



**COWLEY COLLEGE
& Area Vocational Technical School**

COURSE PROCEDURE FOR

**COMPUTER INTEGRATED MANUFACTURING
MEC3480 3 Credit Hours**

Student Level:

This course is open to high school and post-secondary level students.

Catalog Description:

MEC 3480 - COMPUTER INTEGRATED MANUFACTURING (3 hrs)

The student will set up a batch processing line, controlled by computers. This course incorporates programming, interfacing, and troubleshooting of automated systems. The student will also design and produce a product using rapid prototyping.

Prerequisites:

None

Controlling Purpose:

This course is designed to help the student increase their knowledge regarding fundamentals of computer integrated manufacturing.

Learner Outcomes:

Students will learn theory and application of computer integration in a manufacturing setting. Students will be able to describe operations of networks program design and computer design. Students will use these skills in virtual and rapid prototyping.

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

Units Outcomes and Criterion Based Evaluation Key for Core Content:

The following defines the minimum core content not including the final examination period. Instructors may add other content as time allows.

Evaluation Key:

A = All major and minor goals have been achieved and the achievement level is considerably above the minimum required for doing more advanced work in the same field.

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DISCLAIMER: THIS INFORMATION IS SUBJECT TO CHANGE. FOR THE OFFICIAL COURSE PROCEDURE CONTACT ACADEMIC AFFAIRS.

- B = All major goals have been achieved, but the student has failed to achieve some of the less important goals. However, the student has progressed to the point where the goals of work at the next level can be easily achieved.
- C = All major goals have been achieved, but many of the minor goals have not been achieved. In this grade range, the minimum level of proficiency represents a person who has achieved the major goals to the minimum amount of preparation necessary for taking more advanced work in the same field, but without any major handicap of inadequacy in his background.
- D = A few of the major goals have been achieved, but the student's achievement is so limited that he is not well prepared to work at a more advanced level in the same field.
- F = Failing, will be computed in GPA and hours attempted.
- N = No instruction or training in this area.

UNIT 1: Computers And Manufacturing						
Outcomes: Upon completion of this unit, the student will be able to successfully demonstrate understanding of the application of computers to industrial fields.						
A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Understand just-in-time systems and their need for computer support.
						Explain the impact of automated manufacturing and materials handling to workers and companies.
						List and describe uses of computer integrated manufacturing in one industrial sector.
						Identify and explain the different types of computer systems used in automated manufacturing.
						Describe cellular and flexible manufacturing.
						Explain computer aided process planning and information systems and describe how they have influenced manufacturing.
						Understand the computer aided design (CAD) as used in industry.

UNIT 2: Software Development

Outcomes: Upon completion of this unit, the student will be able to successfully identify components of computer aided designs.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						List and describe techniques used in information system design.
						Understand numerically controlled machines and CAD/CAM integration.
						Understand basic NC programming.
						Describe the V-model of design.
						Understand object oriented software development.

UNIT 3: Communication Systems

Outcomes: Upon completion of this unit, the student will be able to successfully utilize computer networking.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Understand the OSI-reference model and OSI based implementation.
						Understand local area networks as they apply in a manufacturing setting.
						List and describe common network protocols.
						Understand the use of data bases such as object and distributed data bases.

UNIT 4: Virtual Prototyping

Outcomes: Upon completion of this unit, the student will be able to successfully apply computer modeling and prototyping.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Understand modeling and model analysis.
						Describe uses of virtual reality in prototyping.
						Describe uses of augmented reality in prototyping.
						Determine efficiency standards for integrated systems.

UNIT 5: Laboratory

Outcomes: Upon completion of this unit, the student will be able to successfully prototype a product.

A	B	C	D	F	N	Specific Competencies
						Demonstrate the ability to:
						Use computer simulation software to design a computer integrated system.
						Use computer simulation software to troubleshoot computer integrated system.
						Build and perform troubleshooting on computer integrated system including programming and interfacing.
						Design and build a component using computer design and rapid prototyping.

Projects Required:

As assigned

Textbook:

Contact Bookstore for current textbook.

Materials/Equipment Required:

None

Attendance Policy:

Students should adhere to the attendance policy outlined by the instructor in the course syllabus.

Grading Policy:

The grading policy will be outlined by the instructor in the course syllabus.

Maximum class size:

Based on classroom occupancy

Course Timeframe:

The U.S. Department of Education, Higher Learning Commission and the Kansas Board of Regents define credit hour and have specific regulations that the college must follow when developing, teaching and assessing the educational aspects of the college. A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one semester hour of credit or an equivalent amount of work over a different amount of time. The number of semester hours of credit allowed for each distance education or blended hybrid courses shall be assigned by the college based on the amount of time needed to achieve the same course outcomes in a purely face-to-face format.

Refer to the following policies:

[402.00 Academic Code of Conduct](#)

[263.00 Student Appeal of Course Grades](#)

[403.00 Student Code of Conduct](#)

Disability Services Program:

Cowley College, in recognition of state and federal laws, will accommodate a student with a documented disability. If a student has a disability, which may impact work in this class which requires accommodations, contact the Disability Services Coordinator.