

COURSE NUMBER: ME 5221, 4 credits	COURSE TITLE: Computer Assisted Product Realization
TERMS OFFERED: Fall & Spring	PREREQUISITES: ME 3221 AEM 3031 CSci 1113 MatS 2001
TEXTBOOKS/REQUIRED MATERIAL: None	PREPARED BY: Professor B. Klamecki DATE OF PREPARATION: May 9, 2007
COURSE LEADER(S): Professors B. Klamecki, S. Ramalingam	CLASS/LABORATORY SCHEDULE: One 180 minute lecture per week and one 180 minute lab per week CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES: 100 % Engineering Topics
CATALOG DESCRIPTION: Design of manufacturing processes with emphasis on injection molding. Tooling design and specification of processing conditions using computer-based tools; process simulation software and computer-controlled machine tools. Simultaneous process and part design. Production of tooling and parts. Part evaluation.	COURSE TOPICS: <ol style="list-style-type: none"> 1. Specification of Product Performance 2. Analytical and Numerical Analysis 3. Injection molding 4. Design and manufacturing of molded polymer parts 5. Finite element analysis 6. Molding simulations 7. Modeling polymer processing 8. Machining process design 9. Mold and process design 10. Mold and Part Production 11. Part testing

COURSE OBJECTIVES	<ol style="list-style-type: none"> 1. To provide the full product design-process design-part production experience using commercial quality computer-based tools with an emphasis on process design. 2. To realize part and process design using integrated computer-based engineering tools (Pro/Engineer, Pro/Manufacture, ANSYS, CMOLD). 3. To create a complete digital part and process design followed by production and testing of the part. 4. To have students provide technical explanations of results in presentations during the semester a final report.
--------------------------	--

<p>COURSE OUTCOMES</p>	<p>(Letters shown in brackets are linked to program outcomes a-k) With the successful completion of the course each student will:</p> <ol style="list-style-type: none"> 1. Have gained theoretical and practical experience in most aspects of part and process design. [a, b, c, e, k,] 2. Be familiar with the capabilities of integrated CAD/CAM systems. [k] 3. Have completed an in-depth experience with one of the part or process design activities. [a, b, c, e, i, k] 4. Have worked in a team to produce a part and provide a formal technical justification for the part and process designs in written and oral report forms. [d, g]
<p>ASSESSMENT TOOLS:</p>	<ol style="list-style-type: none"> 1. Individual homework and lab assignments 2. Final report for group design project 3. Instructors assessment of effort and contribution

ME 5221

Nature of Changes:

1. *The class schedule has been changed to one 180 minute lecture and one 180 minute laboratory.*
2. *Specification of Product Performance and Analytical and Numerical Analysis were inserted as course topics 1 and 2.*
3. *Course topic #8, Machine tool performance, was removed*
4. *Mold and Part production was added ad course topic #9.*
5. *The order of course outcomes 1 and 2 were switched.*