ENG ME 495 Senior Design Capstone in Manufacturing Engineering

2008-2009 Catalog Data:
ENG ME 495 Senior Design Capstone in Manufacturing Engineering Prereq: ENG ME 345 and ENG ME 415; coreq: ENG ME 420. Senior students in manufacturing engineering work in teams of three to four in industry on typical manufacturing projects. Each team has an industrial customer for the project and makes weekly progress reports. All projects are paced through the semester by a common schedule. 4 cr.

Class/Lab Schedule: 4 lecture hours per week

Status in Curriculum: Required in Manufacturing Program

Textbook(s) and/or Other Required Material: None

Coordinator: Theo A. de Winter, Associate Professor, Mechanical Engineering

Prerequisites by topic: None

Goals:
To prepare the manufacturing graduates for team dynamics while solving actual problems in industry.

Computer Usage:
1. SolidWorks

Laboratory projects:
1. In industry (see Topics listed below)

Course Learning Outcomes:
As an outcome of completing this course, students will:

i. Get actual assignments in local manufacturing companies
ii. Work in a project group mode, with weekly oral progress reports in front of a live audience
iii. Experience real working environments, where they are issued badges and come and go as employees.
iv. Deliver 3 to 6 engineer months of work to their client company
v. Bring to bear all of their course material
vi. Are required to define and solve problems and situations which do not fit into stereotype course materials

Course Learning Outcomes as mapped to Program Outcomes:
(For Program Outcomes, please see attached page or Department Web Site)

Program:	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Course:	i-iv	vi	i-vi	vi	i,iii, vi	i,iii, vi	ii,iii	v	i-vi		i-vi	i-vi	i-vi	i-vi
Emphasis:	5	3	4	1	5	5	5	3	5	1	5	5	5	5

Topics:
1. Sikorsky Aircraft, Stratford, CT: Develop a method of strapping wire harnesses which eliminates the likelihood of carpal tunnel syndrome in technicians.
2. BU Production Technology Collaboration/Hasbro: Develop a rapid tooling mold.
3. Vicor Corporation, Andover, MA: Develop special tooling for trimming printed circuit board leads.
4. PRI Inc., Billerica, MA: Develop and implement a Kanban system for a sub-assembly cell of the Aerotrak silicon wafer Material Handling System.
5. Johnson & Johnson, Braintree, MA: Implement statistical process control for injection molded parts.
6. Perkin-Elmer, Danvers, MA Developd software for logging and tracking returned products
7. Boston Scientific Corp., Watertown, MA: Develop a method for lap welding a catheter device.
8. Boston Scientific Corp., Watertown: Design and develop automatic lapwelding machine for "Tri-Lumen" stents.
9. Boston Scientific Corp., Watertown, MA: Re-design Stent Delivery System floor layout into Manufacturing Cells which utilize Kanban and self-directed work teams; design automated fixture for necking of asheath bump assembly which is worker-friendly and has a low defect rate.
10. Analog Devices, Cambridge, MA: Design, construction, and delivery of a device to remove protective silicon covers from airbag accelerators, without damaging the chip.

Contribution of Course to Meeting the Professional Component:
Engineering topics: 100%

Status of Continuous Improvement Review of this Course:
Date Last Reviewed: Spring 2009 **Reviewed by**: MFG Undgrad Comm./ME Design Comm.
Prepared by: Prof. Theo A. de Winter **Date:** June 2, 2009