

Course Outline
IMTC 201
MECHANICAL DRIVES AND EQUIPMENT I
4 Semester Hours

The Community College of Baltimore County

Description

Mechanical Drives and Equipment I

Covers the mechanical and physical properties involved with gears, cams, shafts, couplings, and clutches associated with the transmission of motion in an industrial setting; teaches how to apply the mathematical and physical principles to a mechanical drive system.

Prerequisite: IMTC 101.

Overall Course Objectives

Upon completion of this course the student will be able to:

- A. Explain the theory of transmission of motion.
- B. Explain the difference between spur gears, helical gears and their uses.
- C. Explain gear terminology.
- D. Explain how to maintain gears.
- E. Explain coupling design theory.
- F. Identify orally, basic types of couplings and uses.
- G. Explain the theory of torque limiting.
- H. Explain the purpose and design of clutches.
- I. Explain the purpose and uses of belt drives.
- J. On a graded project, install and align a belt and pulley drive.
- K. Explain the purpose and theory of a chain and sprocket drive.
- L. On a graded project, assemble and align a chain and sprocket drive.
- M. On a graded project, assemble and align a set of couplings.
- N. Explain the theory of laser beam alignment.
- O. On a graded project, align a set of gears and set backlash.
- P. Demonstrate on a graded project, installation and removal of a ring feeder.
- Q. On a graded project, hook-up, adjust and align a set of brakes.
- R. Explain how to set a torque limiter.
- S. Explain how to adjust friction clutches.
- T. On a graded project, assemble and adjust worm type speed reducer.
- U. Explain why speed reduction increases torque output on speed reducers.

Major Topics

List all major topics in outline form if appropriate

- I. Gears
- II. Shaft Couplings
- III. Torque Limiters

- IV. Clutches
- V. Fluid Drives
- VI. Brakes
- VII. Belt Drives
- VIII. Chain Drives
- IX. Aligning Equipment
- X. Lab Practice

Course Requirements

Exams	75%
Quizzes	25%

(Subject to revision by the instructor)

Other Course Information