

ME 183 – ME Lab IV – Senior Lab – Fall 2005

Time and Location: M W 8:00-8:50am; Room 209 Votey,

Lab Sections Perkins 108: M 13:25-16:25; T 14:00-16:25; W 13:25-16:25

Instructor: JC Iatridis, 231b Votey Building, Phone: 656-2774, james.iatridis@uvm.edu

TA: Casey Korecki, ckorecki@cems.uvm.edu

Office Hours: MW 5:00-6:00pm and by appointment

URL: www.cems.uvm.edu/~iatridis/me183

Prerequisite: Senior standing in Mechanical Engineering.

Catalogue Description: Advanced engineering experimentation, data collection and reduction techniques applied to areas of mechanical engineering; projects involving "design for manufacturing" of a specified product.

Course Objectives and Outcomes

ME Lab IV is a design-focused laboratory with exercises that emphasize mechanics and design, materials technology, manufacturing, computer aided design and analysis. It also has significant involvement in national projects including the ASME Student Design Contest.

Lab Schedule

Lab	week	Report due date	Topic	Sub-topic	
I/II	1	29-Aug	12-Sep	ASME/Double Pendulum	ASME introduction/lab groups
II	2	5-Sep		Double Pendulum	
III	3	12-Sep	26-Sep	Drill Dissection	rapid prototype test/analyze
IV	4	19-Sep	3-Oct	Finite Strain	
IV	5	26-Sep		Finite Strain	
I	6	3-Oct	10-Oct	ASME progress updates*,**	
V	7	10-Oct	31-Oct	Beam	Test
V	8	17-Oct		Beam	Analytical and FEA solutions
V	9	24-Oct		Beam	
I	10	31-Oct		ASME**	FEA solution complete
I	11	7-Nov	14-Nov	ASME1st competition*	
VI	12	14-Nov	21-Nov	ECP	
	13	21-Nov		Thanksgiving	
I	14	28-Nov		ASME**	
I	15	5-Dec	9-Dec	ASME 2nd Competition*	

ASME assignments*	
due date	topic
7-Oct	1) Design concept report with schedule & budget
11-Nov	2) Preliminary trials during lab period/prelim report due on Friday
9-Dec	3) Final trials held/final report due
	**oral updates to TA and instructor during lab period

Grading

The relative weights of the assignments are as follows.

Lab I – ASME Design Contest: 40%

Average of labs II-VI: 60%

Special Accommodation and Lateness Policy

Students requiring any special accommodations for any details associated with this course will be handled on a case-by-case basis. Lab reports are due on the date indicated. A rare exception may be considered for extenuating circumstances if requested in advance.

Student Educational Objectives

This course should contribute to the students' advancement toward the following program objectives.

Course Number and Name: ME183 – Senior Lab IV							
#	Outcomes Common to all Engineering Programs	Level of Contribution 0 – no contribution 1 – very low level 5 – very high level					
		0	1	2	3	4	5
a	An ability to apply knowledge of mathematics, science, and engineering to the analysis of mechanical engineering problems [Engineering Criterion 3(a)].						X
b	An ability to design and conduct scientific and engineering experiments, as well as to analyze and interpret data [Engineering Criterion 3(b)].						X
c	An ability to plan, specify, design, implement, and operate a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability [Engineering Criterion 3(c)].						X
d	An ability to function on multidisciplinary teams [Engineering Criterion 3(d)].						X
e	An ability to identify, formulate, and solve mechanical engineering problems [Engineering Criterion 3(e)].						X
f	An understanding of professional, legal, and ethical responsibility [Engineering Criterion 3(f)].			X			
g	An ability to convey technical material through formal written work products which satisfy accepted standards for writing style, and an ability to convey technical material through oral presentation and interaction with an audience, [Engineering Criterion 3(g)].			X			
h	The broad education necessary to understand the impact of mechanical engineering solutions in a global and societal context [Engineering Criterion 3(h)].			X			
i	A recognition and appreciation of the need for, and ability to engage in life-long learning and critical thinking [Engineering Criterion 3(i)].					X	
j	A knowledge of contemporary issues [Engineering Criterion 3(j)].			X			
k	An ability to use modern engineering techniques, skills, and tools necessary for analysis and design [Engineering Criterion 3(k)].						X
Outcomes Specific to Mechanical Engineering Programs							
l	Knowledge of chemistry and calculus-based physics with depth in at least one.				X		
m	The ability to apply advanced mathematics through multivariate calculus and differential equations.				X		
n	Familiarity with statistics and linear algebra.			X			
o	The ability to work professionally in both thermal and mechanical systems areas including the design and realization of such systems.					X	