New Jersey Institute of Technology
Department of Engineering Technology
MET 103 Engineering Graphics & Introduction To CAD

COURSE NUMBER	MET 103
COURSE NAME	Engineering Graphics and Introduction to CAD
COURSE STRUCTURE	(1-2-2) (lecture hr/wk - lab hr/wk – course credits)
COURSE COORDINATOR/ INSTRUCTOR	Dr. A. Sengupta/ M. Rodriguez
COURSE DESCRIPTION	A first course in Computer Aided Design (CAD), includes lab work using AutoCAD software. Topics include fundamentals of engineering graphics, AutoCAD command structure, setting units and limits, drafting primitives, layering, use of editing tools; grid, snap, and axis commands. Upon successful completion of this course, students should be able to effectively produce two-dimensional drawings using the AutoCAD software program.
PREREQUISITE(S)	None.
COREQUISITE(S)	None.
REQUIRED, ELECTIVE OR SELECTED ELECTIVE	Required.
REQUIRED MATERIALS	Instruments: Pencil, Eraser, Scales (Eng. & Arch.), Triangles (30-60 and 45-45), Compass, Protractor. Text: ***Autodesk Inventor 2023 and Engineering Graphics*** by Randy H. Shih – *SDC* Publications ISBN: 978-1-63057-502-1
COMPUTER USAGE	Inventor Professional 2022

COURSE OUTCOMES (CO)   By the end of the course students should be able to:

1. Read a blue print.
2. Create standard orthographic views of a three dimensional object by using geometric tools (without CAD software).
3. Create a three dimensional object and standard orthographic views by using Inventor.
4. Show dimensions and tolerances of an object by following the rules.
5. Use Inventor to create Sectional, Auxiliary and Detail/Break views of a three dimensional object.

CLASS TOPICS   Introduction to Engineering graphics & CAD, Line types/Geometric constructions, Introduction to Inventor, Scales in Engineering Graphics/Inventor, Shape Description, Orthographic Projections, 3D Visualization, Dimensioning, Sectional Views, Auxiliary Views, Detail/Break views, Axonometric Drawings, Assembly/Working Drawings, Discipline-specific projects.

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STUDENT OUTCOMES

The Course Outcomes support the achievement of the following MET Student Outcomes:

Student Outcome (1) - an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline
Related CO – 1 thru 5

Student Outcome (2) - an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the discipline;.
Related CO – 3 thru 5

GRADING POLICY

Homework	10 %
Project	20 %
Tests (2x20%)	40 %
Final Exam	30 %

Note: There are two tests and a final exam during the semester. There will be no makeup quizzes.

ACADEMIC INTEGRITY

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code, go to http://www.njit.edu/academics/honorcode.php

STUDENT BEHAVIOR

- No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.
- Cellular phones must be turned off during the class hours – if you are expecting an emergency call, leave it on vibrate. No cell phone during exams
- No headphones can be worn in class. No video or audio recording.
- Unless the professor allows the use during lecture, laptops should be closed during lecture.
- During laboratory, if you are finished earlier, you must show the professor your work before you leave class
- Class time should be participative. You should try to be part of a discussion

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MODIFICATION TO COURSE	The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course outline.
PREPARED BY	Max Rodriguez
COURSE COORDINATED BY	Dr. A. Sengupta

CLASS HOURS

Friday   6:00 PM – 8:50 PM   MALL PC39

OFFICE HOURS (TBD)

By appointment

HOMEWORK & PROJECT - IMPORTANT

Homework
- Homework sets are due one week after they are assigned.
  - Late penalty is minus 25% each week.
  - Assignments more than one week late will not be accepted.
- Homework must be submitted in the format provided by the professor.

Project:
The semester project requires <u>all</u> students to have completed the following Makerspace Training courses:
- Make 101 Introduction to the Makerspace
- Make 102 Introduction to Laser Engraving and Cutting
- Make 103 Introduction to 3D Printing

Your instructor will provide the deadline for completion of training.
- Students who are registered for ET-101 during the same semester as this course will receive these trainings.
- All students can sign up for training through the following link:
  - Training Courses for the NJIT Community | NJIT Makerspace

The project will be conducted in teams.
- Projects are due on the dates indicated.
  - No late projects will be accepted.
- Projects should be submitted in the format provided by the professor.

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GRADING LEGEND

GRADE	NUMERIC RANGE
A	90 to 100
B+	85 to 89
B	80 to 84
C+	75 to 79
C	70 to 74
D	60 to 69
F	0 to 59

NJIT ONLINE INFORMATION

The instructor will discuss these requirements on the first day of the course and/or post on their Learning Management System (LMS). Please become familiar

- Webex: http://ist.njit.edu/webex
- Online Proctoring: https://ist.njit.edu/online-course-exam-proctoring

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COURSE OUTLINE

Wk	Date	Topic	Assignments
1	1/20	Introduction to Engineering graphics & CAD (Chapter 1) Pictorials and Sketching-By Hand (Ch. 10) Introduction of Semester Project	Ch. 10-Exercise 1, 4, 5
2	1/27	Parametric Modeling Fundamentals (Ch. 2) Constructive Solid Geometry Concepts (Ch. 3)	Ch. 2-Exercise 1,3,4 Ch. 3-Exercise 1,3,5
3	2/3	Geometric Construction-By Hand & CAD (Ch. 4)	Ch. 4-Exercise 2,4,6
4	2/10	Orthographic Projection and Multiview Constructions-By Hand (Ch. 7: 7-1 thru 7-45) Part 1	Study For Exam
5	2/17	Orthographic Projection and Multiview Constructions-By Hand (Ch. 7: 7-1 thru 7-45) Part 2 **Test #1**	Proposed Project
6	2/24	Model History Tree (Ch. 5) Geometric Construction Tools (Ch. 6) **Proposed Project Due**.	Ch. 5-Review Question 7 Ch. 5-Exercise 2,4 Ch. 6-Exercise 2,4,6
7	3/3	Orthographic Projection and Multiview Constructions (Ch. 7: 7-46 thru 7-84)	Ch. 7-Exercise 1,3,6
8	3/10	Dimensioning and Notes (Ch. 8) Tolerancing and Fits (Ch. 9) Part 1	Ch. 8-Exercise 1,2,4 Ch. 9-Review Qu. 1-6
		NO CLASS 3/17 SPRING BREAK	
9	3/24	Tolerancing and Fits (Ch. 9) Part 2 **Test #2**	Ch. 9-Exercise 1-3
10	3/31	Auxiliary Views and Reference Geometry (Ch. 11)	Ch. 11-Exercise 1, 3
		NO CLASS 4/7 GOOD FRIDAY UNIVERSITY CLOSED	
11	4/14	Section Views & Symmetrical Features in Design (Ch.12)	Ch. 12-Exercise 6, 7
12	4/21	Assembly Modeling and Working Drawings (Ch.14)	Ch. 12-Exercise 1
13	4/28	Threads and Fasteners (Ch. 13)	Project Report & Presentation
14	5/2 (Tues)	**Project Report Due & Team Presentations**	
15	TBD	**Final Examination (Cumulative)**	