

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

<b>COURSE NUMBER</b>	MET 103
<b>COURSE NAME</b>	Engineering Graphics and Introduction to CAD
<b>COURSE STRUCTURE</b>	(1-2-2) (lecture hr/wk - lab hr/wk – course credits)
<b>COURSE COORDINATOR/ INSTRUCTOR</b>	Dr. J. Sodhi/ Mark Lanfrank
<b>COURSE DESCRIPTION</b>	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.
<b>PREREQUISITE(S)</b>	None.
<b>COREQUISITE(S)</b>	None.
<b>REQUIRED, ELECTIVE OR SELECTED ELECTIVE</b>	Required.
<b>REQUIRED MATERIALS</b>	Instruments: Pencil, Eraser, Scales (Eng. & Arch.), Triangles (30-60 and 45-45), Compass, Protractor. Text: <i>Autodesk Inventor 2025 and Engineering Graphics</i> by Randy H. Shih – SDC Publications ISBN: 978-1-63057-664-6
<b>COMPUTER USAGE</b>	Inventor Professional 2025
<b>COURSE OUTCOMES (CO)</b>	By the end of the course students should be able to: <ol style="list-style-type: none"><li>1. Read a blue print.</li><li>2. Create standard orthographic views of a three dimensional object by using geometric tools (without CAD software).</li><li>3. Create a three dimensional object and standard orthographic views by using Inventor.</li><li>4. Show dimensions and tolerances of an object by following the rules.</li><li>5. Use Inventor to create Sectional, Auxiliary and Detail/Break views of a three dimensional object.</li></ol>
<b>CLASS TOPICS</b>	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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The Course Outcomes support the achievement of the following MET Student Outcomes:

**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**

<b>GRADING POLICY</b>	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.

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<b>STUDENT BEHAVIOR</b>	<ul style="list-style-type: none"><li>• No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.</li><li>• 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</li><li>• No headphones can be worn in class. No video or audio recording.</li><li>• Unless the professor allows the use during lecture, laptops should be closed during lecture.</li><li>• During laboratory, if you are finished earlier, you must show the professor your work before you leave class</li><li>• Class time should be participative. You should try to be part of a discussion</li></ul>
<b>MODIFICATION TO COURSE</b>	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.
<b>PREPARED BY</b>	Mark Lanfrank / Dr. J. Sodhi
<b>COURSE</b>	
<b>COORDINATED BY</b>	Dr. J. Sodhi

**CLASS HOURS**

Thursday      6 – 8:50 PM                      PC MALL 39

**OFFICE HOURS (TBD)**

By appointment: mark.lanfrank@njit.edu

**HOMEWORK & PROJECT – IMPORTANT ANNOUNCEMENTS**

**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 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

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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**

<b>GRADE</b>	<b>NUMERIC RANGE</b>
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**

<b>Wk</b>	<b>Date</b>	<b>Topic</b>	<b>Assignments</b>
<b>1</b>	Jan 23	Introduction to Engineering graphics & CAD (Chapter 1)  Pictorials and Sketching-By Hand (Ch. 10)  Introduction of Semester Project	Ch. 10-Exercise 1, 4, 5
<b>2</b>	Jan 30	Parametric Modeling Fundamentals (Ch. 2)  Constructive Solid Geometry Concepts (Ch. 3)	Ch. 2-Exercise 1,3,4  Ch. 3-Exercise 1,3,5
<b>3</b>	Feb 6	Geometric Construction-By Hand & CAD (Ch. 4)	Ch. 4-Exercise 2,4,6
<b>4</b>	Feb 13	Orthographic Projection and Multiview Constructions-By Hand (Ch. 7: 7-1 thru 7-45 ) Part 1	Study For Exam
<b>5</b>	Feb 20	Orthographic Projection and Multiview Constructions-By Hand (Ch. 7: 7-1 thru 7-45 ) Part 2  <b>Test #1</b>	Proposed Project
<b>6</b>	Feb 27	Model History Tree (Ch. 5)  Geometric Construction Tools (Ch. 6)  <b>Proposed Project Due.</b>	Ch. 5-Review Question 7 Ch. 5-Exercise 2,4  Ch. 6-Exercise 2,4,6
<b>7</b>	Mar 6	Orthographic Projection and Multiview Constructions (Ch. 7: 7-46 thru 7-84 )	Ch. 7-Exercise 1,3,6
<b>8</b>	Mar 13	Dimensioning and Notes (Ch. 8)  Tolerancing and Fits (Ch. 9) Part 1	Ch. 8-Exercise 1,2,4  Ch. 9-Review Qu. 1-6
<b>9</b>	Mar 27	Tolerancing and Fits (Ch. 9) Part 2 <b>Test #2</b>	Ch. 9-Exercise 1-3
<b>10</b>	Apr 10 (No Class on Apr 3 – Wellness Day)	Auxiliary Views and Reference Geometry (Ch. 11)	Ch. 11-Exercise 1, 3
<b>11</b>	Apr 17	Section Views & Symmetrical Features in Design (Ch.12)	Ch. 12-Exercise 6, 7
<b>12</b>	Apr 24	Assembly Modeling and Working Drawings (Ch.14)	Ch. 12-Exercise 1
<b>13</b>	May 1	Threads and Fasteners (Ch. 13)	Project Report & Presentation
<b>14</b>	May 6 (Tuesday on Thursday schedule)	<b>Project Report Due &amp; Team Presentations</b>	
<b>15</b>	TBD	<b>Final Examination (Cumulative)</b>	