



ADVANCED DIPLOMA OF MECHANICAL ENGINEERING TECHNOLOGY

MODULE DETAILS

Module 3: Mechanical Drive Systems

Nominal duration: 5 weeks (60 hours total time commitment)

This time commitment includes the preparation reading, attendance at each webinar (1 hour plus 15-30 minutes for discussion), and the time necessary to complete the assignments and further study.

MODULE PURPOSE

Most engineering professionals working with drives will confirm that there are major benefits in installing and maintaining mechanical drives correctly the first time. Typical areas that can be dramatically improved include: wear and tear on equipment, unscheduled downtime and production losses, energy consumption operating efficiencies.

This module has been designed to examine the majority of mechanical drives such as belts, chains and gears in terms of improved lubrication, proper alignment, and fastening techniques. You will have an opportunity to discuss drive design applications, operations, maintenance and management issues and you will be provided with the most up-to-date information and best practice in dealing with the subject. You will develop the skills and ability to recognize and solve drive problems in a structured and confident manner.

PRE-REQUISITE MODULES/UNIT(S)

NONE

ASSESSMENT STRATEGY

To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.

SUMMARY OF LEARNING OUTCOMES

1. Examine and discuss the concept of prime movers
2. Select appropriate bearings for given applications
3. Select appropriate chains for given applications
4. Select appropriate belts for given applications
5. Select appropriate gear drive systems for given applications
6. Select appropriate couplings for given applications
7. Select appropriate clutches and brakes for given applications



**ADVANCED DIPLOMA OF
MECHANICAL ENGINEERING TECHNOLOGY**

Learning Outcome 1	Examine and discuss the concept of prime movers
Assessment Criteria	<ul style="list-style-type: none">1.1. Discuss the different types of prime movers1.2. Compare the basic operating characteristics of:<ul style="list-style-type: none">(a) Synchronous motors(b) Induction motors1.3. Select appropriate electric motors for given applications
Learning Outcome 2	Select appropriate bearings for given applications
Assessment Criteria	<ul style="list-style-type: none">2.1 Discuss the various bearing types and their construction2.2 Examine and discuss bearing selection and installation2.3 Discuss bearing maintenance issues
Learning Outcome 3	Select appropriate chains for given applications
Assessment Criteria	<ul style="list-style-type: none">3.1 Describe the principles of operation of chain drives3.2 Discuss the procedure for chain and sprocket selection3.3 Describe the salient attributes of the various chain types3.4 Discuss chain lubrication issues
Learning Outcome 4	Select appropriate belts for given applications
Assessment Criteria	<ul style="list-style-type: none">4.1 Discuss the salient attributes of the various belt types4.2 Describe the procedure for determining proper belt tension4.3 Discuss the procedure for belt selection4.4 Discuss belt installation and maintenance issues



**ADVANCED DIPLOMA OF
MECHANICAL ENGINEERING TECHNOLOGY**

Learning Outcome 5

Select appropriate gear drive systems for given applications

Assessment Criteria

- 5.1 Discuss issues related to the construction and configuration of gear drive systems
- 5.2 Describe issues related to the selection and installation of gear drives, including (a) load factors and (b) service factoring
- 5.3 Examine and discuss the maintenance of gear drives

Learning Outcome 6

Select appropriate couplings for given applications

Assessment Criteria

- 6.1 Explain the difference between rigid and flexible couplings
- 6.2 Examine and discuss the various coupling types, along with their applications
- 6.3 Select a coupling based on operating factors

Learning Outcome 7

Select appropriate clutches and brakes for given applications

Assessment Criteria

- 7.1 Discuss clutch and brake functions and their principles of operation
- 7.2 Identify the various clutch and brake types
- 7.3 Select a clutch for a particular application
- 7.4 Explain the operation of torque converters

Delivery Mode

A combination of asynchronous and synchronous e-learning delivery comprising a judicious mix of interactive online web conferencing, simulation (virtual labs) software, remote online labs, online videos, PowerPoint slides, notes, reading and study materials (in PDF, HTML and Word format) accessed through the Moodle Learning Management System (LMS).