I. **TITLE:** Product and Tooling Design

II. **CATALOG DESCRIPTION:**
This course utilizes parametric, feature based, solid modeling software and techniques applied to problem solving and representation of product and tooling components and assemblies. Emphasis is placed on dimensioning, geometric dimensioning and tolerancing, 3-D modeling and design of mechanical devices, and principles of tooling design.

III. **PURPOSE:**
To provide students with the knowledge and technique necessary for the preparation of machine components and assembly drawings.

IV. **COURSE OBJECTIVES:**
A. Develop an insight and understanding of the role that product and tooling design, and drawing play in our concurrent engineering process.
B. Gain knowledge in product and tooling design, and modeling using parametric, feature-based solid modeling software for design documentation of product and tooling designs.
C. Apply the knowledge of manufacturing processes and materials to product and tooling drawing and design.
D. Apply geometric dimensioning and tolerancing to product component, assembly and tooling design documentation.
E. Creation of full set of working drawings including general assembly, tooling, and detail drawings.

V. **CONTENT OUTLINE:**
A. Industrial machine drawing
B. Engineering process and the design process
C. Parametric modeling
D. Machine design principles
E. Jig and fixture design
F. Conventional dimensioning and tolerancing
G. Geometric dimensioning and tolerancing
H. Assemblies
I. Components and organization of sets of mechanical drawings

VI. **INSTRUCTIONAL ACTIVITIES:**
A. Lecture and demonstrations
B. Projects
C. Classroom assignments
D. Presentations
VII. **FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:**

NA

VIII. **RESOURCES:**

A. Laboratory
B. Equipment and supplies

IX. **GRADING PROCEDURES:**

A. Assignments 60%
B. Attendance 10%
C. Final Project/Presentation 30%

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<thead>
<tr>
<th>Grading Scale</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100%</td>
<td>A</td>
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<td>80-89%</td>
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<td>70-79%</td>
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<td>60-69%</td>
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<td>Below 60%</td>
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X. **ATTENDANCE POLICY:**

This course will adhere to the policy published in the MSU Undergraduate Bulletin. Attendance will be taken at every scheduled class and laboratory. No make-ups unless:

A. Organized university trip.
B. Illness or death in immediate family.
C. Illness of student.

Each one of these will require either a doctor’s statement or a signed statement from the individual in charge of the trip.

Make-up examinations are the student’s responsibility. No excuses will be accepted after the exam is given. The instructor must be notified prior to the scheduled exam. If not, the student forfeits their right to take the exam. Quizzes will not be made up unless prior acceptable excuse for absence has been received by the instructor.

XI. **ACADEMIC HONESTY POLICY:**

This course will adhere to the policy published in the MSU Undergraduate Bulletin.

XII. **TEXT AND REFERENCES:**

Dym, C. L. & Little, P. *Engineering Design: A project based introduction*. John Wiley and Sons, Inc.

XIII. **PREREQUISITES:**

ITD 304, ITD 330 and ITD 333

XIV. **STATEMENT OF AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY:**

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or other provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact Sabrina Y. Dial, Director of Equal Opportunity, Murray State University, 103 Wells Hall, Murray, KY 42071-3318. Telephone: 270-809-3155 (voice), 270-809-3361 (TDD).