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 / Martin Klee

COURSE DESCRIPTION
Basic principle of Engineering Graphics, blueprint reading and geometric constructions are reviewed. Multi-view projections and 3D visualization are introduced. CAD software named Inventor Professional is studied extensively. Using Inventor students learn dimensioning, creating Sectional, Auxiliary and Detail/Break views.

PREREQUISITE(S)
None.

COREQUISITE(S)
None.

REQUIRED, ELECTIVE OR SELECTED ELECTIVE
Required.

REQUIRED MATERIALS

COMPUTER USAGE
Inventor Professional

COURSE LEARNING OUTCOMES (CLO)
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
New Jersey Institute of Technology
Department of Engineering Technology
MET 103 Engineering Graphics & Introduction To CAD

STUDENT OUTCOMES

The Course Learning Outcomes support the achievement of the following MET Student Outcomes and TAC of ABET Criterion 9 requirements:

**Student Outcome a** - an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities.

**Related CLO – 1 thru 5**

**Student Outcome d** - an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives.

**Related CLO – 3 thru 5**

GRADING POLICY

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework &amp; class participation</td>
<td>25 %</td>
</tr>
<tr>
<td>Tests (3x15%)</td>
<td>45 %</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30 %</td>
</tr>
</tbody>
</table>

Note: Grading Policy may be modified by Instructor for each Section in the Course

**Note:** You may not pass the course if you are having failing grades (<60%) on the tests and final exam. There are three tests and a final exam during the semester.

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](http://www.njit.edu/academics/honorcode.php)

STUDENT BEHAVIOR

See Individual Instructor Policies, which can include:

- 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 headphones can be worn in class.
- 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

Martin Klee

COURSE COORDINATED BY

Dr. A.Sengupta
MET103-003, ENGINEERING GRAPHICS & INTRO TO CAD, FALL 2018

Course: MET103, Section 003, Call # 94214, Credits: 2, Contact Hours: 3

When & Where: Mondays, 8:30 am - 11:20 am, Room: Student Mall PC-36 (under the parking deck)

Course Description: A first course in Computer Aided Design (CAD) includes lab work using AutoCAD Inventor software. Topics include fundamentals of engineering graphics, traditional drawing techniques (paper and pencil), and using AutoCAD Inventor software. Upon successful completion of this course, students should be able to effectively produce 3-D models and 2-D Drawings using the AutoCAD Inventor software program to communicate their ideas.

Instructor: Martin Klee  Email: klee@njit.edu


Messages: I'm an adjunct instructor and I do not have an office on campus. The best way to contact me is by E-mail. In an emergency, call Patrice Edwards in the Engineering Technology department 973-596-3228.

Office Hours: We can meet before or after this class or by appointment.


Software: AutoDesk Inventor Professional 2019

Drafting Material: Pencils, Erasers, Ruler / Scales (Eng.), Triangles (30-60 and 45-45), Compass & Protractor.

Homework: Is due ONE week from the day it is assigned. It is due at the beginning of class. No late homework will be accepted.

Exams: Please let me know in advance, if you can't make an exam. If you are sick, bring a medical certificate, or by any official proof of the reason given for the absence. Make up tests are generally significantly more difficult than the regular tests.

Grading: There will be hourly exams and one final exam. [Tentative breakdown: Homework and Class Participation 25%, Exams 45%, Final 30%].

Academic Integrity: Please read http://integrity.njit.edu Students violating the University Code on Academic Integrity will be referred to the Dean of Students Office.

Attendance: It is very important to come to class. I will be taking attendance. If you can’t make it, please let me know before class.

Commitment: In order to succeed in this class, you need to make a serious commitment to read the book and to do the homework.

Questions: Please ask lots of them. The only bad questions are those not asked!
# New Jersey Institute of Technology  
Department of Engineering Technology  
MET 103 Engineering Graphics & Introduction To CAD

## Topics and Tentative Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Reading Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sep 10, 2018</td>
<td>Introduction to Engineering Graphics and CAD. Download Autodesk Inventor.</td>
<td>Ch. 1</td>
</tr>
<tr>
<td>2</td>
<td>Sep 17, 2018</td>
<td>Parametric Modeling Fundamentals. CAD History. 2D versus 3D.</td>
<td>Ch. 2</td>
</tr>
<tr>
<td>3</td>
<td>Sep 24, 2018</td>
<td>CSG (Constructive Solid Geometry) concepts. Design Process.</td>
<td>Ch. 3</td>
</tr>
<tr>
<td>4</td>
<td>Oct 1, 2018</td>
<td>Geometric Constructions, using manual drafting and Inventor.</td>
<td>Ch. 4</td>
</tr>
<tr>
<td>5</td>
<td>Oct 8, 2018</td>
<td>Model History Tree and <strong>Test 1 on Ch. 1 to 4</strong> (on paper and computer)</td>
<td>Ch. 5</td>
</tr>
<tr>
<td>6</td>
<td>Oct 15, 2018</td>
<td>Geometric Construction Tools and Intro to Orthographic Projection.</td>
<td>Ch. 6 &amp; 7</td>
</tr>
<tr>
<td>7</td>
<td>Oct 22, 2018</td>
<td>Creating Drawings, with Dimensions and Notes. STL files and format.</td>
<td>Ch. 7 &amp; 8</td>
</tr>
<tr>
<td>8</td>
<td>Oct 29, 2018</td>
<td>Machined Holes and Dim in ISO view. Tolerancing and Fits. <strong>(GD&amp;T)</strong> Sample U-Bracket part. Sweeps and Lofts. <strong>Test 2 on Ch. 5 to 8</strong> (on paper and computer)</td>
<td>Ch. 8 &amp; 9</td>
</tr>
<tr>
<td>9</td>
<td>Nov 5, 2018</td>
<td>Pictorials &amp; Sketching. <strong>Ch. 10 Exercises. Graphical Projections. Oblique Projections.</strong> More on Sweeps and Lofts.</td>
<td>Ch. 10</td>
</tr>
<tr>
<td>10</td>
<td>Nov 12, 2018</td>
<td>Auxiliary Views and Section Views and Symmetric Features</td>
<td>Ch. 11</td>
</tr>
<tr>
<td>11</td>
<td>Nov 19, 2018</td>
<td>Section Views and Symmetric Features (Revolve, Mirror, and Pattern). Review of <strong>Isometric Sketching</strong> and <strong>Oblique Sketching</strong>. <strong>Test 3 on Ch. 9 to 12</strong> (Opt)</td>
<td>Ch. 12</td>
</tr>
<tr>
<td>12</td>
<td>Nov 26, 2018</td>
<td>Threads and Fasteners, Intro to Assemblies. <strong>Assembly101. Drawing Sizes</strong></td>
<td>Ch. 13</td>
</tr>
<tr>
<td>13</td>
<td>Dec 3, 2018</td>
<td>More on Assemblies, Mates and Assembly Drawings. Interference, Examples</td>
<td>Ch. 14</td>
</tr>
<tr>
<td>14</td>
<td>Dec 10, 2018</td>
<td>Intro to Ch 15, Review, and Student Presentations</td>
<td>Ch. 15</td>
</tr>
<tr>
<td>15</td>
<td>TBD</td>
<td><strong>Final Exam</strong> (on paper and computer) - Cumulative.</td>
<td>Cumulative</td>
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