

# ATLT-1806: SPECIAL TOPICS: OVERHEAD CRANE DRIVE SYSTEMS

---

## Cuyahoga Community College

**Viewing: ATLT-1806 : Special Topics: Overhead Crane Drive Systems**

**Academic Term:**

Spring 2019

**Subject Code**

ATLT - AIT-Lifting Technologies

**Course Number:**

1806

**Title:**

Special Topics: Overhead Crane Drive Systems

**Catalog Description:**

This course covers the types of drive systems used for all types of Cranes. The student will be able to demonstrate the ability to discuss and identify the types of drive systems on an electric overhead crane, hoist, or workstation.

**Credit Hour(s):**

2

**Lecture Hour(s):**

2

## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to Lifting Technologies apprenticeship program.

## Outcomes

**Course Outcome(s):**

I. Discuss the purpose of DC Crane Drive systems, the respective components and the power and control circuits.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Discuss the purpose of DC Crane Drive Systems
2. Identify and define the terms related to overhead electric cranes
3. Differentiate between DC and AC drive systems
4. List the basic components of DC Controls used for efficient crane operation
5. Differentiate between power and control components
6. Explain how control components energize power components

---

**Course Outcome(s):**

II. Explain the advantage of AC Crane Drive systems, the respective components and the power and control circuits.

**Essential Learning Outcome Mapping:**

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

**Objective(s):**

1. Compare the advantages and disadvantages of AC systems vs DC systems
2. List and explain the various components of an alternating current drive system

3. Differentiate between power and control components
4. Explain how control components energize power components

#### Methods of Evaluation:

##### Evaluation of Student Achievement or Proficiency:

Participation and contribution to discussions (Individual)	20%
Assignments	20%
Quizzes & Exams	30%
Practical Application Projects	30%
	100%

#### **Participation & Contribution to discussions (Individual) 20%**

Your own contribution to the discussion based on your unique experience and knowledge is a critical part of the success of the course for everyone. Note 20% depends on your performance in this facet of the course. This is often enough to make a difference in final grades. The instructor will expect informed insightful, comments from individuals both in the classroom as well as the practical lab (shop) activities. The grade for participation is not based on quantity but instead on the quality of the contributions.

#### **Assignments 20%**

Assignments may be individual or done in teams and provides the opportunity for you to inject some of your own learning and experience more directly into the mix.

#### **Quizzes and Exams 30%**

These individual assignments may be a combination of written, oral or practical in nature.

#### **Practical Application Projects 30%**

This portion of the course will help you develop a comprehensive understanding of the materials. Periodically throughout the course, you may be required to perform and display your understanding of the materials in a practical shop setting.

#### **Note:**

Class assignments, quizzes, exams and projects dates may be altered, rescheduled, changes, deleted or added by the instructor.

#### **Grade Computation:**

Your grade in this course is based on a combination of individual and group related classroom and lab work.

Grades are reported as follows:

- A:** Indicates consistently excellent work
- B:** Indicates work of the quality normally expected from Lifting Technologies Apprentice student
- C:** Indicates the minimum acceptable level of work from a Lifting Technologies Apprentice student
- D:** Indicates below minimum acceptable level of work (requires review and evaluation with Mazzella Companies)\*
- F:** Indicates below minimum acceptable level of work (requires review and evaluation with Mazzella Companies)\*
- I:** Indicates incomplete (either due to attendance (withdrawal) or lack of work being submitted)

Grades A, B, and C maybe modified by a plus or minus as appropriate. See below scale.

A+:	99-100%	C+:	78-79%
A:	93-98%	C:	73-77%
A-:	90-92%	C-:	70-72%
B+:	88-89%		69% and below*
B:	83-87%		
B-:	80-82%		

\*Any grade achieved below a 70% or "C-" is unacceptable and requires that the Lifting Technologies Apprentice student to re-register and re-take the course. Any Apprentice not achieving a grade of 70% or "C-" will be required to meet with Mazzella Companies' Apprenticeship Program Coordinator to review and evaluate continuation in the Lifting Technologies Apprenticeship Program prior to re-registering and retaking.

#### **Late Assignments and Make-up work:**

Mazzella Companies expects that Apprentice's exhibit good planning and time management skills throughout the course semester. Late assignments (assignments not turned at the scheduled, or agreed upon, deadline) will result in a minimum of a 10% reduction.

#### **Course Content Outline:**

1. Compare the advantages and disadvantages of AC systems vs DC systems
2. List and explain the various components of an alternating current drive system

3. Differentiate between power and control components
4. Explain how control components energize power components

## Resources

Stephen Herman. *Industrial Motor Control*, . Sixth edition. ISBN #: 1435442393, Copyright 2014.

---

Harwood. *Harwood's Control of Electric Motors*. Fourth Edition. Columbus McKinnon Corporation, Copyright 1999.

---

EC&M . Copyright 2003.

---

RM Hoist . Copyright 2002.

---

## Resources Other

<https://www.HoistsDirect.com/BridgeCranes>

<https://www.ergonomicpartners.com/r-and-m-spacemaster-sx-hoist>

Top of page

Key: 4658