**
- **Unit of Instruction:** Unit 1 - Unit Systems: English, Obtaining English Measurements - Rulers
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Section 1.5; Homework Sections 1.4 & 1.5 on Rulers
- **Assessment Methods:** Group activities/Labs & Homework Completion and Quiz 1

**Week 4**
- **Unit of Instruction:** Unit 1 - Obtaining English Measurements (cont.) - Micrometers
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Homework Section 1.5 on Micrometers
- **Assessment Methods:** Group activities/Labs & Homework Completion

**Week 5**
- **Unit of Instruction:** Unit 1 - Obtaining English Measurements (cont.) – Calipers, Unit Systems: Metric
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Sections 1.6 & 1.7; Homework Section 1.7
- **Assessment Methods:** Group activities/Labs & Homework Completion and Quiz 2

**Week 6**
- **Unit of Instruction:** Unit 1 - Obtaining Metric Measurements – Rulers and Micrometers
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Homework Section 1.7 on Rulers & Section 1.7 on Micrometers
- **Assessment Methods:** Group activities/Labs & Homework Completion

**Week 7**
- **Unit of Instruction:** Unit 1 – Obtaining Metric Measurements (cont.) – Calipers, Conversion between systems (English and Metric)
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Section 1.8; Homework Section 1.8
- **Assessment Methods:** Group activities/Labs & Homework Completion and Quiz 3

**Week 8**
- **Unit of Instruction:** Unit 1 - Conversion between systems (English and Metric) (cont.), Ratios and Proportion
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Sections 1.9, 2.1 & 2.2; Homework Sections 1.8 & 1.9
- **Assessment Methods:** Group activities/Labs & Homework Completion

**Week 9**
- **Unit of Instruction:** Unit 2 – What is Angular Measurement?, Obtaining Angular Measurements
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Section 2.3; Homework Section 2.2 (2 assignments)
- **Assessment Methods:** Group activities/Labs & Homework Completion and Quiz 4

**Week 10**
- **Unit of Instruction:** Unit 2 - Unit Systems: Degrees/Minutes/Seconds, Arithmetic of Angular Measurements
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Sections 2.4 & 2.5; Homework Sections 2.3 & 2.4
- **Assessment Methods:** Group activities/Labs & Homework Completion and Quiz 5

**Week 11**
- **Unit of Instruction:** Unit 2 & Unit 3 – Conversion between Systems (Degrees and Radians), Linear Equations – a Review
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Sections 3.1, 3.2; Homework Sections 2.5 & 3.1
- **Assessment Methods:** Group activities/Labs & Homework Completion

**Week 12**
- **Unit of Instruction:** Unit 3 – Formula Rearrangement, Rectangular Coordinate System
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Sections 3.3 & 3.4; Homework Sections 3.2 & 3.3
- **Assessment Methods:** Group activities/Labs & Homework Completion and Quiz 6

**Week 13**
- **Unit of Instruction:** Unit 3 – Pythagorean Theorem
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Section 4.1; Homework Section 3.4
Week 14
- **Unit of Instruction:** Unit 4 – 2D Shapes (Rectangles, Triangles, Polygons, Circles), 3D Shapes (Prisms, Cylinders, Polyhedron)
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Read Sections 4.2 & 5.1; Homework Sections 4.1 & 4.2
- **Assessment Methods:** Group activities/Labs & Homework Completion and **Quiz 7**

Week 15
- **Unit of Instruction:** Unit 5 – An Introduction to Microsoft Excel, Work on Final Project
- **Learning Objective/Goals:** Critical Thinking, Quantitative Skills & Communication Competence
- **Assignment:** Homework Section 5.1
- **Assessment Methods:** Group activities/Labs & Homework Completion and **Quiz 8**