Metrology
Course Number: IME466
Fall 2008

Course Descriptions:
This course focuses on fundamentals of engineering metrology and its applications for manufacturing measurements. Specifically, the use of vernier calipers, vernier micrometers and coordinated measuring machine (CMM). This course also covers the analysis of measured data using various techniques such as least square and machine learning.

Class Meeting: TR 3:30-4:45 (EB1024)

Instructor:
Dr. Sohyung Cho, Assistant Professor in Industrial and Manufacturing Engineering
E-mail: scho@siue.edu
Phone: 650-2817
Office Hours: MW 3-4:30 or by appointment

Text Book: Class Notes
Reference: Fundamentals of Dimensional Metrology, CL Dotson, 5th Edition, 2007, Thomson

Course Schedule*

Week	Ch.	Subject	Lab #	Activity
1	1	Introduction to Measurement and Metrology		
2	2	Language and Systems of Measurement		
3	3	Measurement and Tolerances (GD&T)	1	Basic Metrology Lab
4 5 6,7	3-1 3-2 3-3	Revisit of GD&T Straightness Analysis Support Vector Machine Regression for Straightness Analysis	2	Inspection for Flatness and Parallelism
8	4	Statistics and Metrology	3	Application of Statistics in Metrology
9	5	Measurement with Graduated Scales and Scaled Instruments		**Midterm Exam**
10	6	Vernier Instruments	4	Vernier Caliper Lab
11	7	Micrometer Instruments	5	Micrometer Lab
12	12	Calibration		
13	16	Surface Measurements	6	Surface Measurement Lab
14	17	Coordinate Measuring Machines	7	CMM Lab
15		Term Paper Presentations		
16		Final Week		**Final Exam**

*** The schedule is subject to sudden changes.**

Grading Policy:
Midterm Exam: 25%, Final Exam: 25%, HW&Quiz: 20%, PJT: 15%, LABS: 15% (Total 100%)

90%+: A, 80-89%: B, 70-79%: C, 60-69%: D, 50% below: F

Quizzes:
There will be several unannounced quizzes given during the semester. You will not be allowed to make up missed quizzes under any circumstances except medical situations with doctor's note.

Project:
A semester project will be completed by each student. The project statement will be handed out within the first two weeks of class. The project is to be turned in by the given due date (TBA). Late projects will receive zero credit.

Laboratory Assignments:
It will be necessary for some lab work to be performed outside of the scheduled lab meeting times. Sign-up sheets will be posted so that students may reserve equipment when this necessity arises.

Late Assignments:
Late assignments will not be accepted in any circumstances.

Hardware and Software Issues:
Failure of computers, peripheral hardware (such as printers), and software difficulties will not be accepted as an excuse for failure to complete assignments before their deadlines. If you plan to use a computer to complete some or all of your work, it is advisable that you perform this work well in advance of the time that it is to be submitted in order to avoid these difficulties.

Collaboration:
If collaboration is to be allowed on an assignment, that fact will be announced verbally in class, and as a written statement in the problem assignment. Unless it is specifically stated otherwise, you are to **assume that each assignment is to be completed individually.** If two or more students turn in similar assignments, each of those involved in the collaboration will receive zero credit on that assignment.

Missed Tests:
Only an extreme emergency (hospitalization, etc.) will be considered to be a valid reason for missing a test. Tests missed without a valid reason will be assigned a grade of zero. For a make-up test to be arranged, the instructor must be notified at least one week in advance.

Academic Conduct:
Cheating on examinations, submitting work of other students as your own, or plagiarism in any form will result in penalties ranging from an F on the assignment to expulsion for the university, depending on the seriousness of the offense.