Required Materials

Textbooks:

Reference:


Chapter 10– ENGINEERING ETHICS (p. 427 – 468)
- Ethics and the University
- The Foundation of Ethics
- Ethics in Engineering
- Legal and Responsibilities of Engineers
- Codes of Ethics
- Codes Rules and Interpretations
- The NSPE Code of Ethics for Engineers

Drawing Materials:
- Mechanical pencils
  - 0.7 mm with HB lead
  - 0.5 mm with HB & 4H
- White plain (unlined) paper (8-1/2" X 11")
- Sheets of isometric lined paper.
- Scales / ruler, a set of triangles (30-60-90 and Isosceles).

Miscellaneous:
- NJIT Academic Honor Code will be upheld, and any violations will be brought to the immediate attention of the Dean of Students – visit http://www.njit.edu/academics/honorcode.php.
- For any modifications or deviations from the syllabus throughout the course of the semester, instructor will consult with students and the students must agree to.

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<tr>
<th>Week Number</th>
<th>TOPICS</th>
<th>Reading Assignment</th>
<th>Workbook Exercises/Quizzes Special Assignments</th>
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| 1           | Lecture:  
- Introduction - Design Process & Technical Graphics used in the design process (p.1).
- ENGINEERING ETHICS – Hand-out and Review
- Overview of traditional drawing tools (p.21): pencils, compass, triangles, and etc.
- ANSI Standard Sheet Sizes (p.23).
- ANSI Standard Title Blocks and Borders | Chapter 1, 2 | Pro/ENGINEER CAD assignment |
- CAD: Computer as technical drawing tool; Pro/ENGINEER as a solid modeling software package.

**Lab:**
- Introduction to Pro/ENGINEER

### Lecture 2
- Alphabet of Lines (p.14).
- Line Drawing Techniques.
- Scales (p.23).
- Hand and CAD Lettering a Technical Drawing (p.57).
- Freehand Sketching Techniques (p.38-51).
- Coordinate Space (p.80).
- Classification of Geometric Elements and Construction (p.87).
- 3-D Modeling (p.113).

Read Chapters 1-2, Chapter 3

**Lab:**
- Pro/ENGINEER: Lesson 2 – Creating a Simple Object Part I

### Lecture 3
- Engineering Geometry Chapter 3
- Introduction to Projections – multiview, isometric (one type of axonometric), oblique, and perspective (p.196).

**Lab:**
- Pro/ENGINEER: Lesson 3 – Creating a Simple Object Part II (Hole, Chamfer, Round etc.)
- Pro/ENGINEER: Lesson 3 – Implementing Design Intent using Relations (simple equations)

### Lecture 4
- Visualizing a multiview drawing (p.199).
- The Six Principal Views (p.202) – First and Third angle projections.
- Multiview sketching (p.211).
- Multiviews from 3-D CAD Models (p.220)

**Lab:**
- Pro/ENGINEER: Lesson 4 – Revolved Protrusions, Mirror Copies, Model Analysis

### Lecture 5
- View Selection (p.220).
- Fundamental Views of Edges and Planes for Visualization (p.223-232)

**Lab:**
- Pro/ENGINEER: Lesson 5 – Obtaining Information about the Model; Suppressing and Resuming Features; Modifying Feature Definitions; Insert Mode

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Chapter 1, 2, and 3

Assignments on Isometric Sketches

Chapter 3, 5

Quiz #1 covering Engineering ethics, Isometric Sketches and questions on Reading Assignments Chapters 1-2/Class Notes. Multiview Chapter 5 Problems.

Chapter 5

Handout Exercises

Chapter 5

Chapter 5 - Problems
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| 6    | Lecture:  
• Multiview Representation for Sketches (p. 232-241).  
• ANSI Standards for Multiview Drawings and Sketches (p.241)  

Lab:  
• Pro/ENGINEER: Lesson 6 – Sketcher Tools and Datum Planes | Chapter 5 | Quiz #2 Chapter 5/ Multiview Drawings. |
| 7    | Lecture:  
• Visualization for Design (p.246).  
• Multiview Drawing Visualization (p.259)  
• Dimensioning, Size and Location Dimensions, Detail Dimensioning & Dimensioning Techniques (p.434-455)  

Lab:  
• Pro/ENGINEER: Lesson 7 – Patterns and Copies | Chapter 5, 9 | Assignments decided by Instructor |
| 8    | Lecture:  
• Auxiliary View Projection Theory (p.312)  
• Auxiliary View Classifications (p.315)  
• Auxiliary View Applications (p.323)  
• Auxiliary View in CAD  

Lab:  
• Pro/ENGINEER: Lesson 8 – Engineering Drawings | Chapter 6 | Handout Ex. |
| 9    | Lecture:  
• Pictorial Projections – Axonometric Projections (Isometric, Dimetric and Trimetric); Oblique Projections; Perspective Projections.  
• Section Views in Isometric Drawings  
• Isometric Assembly Drawings  

Lab:  
• Pro/ENGINEER: Lesson 8 – Engineering Drawings (Continued ...) | Chapter 7 | Handout Ex. |
| 10   | Lecture:  
• Section Views – Sectioning Basics, Section View Types and Special Sectioning Conventions.  
• Section Views using 3-D CAD Techniques  

Lab:  
• Pro/ENGINEER: Lesson 8 – Engineering Drawings (Continued ...) | Chapter 8 | Project Assignment |
| 11   | Lecture:  
• Tolerancing – Interchangeability (p.455).  

Lab:  
• Pro/ENGINEER: Lesson 9 – Assembly Fundamentals and Constraints | Chapter 9 | Working on Project |
| 12   | Lecture:  
• Tolerance Representation | Chapter 9 | Working on Project |
- Tolerances in CAD

**Lab:**
- Pro/ENGINEER: Lesson 10 – Assembly Operations (Information, Part Modifications, Exploding Assembly, Create Sections etc.)

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<td>• Working Drawings and Assemblies – Basic Concepts; Working Drawings; Part Lists etc.)</td>
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<td>• Working Assembly Drawings.</td>
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<td>• Review</td>
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<td>• Pro/ENGINEER: Lesson 11 – Sweeps and Blends</td>
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Note: Assignments may vary as determined by your instructor.