MET 103-002: Engineering Graphics and Introduction to CAD

Sahidur Rahman

Follow this and additional works at: https://digitalcommons.njit.edu/saet-syllabi

Recommended Citation
https://digitalcommons.njit.edu/saet-syllabi/84

This Syllabus is brought to you for free and open access by the NJIT Syllabi at Digital Commons @ NJIT. It has been accepted for inclusion in School of Applied Engineering and Technology Syllabi by an authorized administrator of Digital Commons @ NJIT. For more information, please contact digitalcommons@njit.edu.
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. S. Rahman

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  
Instruments:  Pencil, Eraser, Scales (Eng. & Arch.), Triangles (30-60 and 45-45), Compass, Protractor.

COMPUTER USAGE  
Inventor Professional 2020

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  

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>20%</td>
</tr>
<tr>
<td>Tests (3x15%)</td>
<td>45%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
</tr>
</tbody>
</table>

**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**

- 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 COURSE COORDINATED BY**

Dr. S. Rahman

Dr. T. Juliano
<table>
<thead>
<tr>
<th>Week #</th>
<th>Date</th>
<th>Topic</th>
<th>Chapter (Assignments)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Introductio to Engineering graphics &amp; CAD 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pictorials and Sketching (BY HAND)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Geometric Construction (BY HAND)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orthographic Projection and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiview Constructions (BY HAND)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Parametric Modeling Fundamentals 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Constructive Solid Geometry Concepts 3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Geometric Construction 4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Model History Tree, Test #1 5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Geometric Construction Tools 6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Orthographic Projection and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiview Constructions 7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Dimensioning and Notes 8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Tolerancing and Fits, Test #2 9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Pictorials and Sketching 10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Section Views &amp; Symmetrical Features in Design 12</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Auxiliary Views and Reference Geometry 11</td>
<td></td>
</tr>
<tr>
<td><strong>Test #3</strong></td>
<td></td>
<td>Break view &amp; Detail view</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Threads and Fasteners 13</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Assembly Modeling and Working drawings 14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>TBA</td>
<td><strong>Final Examination (Cumulative)</strong></td>
<td></td>
</tr>
</tbody>
</table>
CLASS HOURS
Thursday 1:00 PM – 3:50 PM FENS 160

OFFICE HOURS (GITC 2105)
Monday 2:00 PM – 04:30 PM (by appointment only)
Tuesday 1:00 PM – 02:20 PM
Wednesday 1:00 PM – 02:20 PM
Friday 10:45 AM – 02:20 PM (by appointment only)

by appointment contact: (973) 596-6072 or rahman@njit.edu

HOMEWORK - IMPORTANT
Homeworks are due the week following the date they are assigned, and must be given to the instructor.