

SYLLABUS

SUBJECT: IE 496 Special Topics in Industrial Engineering2

November 1998 - March 1998

Class Hours:

Credit: 3

Prerequisite: -

Propose: After attend the course, the students should

Course: Essential of Manufacturing systems. Concepts and associated mathematical models, production economics, numerical control, flexible manufacturing systems, computer process control, CAD/CAM and computer aided process planning. Technology about industrial robotics, automated assembly, automated material handling and storage, automated inspection, shop floor control, computer networks for manufacturing and manufacturing productivity.

Lecturer: Busaba Limsombutanana (room 406)

Reference Book:

S.K.Vajpayee, 1995. Principles of Computer-Integrated Manufacturing, Prentice Hall, United States of America.

T.C.Chang et al, 1998. Computer-Aided Manufacturing second edition, Prentice Hall, , United States of America.

Course Evaluation

1. Midterm Examination 40%
2. Final Examination 50%
3. Homework and quiz 10%

Course Outline and Tentative Plan:

Week	Chapter	Title
1	1	Introduction to Computer Integrated Manufacturing
2	2	Essential of Manufacturing Systems <ul style="list-style-type: none">- Type of Production- Function in Manufacturing- Organization and Information Processing in Manufacturing- Production Concepts and Mathematical Models
3	3	Automation <ul style="list-style-type: none">- Type of Automation- Computer Integrated Manufacturing- Reasons for Automating

		<ul style="list-style-type: none"> - Automation Strategies
4-5	4	<p>Design for manufacture</p> <ul style="list-style-type: none"> - CAD - CAM - CAE - Transportability - CIM - Need of CIM
6 – 8	5	<p>Production Process Systems</p> <ul style="list-style-type: none"> - NC / CNC / DNC - FMC / FMS - Tool management - Flexible Fixture - Flexible Assembly Systems - Flexibility
9 - 10	6	<p>Production Planning</p> <ul style="list-style-type: none"> - CAPP - Computer Integrated Production Planning System - MRP
11	7	<p>Shop Floor Control</p> <ul style="list-style-type: none"> - Data logging and acquisition - Automated Data Collection - Control Types - Sensor Technology
12	8	<p>Robotics</p> <p>Automated Material Handling and storage systems</p> <ul style="list-style-type: none"> - AGVs - AS/RS - Palletization
13	9	<p>Quality Control and Automated Inspection</p> <ul style="list-style-type: none"> - Inspection and Test - SQC - Sensor technologies for automated inspection - CMM - Other types of inspection
14	10	<p>Computer Network for Manufacturing</p>

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- Hierarchy of Computers in Manufacturing
- LAN
- MAP

Manufacturing Productivity and Implementation

- CIMs and Productivity
- Requirements of CIM Implementation