

IME 100: Interdisciplinary Design and Manufacturing – Summer 2022

Course Syllabus & Class Policies

Class Hours and Location

Location: 1209/1210 Academic Building

Course meeting days and time:

Lecture [Wednesday]	<u>Section – 2</u>	10:15 AM to 12:20 PM
	<u>Section – 3</u>	01:20 PM to 03:25 PM
In-Person Labs [Mondays and Thursdays]	<u>Section – 2</u>	10:15 AM to 12:20 PM
	<u>Section – 3</u>	01:20 PM to 03:25 PM

Instructor Contact Information

Course Coordinator:

Name	Dr. Abishek Balsamy Kamaraj
Phone	810-762-7850
Email	abalsamykamaraj@kettering.edu
Preferred Contact Method	Email or Google Chat
Office Hours	Wednesday: 4:30 PM – 5:30 PM; or by appointment
Office Location	AB 1-700K (IME Department office)

Laboratory Technician:

Name	Mr. Doug Richardson
Phone	810-762-9910
Email	drichard@kettering.edu
Preferred Contact Method	Email
Office Location	AB 1-700L (IME Department office)

Textbook(s)

None; Notes will be provided in class and/or posted on Blackboard. There is a course [YouTube channel](#) for supplementary information.

Course Description

This introductory class exposes students to basic design principles, the materials of manufacture, their structure and properties, and methods of processing them into everyday products. Laboratory experiences provide hands-on experience in many of these processes. An additional laboratory provides experience in engineering design.

Prerequisites: None

Course credits: 4

Course Contact Hours: Lecture-2 Lab-4

Course Learning Outcomes

Through this course students will be able to:

1. Design innovative and complex products using CAD/CAM software.
2. Manufacture functional products utilizing state-of-the-art manufacturing processes.
3. Demonstrate basic robot design, assembly, and control.

Grading Policy

Attendance/Class Participation	50 points (5 points each week; -2 for each missed session/class assignment)
Manufacturing Projects	75 points (25 points each)
Robotics Project	75 points
Total	200 points

>186 = A; 180-186 = A-; 174-180 = B+; 166-174 = B; 160-166 = B-; 154-160 = C+; 146-154 = C; 140-146 = C- ...

More information on individual project grading and rubrics will be posted on the course Blackboard site.

Late assignments will not be accepted, except at the discretion of the instructor pending student contact. Mid-term grades will include attendance, class participation, and partial credit for the robotics project. A passing grade is required on all the projects to pass the class.

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Attendance Policy

Students shall sign in on a Daily Attendance Roster for each in-person session. In-person attendance is mandatory in this class due to the project-based nature of many of the activities. Students are responsible for all material presented in class discussions, assigned readings, written assignments, announcements, syllabus corrections, etc. Active participation is required. Regular Blackboard and email monitoring are expected outside of the classroom using the @kettering.edu email address. Students who are unable to attend a class in person due to any reason are required to inform the instructor before each absence and get course material from a peer in the class. When necessary, students must provide sufficient proof of their inability to attend class at the scheduled time.

Course Preparation & Safety Policy

Students are expected to review assigned material in advance of class, arrive with prepared thoughts, and actively participate in classroom activities and discussions. Students are encouraged to carry their laptops to the class as the CAD/CAM and Robotics activities of the course require a computer. Safety instructions provided by the instructor and the technicians must be followed by the students. Students must wear necessary personal protection equipment (PPE) while the machines are running inside the manufacturing lab.

Blackboard

All course information, assignments, and many important university resources are on the IME 100 Blackboard course site. Students must be familiar with this tool and review all information posted to aid in a smooth and successful transition to Kettering University.

Schedule and Lesson Plan

Week	Manufacturing Lab (Monday)	Lecture (Wednesday)	Robotics Lab (Thursday)	Projects/ HW Due
1	Course Introduction Safety Videos	Introduction to CAD and the coaster project	Form groups; Team policies; Start building and programming	Software Install/Tutorial
2	Lab Tour and Coaster Manufacturing Demos	Introduction to CAM and Engineering drawings	Build and program the original robot.	Robot Part 0
3	Coaster Project	Intro to Manufacturing and Toy Project; Cura Demonstration	Begin Redesign; Intro to VEX VR Programming and the VEX VR Challenge;	Robot Part 1
4	Coaster Project and Toy Project	Intro to Additive Manufacturing	Design, build and program the custom robot. Mock Competition in Week 6	
5	Coaster Project and Toy Project	Intro to Materials and Materials Selection class activity		Coaster Project
6	Instrument and Toy Project	Project Management and Intro to Musical Instrument Project		Instrument Proposal
7	Instrument and Toy Project	Material Properties and Design for AM class activity		
8	Instrument and Toy Project	CAD behind AM and STL modification class activity		Toy Project
9	Labor Day (No Class)	Practice Robotics	Robot Competition	
10*	Musical Instrument Project	Flex lab and Grand Finals	Robot Disassembly	Instrument
11	Toy Donation/Course Review	Reading Day (No Class)	Exam Day (No class)	Robot Part 2-3

*Grand Finals of the robot competitions will be scheduled in Week 10 outside of class hours.

This lesson plan and the accompanying syllabus, schedule, policies, assignments, and testing are subject to change in the event of extenuating circumstances, or by mutual agreement between the Instructor and the Students.

Check the [University Policy Syllabus](#) for university-wide course policies. It is available on Blackboard as well.