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## MEMORANDUM

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TO: Curriculum Committee

FROM: Jack Kirby 

DATE: March 27, 2013

SUBJECT: Curriculum Proposal #12-13-45, REVISION #4  
BA Degree Education: Specialization Technology Education Comprehensive 5-Adult  
Final Faculty Senate Approval 4/9/2013

I recommend approval of the attached REVISION #4 of Curriculum Proposal #12-13-45 from the College of Science and Technology, Department of Technology. The proposal is now ready for Faculty Senate.






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## MEMORANDUM

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TO: Curriculum Committee

FROM: Jack Kirby 

DATE: March 1, 2013

SUBJECT: Curriculum Proposal #12-13-45, REVISION #3  
BA Degree Education: Specialization Technology Education Comprehensive 5-Adult

I recommend approval of the attached REVISION #3 of Curriculum Proposal #12-13-45 from the College of Science and Technology, Department of Technology. This revision includes the changes suggested by the Curriculum Committee after 1<sup>st</sup> reading.

c: Dr. Jack Kirby  
Dr. Anthony Gilberti  
Dr. Mark Wolf  
Ms. Evie Brantmayer  
Ms. Leslie Lovett






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**MEMORANDUM**

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TO: Curriculum Committee

FROM: Jack Kirby 

DATE: February 15, 2013

SUBJECT: Curriculum Proposal #12-13-45, REVISION #2

I recommend approval of the attached REVISION #2 of Curriculum Proposal #12-13-45 from the College of Science and Technology, Department of Technology. This revision includes adding a course syllabus to the proposal.

c: Dr. Christina Lavorata  
Dr. Anthony Gilberti  
Dr. Mark Wolf  
Ms. Evie Brantmayer  
Ms. Leslie Lovett






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**MEMORANDUM**

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TO: Curriculum Committee

FROM: Jack Kirby 

DATE: February 11, 2013

SUBJECT: Curriculum Proposal #12-13-45, REVISION #1

I recommend approval of the attached REVISION #1 of Curriculum Proposal #12-13-45 from the College of Science and Technology, Department of Technology. This revision expands the summary on Page 1 of the proposal for the purpose of clarification.

c: Dr. Christina Lavorata  
Dr. Anthony Gilberti  
Dr. Mark Wolf  
Ms. Evie Brantmayer  
Ms. Leslie Lovett





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## MEMORANDUM

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TO: Curriculum Committee  
FROM: Jack Kirby *JRK*  
DATE: February 7, 2013  
SUBJECT: Curriculum Proposal #12-13-45

I recommend approval of the attached Curriculum Proposal #12-13-45 from the College of Science and Technology, Department of Technology.

This proposal adjusts the BA in Technology Education to incorporate the new General Studies requirements, while presenting a 30 hour track to student <sup>teacher</sup> candidates.

c: Dr. Christina Lavorata  
Dr. Anthony Gilberti  
Dr. Mark Wolf  
Ms. Evie Brantmayer  
Ms. Leslie Lovett



**CURRICULUM PROPOSAL** (Submit one hard copy and an electronic copy to the Associate Provost by the second Tuesday of the month.)

**Proposal Number:** 12-13-45  
**School/Department/Program:** College of Science and Technology/  
Technology/Technology Education BA.Ed.  
**Preparer/Contact Person:** Mark D. Wolf  
**Telephone Extension:** 4634 or 4105  
**Date Originally Submitted:** 1/28/2013  
**Revision (Indicate date and label it  
Revision #1, #2, etc.):** \_\_\_\_\_  
**Implementation Date Requested:** Fall Semester 2013

- I. **PROPOSAL.** Write a brief abstract, not exceeding 100 words, which describes the overall content of the proposal.

This is a proposal to restructure the Technology Education (TE) curriculum to achieve General Studies (GS) alignment with Attributes categories, while presenting a 30 hr. track to student teacher candidates entering the program. Current Total Credit hours (133) are reducing General Studies requirements with a deduction of 8 credit hours, making the proposed credit hours for the Fall Semester 2013 to (125).

School of Education has requested a waiver for all Educational degree programs to justify Total Credit Hours to exceed the mandated (120) credit hour requirements. Specialization: Technology Education Comprehensive 5-Adult falls into this category.

Working with the School of Education's Graduation credit requirements (39) and continued development of courses in the specialization: Technology (TECH) courses (56) will support the continual development of the BA degree program: Technology Education Comprehensive 5-Adult to meet the (120) credit hours mandate.

This is a proposal to restructure the Technology Education (TE) curriculum to achieve newly developed curriculum in the Specialization: Technology (TECH) courses (56). Deletion of DRFT 2200 Fundamentals of CAD (3). Addition of course: TECH 1108 Engineering Graphics I(3). Curriculum Syllabus Attached.

- II. **DESCRIPTION OF THE PROPOSAL.** Provide a response for each letter, A-H, and for each Roman Numeral II-V. If any section does not apply to your proposal, reply N/A.

A. Deletion of course(s) or credit(s) from program(s)

Deletion of course(s): DRFT 2200      Fundamentals of CAD      3

Deletion of General Studies:      8

Total hours deleted. 11

B. Addition of course(s) or credit(s) from program(s)

Addition of existing course(s): TECH 1108      Engineering Graphics I      3

Total hours added. 3

C. Provision for interchangeable use of course(s) with program(s)

N/A

D. Revision of course content. Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.

N/A

E. Other changes to existing courses such as changes to title, course number, and elective or required status.

N/A

F. Creation of new course(s). For each new course

1. Designate the course number, title, units of credit, prerequisites (if any), ownership (FSU or shared) and specify its status as an elective or required course. If you are creating a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for the course being shared.

N/A

2. Include, as an appendix, a course description, written in complete sentences, suitable for use in the college catalog.

N/A

3. Include, as an appendix, a detailed course outline consisting of at least two levels.

N/A

4. In order to meet the requirements as outlined in Goal One of the Strategic Plan, please include Outcome Competencies and Methods of Assessment as an appendix. Examples are available upon request from the Chair of the Curriculum Committee.

N/A

G. Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s).

Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.

N/A

III. **RATIONALE FOR THE PROPOSAL.**

A. **Quantitative Assessment:** Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

N/A- Data Collection will be administered upon approval. Instructor(s) of course(s) Tech 1108 will be responsible to collect this data to meet the NCATE requirements of Accreditation for student teacher candidates in Technology Education BA degree program.

B. **Qualitative Assessment:** Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

Technology Education BA Degree program is aligning courses to meet General Studies attributes for Fall 2013 catalog. New course(s) Tech 1108 will support NCATE certification standard while developing skills in a contemporary drafting/ CAD approach to instruction. Course(s) Tech 1108 has been created by the Technology Department to replace the Pierpont owned drafting course and allow the Technology Education program to assess outcomes for accreditation requirement and data collection.

IV. Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal.

By signing here, you are indicating your college's/school's notification of this proposal.

College/School	Dean	Signature
Science & Technology	Dr. Anthony J. Albert	Anthony J. Albert
SOELHP	Van Q. Denney, Jr.	Van Q. Denney, Jr.

V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal.

VI. **ADDITIONAL COMMENTS.**



**APPENDIX A**

B.A. Degree in Education: Specialization Technology Education Comprehensive 5- Adult  
Current Program

<b>Required Major Courses</b>			<b>HRS</b>
DRFT	2200	Fundamentals of CAD	3
MATH	1101	Applied Technical Mathematics	3
MATH	1102	Applied Technical Mathematics II	3
MANF	1100	Material and Processes	3
TECH	1100	Technology and Society	3
TECH	1104	Tech. Design and Problem Solving	3
TECH	1150	Control Technology	3
TECH	2202	Transportation I	4
TECH	2203	Manufacturing I	4
TECH	2204	Construction	4
TECH	3301	Communication	4
TECH	3302	Manufacturing II	4
TECH	3303	Transportation II	4
TECH	3304	Construction II	4
TECH	3331	Organization and Administration of Technology Education	4
TECH	4431	Methods and Materials for Teaching Technology Education	3
<b>TOTAL Required Major Courses</b>			<b>56</b>
Major Educational Requirements			39
EDUC	2200	Intro to Education	3
EDUC	2201	Instructional Technology	3
EDUC	2203	Human Developmental Learning & Teaching	3
EDUC	2240	High Incidence Disabilities	3
EDUC	2260	Instructional Design 1	3
EDUC	2265	Field Experience 2	1
EDUC	3331	Reading in Content Areas	3
EDUC	3340	Instructional Design 2	3
EDUC	3351	Inclusive Classroom Practices	3
EDUC	3365	Field Experience 3	2
EDUC	4485	Action Research	1
EDUC	4486	Portfolio	1
EDUC	4496	Student Teaching	10
Minor Electives			XX
<b>TOTAL HOURS FOR MAJOR</b>			<b>95</b>
<b>Required General Studies Courses</b>			
First Year Experience			15-16
ENGL	1104	Written English I	3
ENGL	1108	Written English II	3
INFO	1100	Computer Concepts and Applications	3

MATH			3-4
COMM	2200, 2201, OR 2202	Communication	3
Scientific Discovery			8
Cultural / Civilization Exploration			9
Society / Human Interactions			6
Artistic / Creative Expression			6
<b>TOTAL GENERAL STUDIES HOURS</b>			<b>38</b>
<b>TOTAL FREE ELECTIVES</b>			<b>XX</b>
<b>TOTAL HOURS</b>			<b>133</b>
B.A. Degree in Education: Specialization Technology Education Comprehensive 5- Adult Proposed Program			

<b>Required Major Courses</b>			<b>HRS</b>
TECH	1108	Engineering Graphics I	3
MATH	1101	Applied Technical Mathematics	3
MATH	1102	Applied Technical Mathematics II	3
MANF	1100	Material and Processes	3
TECH	1100	Technology and Society	3
TECH	1104	Tech. Design and Problem Solving	3
TECH	1150	Control Technology	3
TECH	2202	Transportation I	4
TECH	2203	Manufacturing I	4
TECH	2204	Construction	4
TECH	3301	Communication	4
TECH	3302	Manufacturing II	4
TECH	3303	Transportation II	4
TECH	3304	Construction II	4
TECH	3331	Organization and Administration of Technology Education	4
TECH	4431	Methods and Materials for Teaching Technology Education	3
<b>TOTAL Required Major Courses</b>			<b>56</b>
Major Educational Requirements			39
EDUC	2200	Intro to Education	3
EDUC	2201	Instructional Technology	3
EDUC	2203	Human Developmental Learning & Teaching	3
EDUC	2240	High Incidence Disabilities	3
EDUC	2260	Instructional Design 1	3
EDUC	2265	Field Experience 2	1
EDUC	3331	Reading in Content Areas	3
EDUC	3340	Instructional Design 2	3

EDUC	3351	Inclusive Classroom Practices	3	
EDUC	3365	Field Experience 3	2	
EDUC	4485	Action Research	1	
EDUC	4486	Portfolio	1	
EDUC	4496	Student Teaching	10	
Minor Electives				XX
<b>TOTAL HOURS FOR MAJOR</b>				<b>95</b>

### Required General Studies Courses

Attribute IA – Critical Analysis		X
	ENGL 1108 (Met in IC)	
Attribute IB – Quantitative Literacy		X
	MATH 1101 or higher in IB (Met in Major Course)	
Attribute IC – Written Communication		6
	ENGL 1104, ENGL 1108	
Attribute ID - Teamwork		3
	COMM 2200 or any choice in ID	
Attribute IE – Information Literacy		X
	Major Course – EDUC 2201	
Attribute IF – Technology Literacy		X
	Major Course – TECH 1100	
Attribute IG – Oral Communication		X
	COMM 2200 (Met in ID)	
Attribute III - Citizenship		3
	POLI 1103 or any course in III	
Attribute IV - Ethics		3
	SOCY 1110	
Attribute V - Health		2
	PHED 1100	
Attribute VI - Interdisciplinary		X
	POLI 1103 (Met in III) or any course in VI	
Attribute VIIA - Arts		3
	ART 1120 or any course in VIIA	
Attribute VIIB - Humanities		3
	HIST 2211 or any course in VIIB	
Attribute VIIC – Social Sciences		3
	PSYC 1101	
Attribute VIID - Natural Science		4
	PHYS 1101	
Attribute VIII – Cultural Awareness		X
	HIST 2211 (Met in VIIB)	
Additional General Studies hours		X
<b>TOTAL GENERAL STUDIES HOURS</b>		<b>30</b>

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<b>TOTAL FREE ELECTIVES</b>	<b>XX</b>
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<b>TOTAL HOURS</b>	<b>125</b>
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**DEPARTMENT:** TECHNOLOGY  
**PROGRAM:** Technology  
**COURSE TITLE:** Engineering Graphics I  
**COURSE NUMBER:** TECH 1108

### ***Course Information***

**Course description:** Essentials of engineering graphics for engineering technology students. Content and emphasis of the course is to provide competency in technical sketching, blueprint reading, CAD applications, applied geometry, orthographic projection, section, dimensioning, tolerances, threads and fasteners, weldments, detail and assembly drawing, charting and basic elements of descriptive geometry.

**Course Pre-requisite(s):** None  
**Course Co-requisite(s):** None

**Delivery Method:** The course will be delivered using traditional face-to-face lecture and will be enhanced/managed online utilizing Blackboard. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

**Lecture Information:** **3 credit hours**  
**Location:** 113 Engineering Technology Building  
**Meeting day(s):** MW  
**Meeting time(s):** 7:30 – 8:20 am

**Laboratory Information:** None required for this course  
**Location:** N/A  
**Meeting day(s):** N/A  
**Meeting time(s):** N/A

### ***Instructor Information***

**Instructor Name:**  
**Email:**  
**Office location:**  
**Office hours:**  
**Phone:**  
**Fax:**

### ***Required Course Materials***

**Required Textbook(s):** To be determined

**Optional References:**

**Other Tools/Supplies:** N/A  
**Software:** AutoCad, Word, Excel, Power Point, and internet capability

## **ETAC of ABET Program Objectives**

The ETAC of ABET Accredited Programs at FSU concur with ABET in defining program educational objectives as ***“broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve during the first few years following graduation.”***

- 1. Apply the skills and methodologies to solve problems as an engineering technology professional*
- 2. Use learned technical and non-technical methodologies to communicate to audiences of varying demographics*
- 3. Perform work responsibilities independently or as part of a team, ethically and respectfully*
- 4. Assess the societal and global impact of professional decisions and practices*
- 5. Pursue lifelong learning through professional development*

## **ETAC of ABET Program Outcomes**

The ETAC of ABET accredited Programs concur with ABET in defining Program Outcomes as ***“units of knowledge or skill students are expected to acquire from the program to prepare them to achieve the program educational objectives. These are typically demonstrated by the student and measured by the program at the time of graduation”.***

The Program Outcomes for the ETAC programs are comprised of six (6) established outcomes which encompass ABET’s required a-k and the program specific outcomes.

- 1. Master and apply current knowledge, techniques, skills and modern tools of their disciplines including mathematics and science*
- 2. Identify, analyze and improve technical processes including experimental verification*
- 3. Apply creativity in the design of systems, components or processes appropriate to program objectives including working on teams and communicating effectively*
- 4. Prepare for the ability to engage in lifelong learning, a commitment to quality, timeliness, and continuous improvement*
- 5. Demonstrate an awareness of professional, ethical and social responsibilities, including a respect for diversity and a knowledge of contemporary professional, societal and global issues*
- 6. Solve complex problems utilizing discipline specific expertise.*

## Course Outcomes and Assessment Key

At the conclusion of this course, students will be able to meet the following outcomes:

1. Create orthographic and isometric 2D drawings using an AutoCad workstation
2. Perform dimensioning techniques using AutoCad
3. Use computer-aided drafting or design tools to prepare graphical representations for civil, electrical, or mechanical engineering
4. Navigate the AutoCad user interface to create engineering drawings
5. Store, retrieve, and reproduce engineering drawings to the proper scale
6. Explain the process of setting up time saving drawing fields and template files
7. Utilize AutoCad to create irregular lines and precise patterns of lines
8. Modify existing geometry using AutoCad commands

## Assessment Tools Key

Assessment Number	Assessment Tool	Benchmark*		
		Substandard	Target	Professional
1	Homework/Exams	<70%	70%-90%	≥ 90%
2	Homework/Exams	<70%	70%-90%	≥ 90%
3	Homework/Exams	<70%	70%-90%	≥ 90%
4	Homework	<70%	70%-90%	≥ 90%
5	Presentation	<70%	70%-90%	≥ 90%
6	Homework/Exams	<70%	70%-90%	≥ 90%

\* Note that the benchmark range does not indicate passing or failing. It is an indicator for continuous improvement of the course.

## Learning Objectives Key

### Institutional Assessment of Course:

The institutional assessment will be administered using the IDEA educational assessment format. It is the intent of the instructor to emphasize the following IDEA objectives during the course:

(Scale: M = Minor or no importance, I = Important, E = Essential)

No.	Assessment Category	Scale		
		M	I	E
1.	Gaining factual knowledge (terminology, classifications, methods, trends)		X	
2.	Learning fundamental principles, generalizations, or theories			X
3.	Learning to apply course material (to improve thinking, problem solving, and decisions)			X
4.	Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course		X	
5.	Acquiring skills in working with others as a member of a team	X		
6.	Developing creative capacities (writing, inventing, designing, performing in art, music, drama, etc.)	X		
7.	Gaining a broader understanding and appreciation of intellectual/cultural activity (music, science, literature, etc.)	X		
8.	Developing skill in expressing oneself orally and in writing		X	
9.	Learning how to find and use resources for answering questions or solving problems	X		
10.	Developing a clearer understanding, and commitment to, personal values	X		
11.	Learning to analyze and critically evaluate ideas, arguments, and points of view	X		
12.	Acquiring an interest in learning more by asking questions and seeking answers		X	

## Course Outline and Tentative Schedule of Topics

### A. Syllabus review

#### 1. Engineering design process and documentation

##### a. Communicating effectively

1. Title block
2. Lettering
3. Line types
4. Geometric construction
5. Basics of AutoCad program

#### 2. Sketching

##### a. Orthographic sketching

1. Orthographic projections



2. Drawing with basic objects
  3. Geometric constructions
  4. Title block
3. **Multiview drawing**
    - a. **Relationships between orthographic views**
      1. Missing lines and views
      2. Isometric sketches
      3. 2-D drawing in AutoCad
4. **Drawing with precision for engineering drawings**
    - a. **Placing text on a drawing**
      1. Object properties
      2. Layers
      3. Orthographic and isometric drawings, multiview drawings in AutoCad
5. **Constructing objects**
    - a. **Construction and editing objects**
      1. Isometric drawings in AutoCad
      2. AutoCAD 2D drawing
      3. AutoCad ISO drawing
6. **Dimensioning**
    - a. **The need for proper dimensioning in engineering graphics**
      1. Auxiliary views
7. **Blueprint reading**
    - a. **Examples in Civil, Electronics, and Mechanical Engineering**
      1. Introduction to sections and conventions
      2. Auxiliary views
      3. Blueprint reading
      4. AutoCad 2D drawing
8. **Sections in Autocad**
    - a. **Hatching and Viewports**
      1. Creating Sections
      2. Use of Viewports
9. **Dimensioning drawings**
    - a. **Dimension styles and dimensioning variables**
      1. Creating an AutoCad 2D drawing with dimensions

10. **Symbols in engineering drawings**
  - a. **Welding, hydraulic, civil, electrical, and mechanical drawings**
    1. AutoCad Design Center
    2. Blocks
    3. Introduction to threads and fasteners
11. **Printing Documents**
  - a. **Types of printers and plotters**
    1. Threads and fasteners
    2. Setting parameters and printing correctly
12. **2D project in civil, electrical, or mechanical engineering**
  - a. **Creating a project specific to student's program areas**
    1. Creating a final project

## ***Policies/Procedures***

Students enrolled in the Department of Technology programs at Fairmont State University will primarily be concerned with applying established scientific and engineering knowledge and methods combined with technical skills in support of engineering activities.

### **Professionalism and Classroom Etiquette:**

Students will gain the most from this course if they treat it as a work or professional experience. Being prepared in the classroom means reading *and* comprehending all assignments prior to class meetings. Maintaining and organizing class documents will prepare you for future courses and future goals after you leave this program.

- a. *No Tobacco or food is permitted in the Classroom/Laboratories.*
- b. *Closed drinking containers are permitted in the classroom.*
- c. *Observe proper Cell Phone etiquette during class*
- d. *Professionalism*
- e. *Honor code*
- f. *Attendance/tardy*
- g. *Examination policy*
- h. *Dress code (Hats will be removed during Class)*
- i. *Student work submitted for grade*
- j. *Presentations*

**Disability Services:** Services are available to any student, full or part-time, who has a need because of a [documented] disability. It is the student's responsibility to register for services with the coordinator of students with disabilities and to provide any necessary documentation to verify a disability or the need for accommodations. The Coordinator of Disability Services, Andrea Pammer, is located in Colebank Hall 307. The office phone is (304) 367-4686. TTY 304-367-4906. Her e-mail is [apammer@fairmontstate.edu](mailto:apammer@fairmontstate.edu)

### **Additional Policy Statements from the Office of Academic Affairs:**

In keeping with the Department of Technology program's goal of professional development and conduct, the attached link further expresses the information regarding integrity, student disability services and expectations of students:

<http://www.fairmontstate.edu/AcademicAffairs/SyllabusStatements.asp>

## **Student Responsibilities**

### **Student Workload:**

This is a professional setting and a high level of work ethic is expected. It is the **STUDENT'S** responsibility to participate in classroom discussions and to be prepared (this is accomplished by reading, comprehending, and working problems out of the text). It is the **INSTRUCTOR'S** responsibility to identify key topics from the text and to present real world projects and experiences into the classroom. Students are responsible for attending class; completing examinations, quizzes, assignments, and projects.

### **Student Evaluation:**

Each student is solely responsible for his/her grade average. This evaluation is objective and based on multiple exams, quizzes, homework assignments and projects. There shall be no curving or bonuses in this class. All grades are based entirely on the student's performance.

## **Student Grade Scale**

A: 90%-100%	Benchmark: Professional
B: 80%-89.9%	Benchmark: Target
C: 70%-79.9%	Benchmark: Target
D: 60%-69.9%	Benchmark: Substandard
F : <60%	Benchmark: Substandard

## **Student Grade Distribution**

### **Homework/Review Questions:**

1. Assignments are due on the date scheduled and are to be submitted **at the beginning of class**. The instructor reserves the right to accept assignments that are turned in late with prior approval or with a legitimate excuse. However, the instructor may deduct one full letter grade for each day the assignment is late.
2. No work will be accepted after the due date. Missed assignments will be recorded as zeroes.
3. Each assignment will be presented in a neat and orderly fashion. Questions and answers will be **very neat/legible**. All calculations shall be worked on engineering/graph paper.
4. Quizzes/Exams will be based on the reading assignment, homework and chapter review questions. No make-up quizzes will be administered. Quizzes may be announced or unannounced.

### **Exams [20% (10% each)]**

There will be two exams. Exams will be based on the reading assignments and chapter review questions, quizzes, etc. Make-up exams will be administered only at the discretion of the instructor.

### **Homework (30%):**

Syllabus (Fall 2013)  
Instructor:

Homework will be assigned throughout the semester. The majority of the assignments will be based on AutoCad drawings. Each assignment has been developed to increase the understanding and skill in creating engineering drawings.

**Projects (30%):**

Each student will prepare a major project that encompasses a 2D illustration of a part or device. This engineering drawing must demonstrate student proficiency in using AutoCad. Each student project must contain the following items: Properly laid out illustration with title block, a 2D illustration with layers and the use of auxiliary views, and a section with dimensioning. The final project must be presented in both electronic and printed forms. All projects must be approved by the instructor.

**Comprehensive Final Exam (20%):**

The Final exam will be administered on XXX

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