

	<b>Drafting &amp; Design Engineering Technology</b>	<b>Northwest College</b>
<b>Spring 2013 CNR #33031</b>	<h1 style="text-align: center;">Syllabus</h1>	<b>DFTG-1329 Electromechanical Drafting</b>
Semester Credit Hours (SCH): <b>96</b> Credit Hours: <b>3</b> Format: Lecture: <b>1/3</b> Lab and/or Web: <b>2/3</b> Weekly: 6 hrs (include online for Web Enhanced class) (8 hrs for 2 <sup>nd</sup> Start term, 9.6 hrs for Summer term) For Web-enhanced (WE) class, please see your instructor	<b>Professor/Instructor:</b> <b>Francis Ha, BS, MA, Lead Faculty</b> <b>Phone number: 713-718-5544</b> <b>Email: <a href="mailto:francis.ha@hccs.edu">francis.ha@hccs.edu</a></b> <b><a href="mailto:fh.class@yahoo.com">fh.class@yahoo.com</a></b>	<b>Office:</b> <input type="checkbox"/> <b>Spring Branch campus, Suite 200</b> Visit <a href="http://learning.hccs.edu">learning.hccs.edu</a> for more info.

12-0828

**PREREQUISITE:** DFTG 1305, DFTG-1309, and basic computer skills

**COURSE DESCRIPTION:** A basic course including layout and design of electro-mechanical equipment from engineering notes and sketches. Emphasis on drawing of electronic equipment control panels, interior hardware, exterior enclosures detailed and assembly drawings with a parts list, and a flat pattern layout.

**TEXTBOOK:** "Introduction to Electromechanical Design",  
by Francis Ha, published by Dynamic Design Group. 7<sup>th</sup> 2010.

**MATERIALS REQUIRED:** A **flash drive** (2GB or larger recommended) with USB connector.

**COURSE OBJECTIVES:** Upon successful completion of the course, the student will be able to demonstrate a basic concept of electro-mechanical drafting and design in the engineering technology.

**KNOWLEDGE:**

- Understand the relationship between electronic and electrical parts in electronic and electrical system.
- Ability to design the basic engineering system using electromechanical devices.
- Ability to draw basic electro-mechanical related parts and devices such as fastening method, sheet metal, control panel, linear-motion and thermal control applications.

**BASIC COMPUTER SKILL REQUIREMENTS**

Before taking this class, student must be familiar with the basic functions of Microsoft Windows. If you are not comfortable using a computer and working with MS Windows, you should not take this class. Basic functions include the use of keyboard, mouse, and printer. You must also be able to perform the following tasks:

- **Windows Operating System:** Use the Start menu, create folders, use desktop icons, work with MyComputer, Copy or Move files/folders to other location, use Search to locate files and folders, Minimize/Restore Windows. Ability to use computer to search online for assigned projects.
- **Applications:** Cut, Copy, and Paste texts, Rename, use Save / SaveAs functions.

**CLASS RULES**

- a. **All cellulars and pagers must be turned off during the class meeting.**
- b. **You must initial the Sign-In Blue Form for every class meeting.**
- c. If you are not be able to make the class, please notify your instructor as early as possible by email.
- d. Do not change computer's current Windows settings, including the screen saver, AutoCAD display.
- e. It is recommended that students save assignments to the jump drive before leaving.
- f. At the last day of the semester, please save your work to your flash drive, not the computer's hard drive.
- g. Unless otherwise instructed, please do not shut down your computer before leaving.

**LAB USE**

- Students can use the lab other times during the weekdays. Please refer the Lab Open Hours posting at the door.
- If you see a class in process during the Lab Open Hour, please get the permission of the instructor who is teaching. Please be noted that he instructor does not have to answer questions that you may have regarding of the assignments of your own class. Lab assistant may or may not be available during the lab open hours.

- ATTITUDES/BEHAVIORS:**
- a. Must be able to work as a team.
  - b. Show respect for others
  - c. Practice safe habits including wearing safety glasses.

**SCANS SKILLS:** The Department of Labor has identified skill sets that U.S. employers want most in entry level employees. It is our commitment to prepare every student with the knowledge and skills needed to succeed in today's dynamic environment. Toward this end the following skills will be included in this course:

- **Decision making:** specifies goals and constraints, generates alternatives, considers risks and chooses best alternative.

- Organize/maintain information: Organizes, processes, and maintains written or computerized records and other forms of information in a systematic fashion.
- Arithmetic: performs basic computations; uses basic numerical concepts such as whole numbers and percentages in practical solutions, makes reasonable estimates of arithmetic results without a calculator and uses tables, graphs, diagrams, and charts to obtain and convey quantitative information.

The student will be presented problems in which they must establish their objective and organize and maintain appropriate documentation and dimensioned drawing details in achieving that objective.

**COURSE WORK:** The course will consist of Study Guide and textbook reading assignments, lectures, class exercises, and drafting lab assignments. *The student is expected to read and study the text before the lecture on the unit.* Study Guide units will be assigned either as homework or class work, at the instructor's option.

**Note:** Refer to the "Course Outline & Assignment" document for scheduled weekly activities - Refer to the "Drafting Equipment & Supplies" list for drafting equipment requirements. The student should bring the Study Guide, textbook, and drafting instruments every day, if needed, unless otherwise instructed.

**COURSE EVALUATION PROCEDURE:** The student will be evaluated and receive a final grade based upon the following criteria:

- Laboratory work consisting of assigned technical drawing problems.
- A minimum of two tests: (a mid-term and a final examination):  
*NOTE: Individual instructors may schedule more tests if desired.*
- Class and laboratory attendance, active participation in class, professional attitude and growth in terms of technical skill development and teamwork within the laboratory environment shall be taken into consideration.

Note: Students are required to initial his/her name on the provided form (Green Form) upon showing up to the class.

**GRADING PROCEDURE:**

**A = 90 – 100      B = 80 – 89      C = 70 – 79      D = 60 – 69      F = below 59**

The drawing portion of the above evaluation criteria shall be based to the following portions of the drawing development:

Layout	25%;	Dimensional accuracy	40%;	Neatness	25%;	Timely completion	10%.
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**STUDENT EVALUATION**

Attendance (lecture session)	20%
Drawing assignments	40%
Chapter Exams	10%
Final Project	20%
Final Exam	<u>10%</u>
<b>Total:</b>	<b>100%</b>

**ASSIGNMENTS**

You will be given a number of assignments after the lecture. Unless otherwise permitted by the instructor, all assignments need to be turned in the following week.

**Notes:** If the same assignment contains more than 2 sheets (i.e. 1A & 1B), you need to staple them together. *Please **do not** staple multiple assignments together (i.e. Assignment 1 to Assignment 2, etc...)*

**LATE ASSIGNMENT POLICY:** Students are encouraged to turn assignments in on time if at all possible. This allows the instructor to grade the work, return it to the student and the student use the feedback as a learning tool. *Reduction of points could be applied to late submissions. In general, a minus 5% would be applied to every late week.*

**MAKE-UP TEST/PROJECT POLICY:** The student must request a make-up test and it should be scheduled at the earliest possible date following the quiz (or mid-term) missed. NO make-up test are given for the final examination.

**EXTRA CREDIT:** Extra credit work is offered only to assist students that have a grade range of “D” or “F” at the mid-term break. This work cannot be substituted for regular assignments and can only raise the final grade to a maximum of a “C”.

**STUDENTS WITH DISABILITIES**

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc) who needs to arrange reasonable accommodations for the classroom and/or testing must contact the appropriate HCC Disability Support Service (DSS) Counselor at the beginning of each semester. Faculty is authorized to provide only the accommodations requested by the Disability Support Services Office. Students who are requesting classroom and/or testing accommodations must first contact the DSS office for assistance prior to the beginning of each semester. At Northwest college, please call 713.718.5422.

**CLASS ATTENDANCE:** **You are expected to attend all lecture classes and labs.** You are also responsible for all materials covered in either lecture or lab. In the case of your absence, you must contact the instructor to obtain make-up assignments or arrange make-up testing, either of which can be distributed at the instructor’s discretion. Class attendance is checked daily. The instructor has the authority to drop you from the class for excessive absences, that is, you may be dropped from a course after accumulating absences in excess of 12.5 percent of the total hours of instruction (lecture and lab).

For example: - A 3 credit hour lecture/lab class meeting 6 hours per week – 2 absences (12 hrs.) is 12.5% of the class.

- A 3 credit hour lecture/lab class meeting 3 hours x2 times per week – 4 absences (12 hrs.) is 12.5% of the class.

Administrative drops are at the discretion of the instructor. It is your responsibility to drop a course, should you choose not to complete it. Failure to withdraw officially will result in you receiving a grade of "F" in the course.

**Note:** *Although it is your responsibility to officially withdraw from a course, it is always a good idea to discuss any attendance problems with your instructor first. Class attendance is very important, but your instructor may be able to help you catch up. If you become ill or know you are going to miss class for some reason, tell your instructor as soon as possible.*

Departments and programs governed by accreditation or certification standards may have different attendance policies.

**RELIGIOUS HOLIDAYS:** If you observe a religious holiday and miss class, you must notify your instructor in writing two weeks in advance to arrange to take a test or make up an assignment. A religious holiday is "a holy day observed by a religion whose place of worship is exempt from property taxation under Section 11.20, Tax Code."

**SCHOLASTIC DISHONESTY:** Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. College System Officials may initiate penalties and/or disciplinary proceedings against a student accused of scholastic dishonesty. "Scholastic dishonesty" includes, but is not limited to, cheating on a test, plagiarism, and collusion.

"Cheating" on a test includes:

- Copying from another student's test paper;
- Using materials during a test that are not authorized by the person giving the test;
- Collaborating with another student during a test without authority;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of an un-administered

test;

- Bribing another person to obtain a test that is to be administered.

"Plagiarism" means the misuse of another's work and the deliberate incorporation of that work into work you offer for credit.

"Collusion" means the unauthorized collaboration with another person in preparing work offered for credit.

Determination of scholastic dishonesty will be at the discretion of the instructor.

Reference the following web link for additional information: <http://northwest.hccs.edu>

**\*The Final Examination Date & Time:**

Will be notified by the instructor.

**Notice:** Students who repeat a course three or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test-taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available."

**EGLS<sub>3</sub>-- Evaluation for Greater Learning Student Survey System** *(since Fall.2011)*

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction

## COURSE CALENDAR

**Week 1** Introduction to Electromechanical Design  
Chapter 1 Design and Drafting Techniques  
ANSI Standard - ISO 9000

**Assignment 1**  
ISO 9000 video review

**Week 2** Chapter 2. Fastening and joining methods  
Method of soldering, bonding, threaded and  
Unthreaded fastening

**Assignment 2**  
Fastening and joining methods

**Week 4** Chapter 3. Wire, Cable, and Harness assembly  
method

Cable materials, jacket, wire insulation,  
connectors, TB layout, markers, heat-  
shrinkable tubing standard.

**Assignment 3**  
Harness assembly

**Week 5** Wire, Cable, and Harness assembly (continued)

**Assignment 4**

**Week 6 - Quiz #1**

Chapter 4. Linear - Motion Applications  
Loudspeaker and Microphone structures and  
specifications

**Assignment 5**

**Week 7** Chapter 5. Switches and Relays

**Assignment 6**

Mid Term Exam. review

**Week 8 Mid Term Project**

Relay Applications ( continued)

**Week 9** Chapter 6. Thermal Control

Heatsink block, Blower, Thermo-electric Cooler

**Assignment 7**

**Week 10** Chapter 7: System Control Panel Design

Design, layout, photography, and Silk Screen  
processing methods

**Assignment 8**

**Week 11 - Quiz #2**

Chapter 8: Sheet Metal Design

**Assignment 9**

**Week 12 Final Project**

**Week 13 Assignment 10** (bonus)

**Week 14** Final Project ( continued)

**Week 15** Final Project ( continued)

All Assignments and Final Project due

**Week 16 - Final Exam**