

Machine Tool Mathematics 1

Course Outcome Summary

Course Information

Organization	Madison Area Technical College
Developers	Russell Kumai
Development Date	9/30/2002
Course Number	31-804-381
Instructional Level	Two-Year Technical Diploma
Potential Hours of Instruction	36
Total Credits	2

Description

Open only for Machine Tool and Industrial Maintenance students. Includes the study of machine tool problems involving calculations with fractions, decimals, and percentage. Includes work with the metric system, measurement conversion, geometry, trigonometry of right triangles, and use of a scientific calculator. Formulas with application to the trade are also studied.

Types of Instruction

Instruction Type	Contact Hours	Credits
Classroom Presentation	36	2

Textbooks

Robert D. Smith. *Mathematics for Machine Technology*. **Edition:** 4th. **ISBN:** 0-8273-7942-0.

Learner Supplies

Scientific calculator such as Casio fx-300W.

Prerequisites

Basic Algebra (77-854-793)
OR appropriate placement score

Exit Learning Outcomes

Core Abilities

- A. Communication
- B. Critical thinking
- C. Mathematics

Competencies

- A. **Solve Machine tool problems involving basic algebra**
- B. **Solve Machine tool problems involving ratios and proportions**
- Unit 1. **Arithmetic**
 - A. **Solve Machine tool problems involving fractions**
You will demonstrate your competence:
 - A.1. in the solution to a problem on a quiz, homework, project or exam

Your performance will be successful when:

- A.1. you express improper fractions as mixed numbers and vice versa
- A.2. you reduce fractions to lowest terms
- A.3. you use the standard order of operations to perform multiplication, division, addition, subtraction, or combinations of these operations with fractions
- A.4. you use a scientific calculator to check calculations involving fractions
- A.5. you use a scientific calculator to enter calculations involving fractions

B. Solve Machine tool problems involving decimals**You will demonstrate your competence:**

- B.1. in the solution to a problem on a quiz, homework, project or exam

Your performance will be successful when:

- B.1. you convert fractions into decimals
- B.2. you convert decimals into the closest measurable fraction with a given denominator
- B.3. you convert fractions into decimals
- B.4. you distinguish when to use fractional calculations or convert between fractions and decimals
- B.5. you perform addition, subtraction, multiplication, division, exponentiation, root taking or combinations of these operations with decimal numbers according to the standard order of operation rules
- B.6. you recognize signed decimal numbers
- B.7. you correctly use signed decimal numbers
- B.8. you recognize decimal numbers expressed in scientific notation
- B.9. you correctly use decimal numbers expressed in scientific notation
- B.10. you round decimals correctly
- B.11. you convert decimals to the nearest 16th or 32nd of an inch
- B.12. you write out calculations done on a calculator to check your answers
- B.13. you use the memories on a calculator to solve problems
- B.14. you correctly use a scientific calculator to compute expressions that involve addition, subtraction, multiplication, division, exponentiation, root taking or combinations of these with decimal numbers according to the standard order of operations

C. Solve Machine tool problems involving the metric system**You will demonstrate your competence:**

- C.1. in the solution to a problem on a quiz, homework, project or exam

Unit 2. Algebra**A. Solve Machine tool problems involving basic algebra****You will demonstrate your competence:**

- A.1. in the solution to a problem on a quiz, homework, project or exam

B. Solve Machine tool problems involving ratios and proportions**You will demonstrate your competence:**

- B.1. in the solution to a problem on a quiz, homework, project or exam

Unit 3. Geometry**A. Solve Machine tool problems involving geometric principles****You will demonstrate your competence:**

- A.1. in the solution to a problem on a quiz, homework, project or exam

Unit 4. Trigonometry**A. Solve Machine tool problems involving basic trigonometry****You will demonstrate your competence:**

- A.1. in the solution to a problem on a quiz, homework, project or exam