1 Credit, 3 Class Hours

Course Description: This course will provide theory and training on basic electrical and mechanical drawing. The student is introduced to graphic communication through the use of instruments and the drawing of charts and graphs. Problem solving is presented step by step. The mechanical drawings illustrate basic geometric construction technique and multi-view projections, as well as the dimensioning of objects. Electrical and electronic drawings are developed so that the student may draw them manually with a template. The student progresses from simple block diagrams to the more complex industrial wiring diagrams. Standard symbols and representations used in the electromechanical field will be stressed.

Pre-requisites: None

Textbook: Introduction to Electrical-Mechanical Drafting with CAD Pearson Prentice Hall, Bethune & Svatik


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Office Hours (See Page 4)

Goals/Objectives: As technicians in the field, graduates must be able to interpret electrical and mechanical drawings and make clear sketches for effective troubleshooting. This course introduces students to basic techniques in interpreting solid objects, electrical and electronic symbols, block diagrams and schematic wiring diagrams. The student should understand the drawings used in the manufacture and production of a product.

Laboratory Projects: 20 drawings described under Topics (Weekly).

Computer Usage: Not required

Oral and Written Communication Requirements: Orally describe assembly drawings

Calculus Usage: Not required

Library Usage: Students are encouraged to use the library as a supplement to the lectures and textbook.
**Attendance:** Under CUNY mandate, attendance in EACH class is REQUIRED and attendance WILL be taken at each class meeting. You are allowed a MAXIMUM of 2 absences. If you exceed that number, you may receive a WU grade. EXCESSIVE LATENESS (more than 5 minutes) will be considered to be an absence from that class meeting.

**Evaluation:** The final grade will be: 95% from the average of 20 projects. Work is due at the very beginning of the session after it is assigned. Late work will lose a grade and more for additional weeks. Work more than 3 weeks late will not be accepted. There are numerous reasons for this policy: 1) You will not miss the day’s lesson because you’re doing late homework. 2) You will not be interrupting the class, running up with late homework during the lesson. Bring late work up after the lesson. 3) You stay current with the material. 4) You get a little sense of a real job in the real world. 5) You will get the most from this class. This method has had the most success at getting most of the students to learn this subject. 5% of your grade comes from Class Participation. This will not be limited to asking and answering questions. There may be some surprise quizzes. Cell phone ringing and any other distracting behavior will affect this grade. Neither food nor drink is allowed in this classroom.

**Materials:** Drafting Supplies: (These may be obtained from the following sources: our college bookstore; WC Art and Drafting at 351 Jay St; an art and drafting supply store near where you live, work, or choose; online. These supplies are needed for the next session.)

1. Quadrille pad (8.5 x 11)
2. Tape, masking, half inch
3. # 2 Pencil (quantity of at least 2) or Drafting Pencil (with sharpening method)
4. 30-60-90 Degree Triangle
5. Electronic Template
6. Digital Template (optional, but recommended)
7. Compass with lead and sanding block
8. Flat scale, Charvoz No. 783 or Pacific Arc 202, or equivalent. One side says 32, and measures in fractions, every 1/32". The other side says 50, and measures in decimals, every 0.02" (or every 1/50 of an inch)
9. Eraser shield
10. Engineering graph paper (20 squares per inch)- a sample is shown on LM pg. 16.
Helpful Hints:
1) You may get assistance in the Tech Learning Center.
2) Do your homework and seek help immediately for any difficulties that arise.
3) Study in groups. Studies have shown that students who study in this manner perform better in all of their classes. SO MAKE FRIENDS.
4) DO NOT wait until the night before work is due to get help. If there is something that you do not understand, get help immediately.
5) Students who are failing should consider officially withdrawing on or before the Withdrawal Date (See Page 4) to avoid an F or WU grade.

Topics: (Weekly)
1) Orientation, Tools
   A: (A will be used to indicate the weekly assignment) Get the text (which we’ll look at extensively during class) and the tools. You need your own text, tools, and this LM (Lab Manual) for every class. Missing text, tools, or Lab Manual means you are unprepared to work and you will be marked “absent”. Read Text chapters 1 and 3.

2) Lettering
   See Pg. 50 of text. Measuring with a scale (For extra help, go to the Tech Learning Center on the 2nd floor in the Voorhies building), Format – See Pg. 5 of the LM.
   A: Project # 1 – Lettering. Lettering Sample Pgs. 6 & 7 of LM. Read in Text, Ch 11, Sections 11.1 and 11.5 and Pgs. 278-280.

3) Schematic Symbols, Templates.
   A: Project # 2 – Electronic Symbols. Redraw electronic symbols from LM Pgs. 8-10, using your template as much as possible. Read Text, Ch 12 to Pg. 300.

4) Schematics
   A: Project # 3 – AM Broadcast Band Transmitter. See Text Pg. 306, Figure P12-4.

5) Schematics
   A: Project # 4 – Schematic 1. Text Pg. 309, Fig. P12-7
   Project # 5 – Schematic 2. Text Pg. 310, Fig. P12-8

6) Simple Amplifier and Simple Power Supply Schematics
   A: Project # 6 – Simple Amplifier. LM Pg. 11
   Project # 7 – Simple Power Supply. LM Pg 12

7) Schematics
   A: Project # 8 – Schematic 3. LM Pg. 13
   Project # 9 – Schematic 4. LM Pg. 14
   Read Text Pgs. 294 and 297-300. Study Figs. 12-6 & 12-7
8) Integrated Circuits
   A: Project # 10 – 8 Watt Amplifier. Text Pg. 311, Fig. 12-10
   Project # 11 – Low Level Video Detector. Text Pg. 311,
   Fig. 12-11. Read Text, Section 10-3 & 10-4. If you have
   purchased the optional digital logic template, bring it in for
   the next session.

9) Logic Symbols and Circuits, Binary Code, Truth Tables, and
   Boolean Algebra
   A: Project # 12 – Logic 1. Text, Page 268 Fig. P10-7 (on the
   LEFT). And Project # 13 – Logic 2. Text Pg. 268 Fig. P10-6.
   With both of these Projects, include Boolean Equations and
   Truth Tables. Bring Engineering Graph Paper to the next
   Session. There is a sample of it on LM pg. 16.
   Read in Text, in Section 2.4, Pgs. 34-40.

10) Graphing, Slider Crank Mechanism
    See LM Pgs. 15-18.
    A: Project # 14 ( A graph that you will entitle). Read Pgs. 90-93
        and 101-109.

11) Orthographic Projection
    A: Project # 15 – Orthographic 1. Fill in, remove, and turn in
        LM Pgs. 19 & 20 for one grade for both together.
        Project # 16 – Orthographic 2. Text Pg. 113, Fig. P5-8
        Project # 17 – Orthographic 3. Text Pg 114, Fig. P5-16

12) Orthographic Projection of Lab Samples
    A: Project # 18 – Orthographic 4. Draw 1 lab sample.
        Read Text Pgs. 157-168.

13) Isometric Drawings of Lab Samples
    A: Project # 19 – Isometric 1.
        Draw 1 lab sample.

14) Isometric Drawings
    A: Project # 20 – Isometric 2.
        Draw 1 lab sample.

15) Isometric Drawings, All Projects Due

**Academic Integrity Statement:** Students and all others who work with information,
ideas, texts, images, music, inventions, and other intellectual property owe their
audience and sources accuracy and honesty in using, crediting, and citing sources. As a
community of intellectual and professional workers, the College recognizes its
responsibility for providing instruction in information literacy and academic integrity,
offering models of good practice, and responding vigilantly and appropriately to
infractions of academic integrity. Accordingly, academic dishonesty is prohibited in the
City University of New York and at New York City College of Technology and is
punishable by penalties, including failing grades, suspension, and expulsion.

**Fall 2008:**
Office Hours: Mon & Tues 10:45-11:30AM; Thurs 8-10AM & 12:30-1PM
Withdrawal Date: 11-12-2008

**Prepared By:** Robert Armstrong    Date: 7-29-2008