New Jersey Institute of Technology
Department of Engineering Technology
MET 103 Introduction to Engg. Tech. Design

COURSE NUMBER	MET 103
COURSE NAME	Introduction to Engineering Technology Design
COURSE STRUCTURE	(1-2-2) (lecture hr/wk - lab hr/wk – course credits)
COURSE COORDINATOR/ INSTRUCTOR	Dr. J. Sodhi/ Dr. Suman Jaiswal
COURSE DESCRIPTION	This course introduces the engineering design process. Students will be introduced to researching an idea, developing design criteria/constraints, concept design, project management techniques, and realization methods. The fundamentals of technical communication will be introduced with topics in engineering graphics, Computer Aided Design (CAD), and engineering/industrial standards. At the conclusion of the course, students are expected to develop and communicate a design project that meets their established criteria.
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 2026 and Engineering Graphics*** by Randy H. Shih – *SDC* Publications ISBN: 978-1-63057-741-4
COMPUTER USAGE	Inventor Professional 2025
COURSE OUTCOMES (CO)	By the end of the course students should be able to: 1. Design a system, component or process that meet specified needs. 2. Produce a prototype of the design and verify that it meets the specifications. 3. Organize credible sources that enhance technical project knowledge and cite in written and oral communication. 4. Develop a comprehensive technical report detailing the design project. 5. Describe the project at various stages through oral and graphical communication. 6. Read and interpret an engineering drawing and identify key information. 7. Construct orthographic and isometric views of an object using manual drafting. 8. Model three dimensional objects and create corresponding engineering drawings using CAD software.

9. Annotate engineering drawings with dimensions and tolerances according to standards.
10. Function effectively as a member as well as a leader of a technical team.

CLASS TOPICS

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

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, 2, 6 thru 9

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 – 1, 2

Student Outcome (3) - an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
Related CO – 3 thru 6

Student Outcome (5) - an ability to function effectively as a member as well as a leader on technical teams.
Related CO – 10

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

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment

by knowing and following the academic code of integrity policy that is found at: NJIT Academic Integrity Code.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.

GENERATIVE AI

Student use of artificial intelligence (AI) is permitted in this course for certain assignments and activities. It is not permitted to be used in the assignments noted by the instructor, as doing so would undermine student learning and achievement of course learning outcomes. Additionally, if and when students use AI in this course, the AI must be cited as is shown within the NJIT Library AI citation page for AI. If you have any questions or concerns about AI technology use in this class, please reach out to your instructor prior to submitting any assignments.

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

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

Dr. J. Sodhi/ Dr. Suman Jaiswal

COURSE COORDINATED BY

Dr. J. Sodhi

CLASS HOURS

Friday	8:30 – 11:20 AM	PC MALL 40

OFFICE HOURS (TBD)

By appointment: sj587@njit.edu

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HOMEWORK & PROJECT – IMPORTANT ANNOUCEMENTS

Homework

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

Project:

The semester project requires all 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.

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

- Canvas: https://canvas.njit.edu/
- Zoom: https://njit-edu.zoom.us/
- Online Proctoring: https://ist.njit.edu/online-course-exam-proctoring

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COURSE OUTLINE

Wk	Date	Topic	Assignments
1	9/5	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	9/12	Parametric Modeling Fundamentals (Ch. 2) Constructive Solid Geometry Concepts (Ch. 3)	Ch. 2-Exercise 1,4 Ch. 3-Exercise 3,5
3	9/19	Geometric Construction-By Hand & CAD (Ch. 4)	Ch. 4-Exercise 2,4,6
4	9/26	Orthographic Projection and Multiview Constructions-By Hand (Ch. 7: 7-1 thru 7-45) Part 1	AI Assignment Study For Exam
5	10/3	Orthographic Projection and Multiview Constructions-By Hand (Ch. 7: 7-1 thru 7-45) Part 2 **Test #1**	Project Proposal
6	10/10	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
7	10/17	Orthographic Projection and Multiview Constructions (Ch. 7: 7-46 thru 7-84)	Ch. 7-Exercise 1,3
8	10/24	Dimensioning and Notes (Ch. 8) Tolerancing and Fits (Ch. 9) Part 1	Ch. 8-Exercise 1,4 Ch. 9-Review Qu. 1-6
9	10/31	Tolerancing and Fits (Ch. 9) Part 2 **Test #2**	Ch. 9-Exercise 1,2
10	11/7	Auxiliary Views and Reference Geometry (Ch. 11)	Ch. 11-Exercise 1
11	11/14	Section Views & Symmetrical Features in Design (Ch.12)	Ch. 12-Exercise 6
12	11/21	Assembly Modeling and Working Drawings (Ch.14)	Ch. 14-Exercise 1
13	11/26 (Wed on Fri Schedule)	Threads and Fasteners (Ch. 13)	Project Report & Presentation
14	12/5	**Project Report Due & Team Presentations**	
15	TBD	**Final Examination (Cumulative)**	