

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

_____ Transfer Course X A.A. Degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: EMET 50 Basic Mechanics for Servicing Electro-Mechanical Equipment

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 48

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: None.

COREQUISITE: None.

RECOMMENDED PREPARATION: Knowledge of simple algebraic equations; different number systems; different types of gears; mechanical advantage; and fluid dynamics.

SCOPE OF COURSE:

Provides students with a basic overview of the maintenance process for postal service electro-mechanical equipment. Topics of study include levers and lever assemblies, gears and gear trains, sprockets and pulleys, basic hydraulics.

SPECIFIC COURSE OBJECTIVES:

The student will be able to:

1. Apply basic math principles to resolve equipment maintenance problems.
2. Apply the use of different number systems to the maintenance of electro-mechanical equipment.
3. Identify the three classes of levers found in postal equipment.
4. Calculate the mechanical advantage of the three types of levers.
5. Identify a minimum of four types of gears.
6. Calculate mechanical advantage of various gear trains.
7. Identify uses for chains and sprockets and calculate mechanical advantages.
8. Identify the various types of belts and pulleys and the advantage of various types.

9. Understand the basic principals of hydraulic systems and how to calculate the mechanical of hydraulic systems.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

- I. Introduction
 - A. Course overview
 - B. Equipment overview

- II. Review of Basic Technical Mathematics
 - A. Whole numbers (Addition, Subtraction, Multiplication, Division)
 - B. Fractions (Addition, Subtraction, Multiplication, Division)
 - C. Decimals (Addition, Subtraction, Multiplication, Division)
 - D. Scientific notation
 - E. Laws of exponents
 - F. Algebraic equations

- III. Number Systems
 - A. Decimal
 - B. Binary
 - C. Octal
 - D. Hexadecimal
 - E. Conversion from one base to another

- IV. Levers
 - A. 1st Class levers
 - B. 2nd Class levers
 - C. 3rd Class levers
 - D. Mechanical advantage of levers

- V. Gears
 - A. Spur
 - B. Helical
 - C. Hypoid
 - D. Rack and pinion

- VI. Gear Trains
 - A. Speed and direction calculations
 - B. Multiple shaft calculations

- VII. Chains and Sprockets
 - A. Types of chains
 - B. Calculation of mechanical advantage
 - C. Use of pawls

- VIII. Belts and Pulleys
 - A. Uses for belts and pulleys
 - B. Various types of belts
 - C. Mechanical advantage calculation
 - D. Controls

- IX. Hydraulic Systems
A. Uses
B. Fluid physics
C. Mechanical advantage calculations

REQUIRED READING:

Starks, Dennis. "BASIC MACHINES SIMPLIFIED", Published, Spring 2002.

SUGGESTED READING:

None.

EQUIRED WRITING:

Term paper on mechanical subject selected by student and approved by instructor.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

Weekly homework assignments.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
 laboratory
 lecture-laboratory combination
 directed study

DISTANCE LEARNING: This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply:

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
 Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
 Two-Way Video Conferencing (Two-way interactive video and audio)
 One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
 Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

A = 90 – 100	Participation	10%
B = 80 – 89	Term Paper	20%
C = 70 – 79	Pop Quizzes	20%
D = 60 – 69	Midterm Exam	25%
E = 59 and below	Final Exam	<u>25%</u>
		100%

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes ___ No X Number of times course may be taken for credit: 1

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

CONTACT PERSON: Director of Vocational and Apprenticeship Programs

SIGNATURES:

SIGNATURES ON FILE