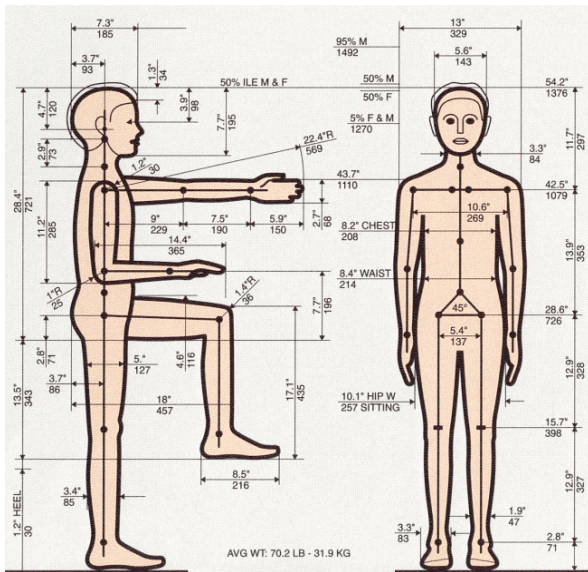


Industrial Design and Manufacturing



Course Syllabus CG-255

Computer Aided Design
Division of Technology
Bay de Noc Community College

Jerry Havill
Winter – 2007

1. Course Information

Title _____ Industrial Design and Manufacturing
Number _____ Cg-255
Section _____ 1
Credit / Contact Hours _____ 4/6
Prerequisites _____ CG125, CG135, or Permission of Instructor
Classroom Number _____ HATC - 405
Days and Hours When Class Meets _____ Monday & Wednesday – 2:45 – 5:23 pm

2. Instructor Information

Name _____ Jerry Havill
Office Location _____ 406
Office Hours _____ M - R – 2:08-3:45 & M-T 5:23-6:00 & W 4:45-6:00
Voice Mail _____ 1206
Email _____ havillj@baycollege.edu
Office Phone _____ 786 - 5802 Ext. 1206
CAD Lab Phone _____ 786 - 5802 Ext. 1144
Home Phone _____ 906-474-9220
Mailing Address _____ PO Box 142, Escanaba, MI

3. Text, References, Materials

Text: Cassette: **The 7 Habits of High Effective People**, Covey Stephen R.,
Nightingale-Conant Corp., 1990 (Cassette sets may be rented for
the semester for a \$5.00 fee. Lost or damaged cassettes will result
in a \$57.00 charge to the student. An incomplete will be given in the
course until the charge is paid. Receipts are available upon request.)

Dreyfuss, Henry **Designing for People**, Allworth Press, 2003

References: Bertoline, G., et al. **Technical Graphics Communication.**
Richard D. Irwin, Inc. Latest Edition

- Materials:
- A. One 4' x 8' sheet of A-A 3/4" Plywood.
Two 4' x 8' sheets of double corrugated cardboard.
 - B. Three Ring Notebook (*The notebook is required for each class session. Notes of sufficient detail are required for each class session.*)
 - C. 128MB Pen Drive
 - D. Paper and ink for drawings will be provided. (*Check prints should not include the raster image.*)
 - E. Model material for bridges will be provided.
 - F. Other project materials are provided by student.

4. **Catalog Description\Course Goal**

A study of the systematic processes controlling and guiding product development and design. Topics include aesthetics, evaluation, design principles, and design processes. Emphasis is placed on team problem solving.

Prerequisites: CG 125, CG 135, or Permission of Instructor

5. **Course Objective**

As a member of a design team; graduates will design, document, fund, and build a product.

6. **Learning Objectives**

#	Performance	Conditions	Criteria	Assessment
1	Design and construct a toothpick structure,	using a class defined rule set,	within the time frame specified.	Project evaluation based on design criteria and craftsmanship.
2	Design and construct an efficient bridge model,	using a class defined rule set,	within the time frame specified.	Project evaluation based on design criteria and craftsmanship.

3	Design and construct an egg drop protection unit,	using a class defined rule set,	within the time frame specified.	Project evaluation based on design criteria and craftsmanship.
4	Design and construct an egg drop tower and release mechanism,	as a part of a team, using a class defined rule set,	within the time frame specified.	Project evaluation based on design criteria and craftsmanship.
5	Design and construct a piece of furniture or toy made from a single sheet of 3/4" plywood,	using a class defined rule set,	within the time frame specified.	Project evaluation by design experts.
6	List and discuss in detail the design principles and the standard steps in the design process,	in the CAD lab, under controlled conditions for testing, without the use of notes or reference materials,	within the time frame specified, with 70% accuracy.	Paper and pencil tests.
7	List and discuss in detail the 7 habits of highly effective people,	in the CAD lab, under controlled conditions for testing, without the use of notes or reference materials,	within the time frame specified, with 70% accuracy.	Paper and pencil tests.
8	Discuss the origin and historical aspects of industrial design in the United States,	in the CAD lab, under controlled conditions for testing, without the use of notes or reference materials,	within the time frame specified, with 70% accuracy.	Paper and pencil tests.
9	Evaluate constructed or manufactured products using form and function as criteria for judgment,	in the CAD lab, under controlled conditions, without the use of notes or reference materials,	within the time frame specified, with 70% accuracy.	Paper and pencil tests.

10	Demonstrate knowledge of theory and application related to human behavior on both an individual and group level,	in the CAD lab, under controlled conditions, without the use of notes or reference materials,	within the time frame specified, with 70% accuracy.	Paper and pencil tests.
----	--	--	--	-------------------------

7. Tentative Schedule

DAY	DAYS LEFT	DATE	TOPIC	PREPARATION
1	32	01-15-2007	Introduction and Course Syllabus Projects Discussion Tooth Pick Structure Project Bridge Project Plywood Project Egg Drop Project	
2	31	01-17-2007	Topics List Tooth Pick Structure Project	
3	30	01-22-2007	Topics List Tooth Pick Structure Project	
4	29	01-24-2007	Topics List Tooth Pick Structure Due	
5	28	01-29-2007	Topics List Bridge Project	
6	27	01-31-2007	Topics List Bridge Project	
7	26	02-05-2007	Topics List Bridge Project	
8	25	02-07-2007	Topics List Bridge Project	
9	24	02-12-2007	Topics List Bridge Project	Effectiveness: The Goose and the Golden Egg Paradigm Shifting/ Maturity Continuum

DAY	DAYS LEFT	DATE	TOPIC	PREPARATION
10	23	02-14-2007	Topics List Bridge Project Due	Quiz Tape 1 Habit One: Be Proactive
11	22	02-19-2007	Test 1 Class Notes – Lecture/Discussion Topics List Plywood Project	Quiz Tape 2 Habit Two: Begin with the End in Mind Habit Three: Put First Things First
12	21	02-21-2007	Topics List Plywood Project	Quiz Tape 3 Habit Three Put First Things First Habit Four: Think Win/Win
13	20	02-26-2007	Topics List Plywood Project	Quiz Tape 4 Habit Five: Seek First to Understand, Then to be Understood
14	19	02-28-2007	Topics List Plywood Project	Quiz Tape 5 Habit Six: Synergize Habit Seven: Sharpen the Saw
15	18	03-05-2007	Topics List Plywood Project	Quiz Tape 6 Design Engineering
16	17	03-07-2007	Test 2 Tapes 1-6 Comprehensive Plywood Project	
17	16	03-12-2007	Plywood Project	Quiz 1 Designing for People 1,2
18	15	03-14-2007	Plywood Project	Quiz 2 Designing for People 3,4

19	14	03-19-2007	Plywood Project	Quiz 3 Designing for People 5,6
20	13	03-21-2007	Plywood Project	Quiz 4 Designing for People 7,8
21	12	03-26-2007	Plywood Project Due	Quiz 5 Designing for People 9,10
22	11	03-28-2007	Egg Drop Project	Quiz 6 Designing for People 11,12
23	10	04-02-2007	<u>Spring Break</u>	
24	9	04-04-2007	<u>Spring Break</u>	
25	8	04-09-2007	Egg Drop Project	Quiz 7 Designing for People 13,14
26	7	04-11-2007	Egg Drop Project	Quiz 8 Designing for People 15,16
27	6	04-16-2007	Egg Drop Project	Quiz 9 Designing for People 17,18,19
28	5	04-18-2007	Egg Drop Project	
29	4	04-23-2007	Test 3 Designing for People	
30	3	04-25-2007	Egg Drop Project Due	
31	2	04-30-2007	Final Exam Week	Comprehensive
32	1	05-02-2007	Final Exam Week	Comprehensive

TOPICS LIST

A.	B.
Design Principles/ Problem Solving / Design Systems	Teamwork /Organizational Theory / Leadership
<ol style="list-style-type: none"> 1. Creativity 2. Design Principles - Froggy Creature the BURP 3. The Deep Dive 4. Scientific Method 5. Industrial Design verses Engineering Design 6. Bauhaus 7. Truth to Materials 8. Objective verses Subjective Evaluation 9. Design and the “Common Man” 10. Beauty and Personal Taste 11. Aesthetic Design and Beauty pg-24 12. Style pg-25 13. Functional Design pg-26 14. Engineering Design pg-26 15. Product Design pg-26 16. Systems Design pg-26 17. Traditional Engineering Design pg-26 18. Concurrent Engineering Design pg-26 19. Collaborative Engineering pg-28 20. Virtual Products Representation pg-31 21. Prototyping pg-31 22. Historical Highlights pg-31 23. EDM PDM pg-32 PLM 24. E-Business pg-32 25. Design in Industry pg-34 26. Top Down verses Bottom up Design 	<ol style="list-style-type: none"> 1. Two Styles of Instruction 2. Active Learning 3. Learner Centered Instruction 4. Bloom’s Task Hierarchy 5. Structure and Consideration 6. Macgregor’s Theory X and Y 7. Learning Pyramid 8. Personality Testing 9. Principles of War 10. Manipulation 11. Machiavellian Principles 12. Paradigms 13. Motivation model 14. Satisfaction Performance Controversy 15. Decision Making - Type 1 and 2 Errors 16. Reliability / Validity 17. Law of Opposites 18. Non-Verbal Communication 19. When You’re Just Plain Wrong 20. Good Team Membership 21. Five Essential Elements of a Team 22. Decision Making 23. Human Dimensions 24. Anger 25. EST Training 26. Buddhist Philosophy

TOPICS LIST

C.	D.		
7 Habits of Highly Effective People	Designing for People		
1. Habit One: Be Proactive	1. The Early Days	14	
2. Habit Two: Begin With the End in Mind	2. Joe and Josephine	26	Quiz 1
3. Habit Three: Put First Things First	3. How the Designer Works	44	
4. Habit Four: Think Win/Win	4. The Importance of Testing	64	Quiz 2
5. Habit Five: Seek First to Understand, Then Be Understood	5. Through the Back Door	72	
6. Habit Six: Synergize	6. Rise in the Level of Public Taste	82	Quiz 3
7. Habit Seven: Be Proactive	7. The Telephone	100	
	8. Land, Sea, and Air	110	Quiz 4
	9. The Open Road	136	
	10. Design in Unexpected Places	146	Quiz 5
	11. Working for the Government	160	
	12. The Five-Point Formula	178	Quiz 6
	13. Relationship of Designer to Client	186	
	14. That Sordid Subject, Money	194	Quiz 7
	15. Not by Design	200	
	16. Why Are Barns Painted Red	210	Quiz 8
	17. Profile of an Organization	226	
	18. An Appraisal	232	
	19. Re-Appraisal	241	Quiz 9

8. Instructor Policies

Attendance - Students are expected to attend all class sessions. Absences can be made up through added teacher defined assignments. Students may be requested to drop the course if absences exceed 10% of the total number of class meetings.

Copying - Copying other students work will result in automatic failure of the course.
(please do not put us in this position)

Incompletes - An incomplete grade is given in extenuating circumstances only.

Course Withdrawal - Course withdrawal is the students' responsibility. File the proper paperwork to drop the course. Failure to drop the course will result in the assignment of an " F " at the end of the term.

Final day to withdraw without "W"

February 3, 2006

Final day to withdrawal with "W"

April 28, 2006

Students with Disabilities - Students with disabilities who require special accommodation should identify themselves at the beginning of the term if there is an expectation to take the disability into consideration.

Lab Usage - It is acceptable to use the lab when another class is in session by obtaining permission from the instructor. Because the acoustics of the room is poor, even small discussions can be distracting. Use common courtesy when multiple activities are occurring in the lab. Food and beverages are acceptable in the lab. Please exercise caution.

Lab Equipment - Software reference books can be checked out by obtaining permission from the instructor.

Internet Usage - The Internet is a valuable resource; however, downloading material of questionable nature carries with it considerable risk to the system due to viruses through the Internet. Viewing of questionable material in the lab is prohibited. Please use good judgment in using this valuable resource.

9. Student Evaluation/Grading

TEST AND FINAL EXAM GRADE SCALE	
A	95 – 100
A-	90 – 94
B+	87 – 89
B	83 – 86
B-	80 – 82
C+	77 – 79
C	73 – 76
C-	70 – 72
D+	67 – 69
D	63 – 69
D-	60 – 62
F	0 – 59

3 Tests

15%

Quiz average can substitute for test 2 and test 3 scores

5 Projects

70%

#	Project	%
1.	Toothpick Structure	5
2.	Bridge	10
3.	Egg Drop Protection Unit	10
4.	Egg Drop Tower and Release Mechanism	15
5.	Plywood Project(A piece of furniture or a toy)	30

Final Exam

15%

100%

Failure to Turn in Assignments

Failure to turn in assignments will result in negative point values entered for that assignment, resulting in significant consequences when calculating grades. (From a grade averaging standpoint, it is better to get an "F" than to not turn in an assignment at all.)

Time Commitment Expectation

At a minimum, the average person can expect to spend 1 additional hour outside of class for each hour of lecture contact hour, and an additional 1/2 hour outside of class for lab contact hour. The Average time commitment for this class is 10 hours per week which entails 3 hours for lecture/studying, and 7 hours for lab work.

10. Student Academic Assistance

Bay de Noc Community College provides tutoring services through the Special Populations Program located in the Learning Resource Center (LRC). The Program Director, Marlene Paavilainen, sets up one-on-one tutoring sessions with Bay College student tutors who can assist you. If you are falling behind or are having problems maintaining an acceptable grade, please call the Special Populations office at extension 1128. Tutoring is available at no cost to Bay College students.

11. Federal Student Aid

Federal Student Aid (FSA) funds are awarded to a student under the assumption that the student will attend school for the entire period for which assistance is received. A student who withdraws after beginning attendance, but prior to completing 60% of the semester, will have their eligibility for FSA grants or loan funds recalculated. The student may be required to return any unearned funds.

12. Assessment

All Bay College students will be expected to participate in assessment activities during their course of study at the college. These activities may include participating in assessment of General Education outcomes, classroom assessment for specific course lessons, or assessment of skills needed for a specific program. The assessments will help instructors and the college make decisions to improve instruction and student learning.

13. Weather

Weather related information is now available on the Bay College phone. When a student calls the college, following the "Hello and welcome to Bay de Noc Community College," the prompt is: "If you are calling for weather or class closing information, press 7."

14. Academic Dishonesty

Cheating and other forms of plagiarism will not be tolerated and will result in the failure of the class. It shall be the policy of the Bay de Noc Community College Board of Trustees that the college provide opportunities for students to gain the knowledge, skills, judgment, and wisdom they need to function in society as responsible citizens. Plagiarism, falsifying data, and other forms of academic dishonesty are inconsistent with the college's goals and mission. Students are expected to pursue their education at Bay College with honor and integrity.

A copy of the entire Academic Integrity Policy is availability to students upon request.