



Industrial Motion Control

ELT 220

Winter 2021

Number of Credits: 3

Days Class Meets: TBD – Fully Online

Meeting Times: Asynchronous fully online

Location/Venue: Fully Online

Instructor: D. Matt Higgins

Contact Phone: phone

Contact Email: higginsdavidm01@jccmi.edu

Online Office Hours: my appointment

Course Description

This course will provide the student with a working knowledge and understanding of a variety of advanced manufacturing topics that prepare students for employment knowledge in Industry 4.0.

Prerequisite(s)

ELT 105

Course Goals

After completing this course students will be able to:

- Demonstrate a solid understanding of various mechanical drive systems and their use
- Show and understanding of manufacturing methods and materials
- Utilizing PLC and Ethernet to connect manufacturing to the internet of things

Textbook (chose appropriate options below)

- No Textbook is required.

Grading Procedure

Learning Modules (20 in total) are worth 10 points each 200 pts possible

Midterm and Final Exam (50 points each) + 100 pts possible

Total class points = 300 pts possible

Grading Scale

GPA	GRADE RANGE
4.0	94-100%
3.5	89-93%
3.0	84-88%
2.5	78-83%
2.0	72-77%
1.5	66-71%
1.0	60-65%
0.5	55-59%
0.0	0-54%

Failure

Any circumstances under which a student could be dismissed from or failed in the course that is not covered in other college publications. In pass/fail courses, a listing of minimal competencies.

Academic Honesty Policy

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

Plagiarism

Plagiarism is defined as the failure to give credit for the use of material from outside sources. Plagiarism includes but is not limited to:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

Cheating

Cheating is defined as obtaining answers/material from an outside source without authorization. Cheating includes, but is not limited to:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

Accessibility

Jackson College understands that cultivating a broadly diverse community is crucial to our educational mission and to our foundational commitment to leadership and service. Jackson College is fully committed to ensuring our courses are accessible to everyone including those with disabilities. We are currently working to increase accessibility and usability of our course materials in order to meet or exceed the requirements of Section 508 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1991 and Web Content Accessibility Guidelines (WCAG) 2.0. For more information about Jackson College's efforts to ensure accessibility please visit the [Jackson College accessibility web page](#).

If you have an accessibility need in any of our classes please e-mail the Center for Student Success at JCCSS@jccmi.edu or visit the [Center for Student Success web page](#).

At the Center for Student Success (CSS), we are committed to providing all students the opportunity to achieve academic success by providing a variety of support services free of charge to Jackson College students. This includes, but is not limited to, peer and faculty tutoring, mental health referral, temporary assistance with transportation, various workshops/seminars, and the TRIO program.

In addition, the CSS staff is committed to adapting the College's general services to meet the individual needs of otherwise qualified students with disabilities, for the purpose of providing equal access to all programs and facilities.

Course Management

Lecture: This format has NO official in person lecture. Instead, the theory and background information is presented in a series of online learning modules that the students may complete at a location of their convenience. The learning modules have a pre-test, online lectures and activities, with

a post-test for each learning module. The login information and supporting documents will be presented to you on the after you complete the introduction activity.

Makeup Policy

Assignments and quizzes must be completed on time and submitted as described in the specific assignment to receive credit. NO CREDIT will be given for late work.

Help

Available learning services or opportunities for students seeking help with their course work. May include information about tutors, learning centers, reserved library materials, counseling services.

Academic Advising

It is important to contact a Center for Student Success professional prior to the start of the semester in order to receive accommodations in a timely manner. While we will make every effort to coordinate accommodations in a timely manner, failure to self-identify prior to the start of the semester may delay notification to instructors and timeliness of acquiring accommodations. Accommodations do not automatically carry over to the next semester. Please e-mail JCCSS@jccmi.edu or visit the [Accommodations for Students with Disabilities](#) web page

Attendance- Participation Policy

For online sections

Just as in a traditional classroom course, regular class participation and keeping up on the reading and assignments is strongly correlated with survival in college. It is my recommendation that you plan to do your assignments and take your exams BEFORE the last day they are due. If problems occur, there is time to fix them before the deadline.

In compliance with Federal Title IV funding requirements, as well as college initiatives, I will be monitoring student participation on a regular basis and officially reporting student activity throughout the term to assure compliance with college policy and federal regulations. It is imperative that you log in to the course and actively participate within the first couple of days of the term to validate your enrollment in the course. After that, not actively participating in class may result in you being withdrawn from the course. Being withdrawn from a course can have an impact on financial aid, billing, athletic eligibility, and housing status. As a college student you are responsible for how your participation impacts your academic progress; the accountability lies with you.

Caveat

If there are technical issues or other circumstances arise, please notify your instructor immediately. Only technical issues that arise from the learning management system will allow the due dates to be altered. Your personal internet access or computer issues must be handled and resolved BEFORE due dates as late work is not accepted.

Course Schedule ELT 220

Industrial Motion Control

Date	Topic	Assignment(s)
3/15	Class Introduction	Access learning system by 03/17

Learning Module Due Dates :

A. Manufacturing Metrics	3/21
B. Adv Mfg Organization	3/21
C. Manufacturing Materials	3/21
D. Principles of Manufacturing Process	3/28
E. Power Efficiency	4/4
F. Mechanical Power Transmission	4/4
G. Gear Drives	4/4
H. Belt Drives	4/4
I. Chain Drives	4/4
J. Hyd Power	4/11
K. Basic Hyd Circuits	4/11
L. Fluid Power Speed Control	4/11
M. Fluid Force and Friction	4/11

MIDTERM EXAMINATION – Covers Modules A – M (Opens 4/12 – DUE 4/18)

N. Basic Material Handling	4/18
O. Flexible MFG Cells	4/18
P. Automation Sequ Circuits	4/25
Q. Electronic Sensors 2	4/25
R. PLC Operation	4/25
S. PLC Project Development	4/25
T. Introduction to Ethernet Networks	4/25

FINAL EXAMINATION – Covers Modules A – T (Opens 4/26 – DUE 5/1)

All lab assignments are due complete not later than the date shown. Learning modules are to be completed by the dates shown. Lab work cannot be started until the learning modules listed are complete. In order to be active in this course not get dropped you need to complete the activities by the due dates shown.

Lab Assignments

- #1 Basic Print Reading exercise
- #2 Sketching Exercise
- #3 Geometry Worksheet
- #4 Trig Work Sheet
- #5 Blueprint Reading Final Exercise