Syllabus

MEEM5408 Design Automation: Theory and Implementation Fall Semester 2004

Instructor:
Dr. B. Bettig email: bettig@mtu.edu Voice: 487-1897 Office: MEEM 924 Office Hours: MWF 10-11 am

Lecture:
Tuesdays 12:00-2:00 pm in 403 MEEM; Fridays 4:00-6:00 pm in 202 MEEM

Textbooks:
Horstmann, C., Budd, T.A., *Big C++*, John Wiley and Sons, Inc., 2005
Lee, K., *Principles of CAD/CAM/CAE Systems*, Addison Wesley Longman, Reading, MA, 1999
Unigraphics API Programmer's Guide (Unigraphics on-line documentation)

Tentative list of Course Topics

Week	Lecture Topic	Assignment	Reading[1]
1	Introduction C/C++ programming essentials Fundamental data types and operators	#1: Hello world (console)	 B-1.8 B-2
2	Control Flow & Structured Programming Object-Oriented Programming Concepts	#2: Sort Algorithm	B-4, 5 B-3.1-3.3, 6
3	OOP concepts in C++ Working with Large programs	#3: Vehicle taxonomy	B-10, 11, 21 Notes
4	OOP Software Design Methodology Graphical User Interfaces		B-13, 25 Notes
5	Instructor out of town	#4: ABAQUS simulation	
6	Unigraphics Open Architecture CAD Visualization	Project Proposal due	On-line help P-3
7	Transformation Matrices Geometric Modeling		P-3 P-5
8	Solid Model Data Structures	#5: UG part simplification	P-5
9	Curves and Surfaces		P-6, 7
10	Optimization		P-9
11	CAD Software Architecture Communicating over the internet		Notes Notes
12	Engineering Knowledge Representation		Notes
13	Automated Design Synthesis		Notes
14	Review	Final Project due	

1. Tutorial Legend: B = *Big C++*; P = *Principles of CAD/CAM/CAE Systems*; -chapter

Course Grading

Course Deliverables		***Grading Scale***			
8 Homework Assignments	40	A	90.0-100%	C	70.0-74.9%
Final Project	20	AB	85.0-89.9%	CD	65.0-69.9%
3 Written Examinations (10,10 & 20)	40	B	80.0-84.9%	D	60.0-64.9%
Course Total	100	BC	75.0-79.9%	F	< 60.0%

Course Policies:

1. You must do all work by yourself; copying complete or partial programs from others will be considered cheating. Cheating will not be tolerated in any form and will be reported to the Dean of Students office according to MTU Policy on Academic Integrity.
2. Late work will be charged a 10% penalty for ***each*** day late - weekend days do count.
3. You must use C++ or Java for all assignments.
4. Grades will depend upon program style, result accuracy, performance, and report quality. Your work must be neat, complete and consistent.
5. Comment your code liberally. Avoid use of short hand in writing code- make it readable.
6. You are responsible for all material presented in lectures. If material or requirements are not clear it is your responsibility to ask the instructor. To be fully prepared for lectures, read the material in the "Reading" column beforehand.