TST 161 CREATIVE DESIGN

1 course unit - Two (2) one-hour and twenty-minute class periods, or one (1) two-hour and forty minute period.
Perspectives on the World: Fine and Performing Arts

2015-16 Catalog Data:
(fall and spring)

This is a foundational course that looks at the elements and principles of design as related to practical products, systems, and environments. It introduces students to the creative process practiced by artists, designers, and engineers, valuable to them as both future producers and consumers. Content includes thinking, drawing, and modeling skills commonly used by designers; development of a design vocabulary; the nature and evolution of technological design; the impacts of design on the individual, society, and the environment; patents and intellectual property; human factors; team design; and appropriate technology, risk analysis, and futuring techniques. Design problems are presented within real-world contexts using field trips and outside speakers. Students complete a major design project, document their work through a design portfolio; and present their solutions before the class. Weekly critiques of class projects build fluency, confidence, and creativity.


Instructor: Norman L. Asper, Ph.D., Professor Emeritus of Engineering
office, Armstrong 132
phone, 883-1778
e-mail, asper@tcnj.edu

Course Objectives: Upon completion of this course, the student will be able to:

1. analyze the nature of art and aesthetics as related to design.

2. analyze the nature of design as the organization of materials and form in order to fulfill specific purposes.

3. discuss the evolution of design within specific cultures.

4. discuss the evolution of design in relation to the environment.

5. analyze the relationships among technological inventions, social organizations and cultural values.

6. use the elements and principles of design to create pleasing products and structures.

7. use design criteria to evaluate selected cultural artifacts.
8. discuss the advantages of the group/team approach to design problem solution.

9. exhibit technical competencies in sketching and modeling for communication of ideas.

10. discuss the role that human factors to must play in a successful design.

11. use fundamental legal aspects of intellectual property rights to understand the protection of personal design activities.

12. develop a complete electronic portfolio of their design work.

13. identify and develop a solution in response to a design problem, and carry that solution through to the stage of a working model which can be tested and evaluated.

**Prerequisites**

by Topic: None

**Schedule:** (Two one-hour and twenty-minute classes/wk, or periods #1 and #2 combined into one two-hour and forty-minute evening class)

<table>
<thead>
<tr>
<th>Week</th>
<th>Period #1</th>
<th>Period #2</th>
<th>Reading Asst's Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Design Process Model Brainstorming</td>
<td>Design communication activity</td>
<td>Tex. Introduction, pp 1-16</td>
</tr>
<tr>
<td></td>
<td>Monday 8/31</td>
<td>Thursday 9/3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Designing and problem solving – SAFE</td>
<td>Term Project &amp; Group Asst.</td>
<td>Tex. Stage 1, pp17-37</td>
</tr>
<tr>
<td></td>
<td>Tuesday 9/8</td>
<td>9/10 Team Development</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The Design Process Through Stage 1</td>
<td>Sketching &amp; Orthographic Projection</td>
<td>Tex. Stage 2, pp 39-70</td>
</tr>
<tr>
<td></td>
<td>9/14</td>
<td>9/17</td>
<td>Design Communication report Due, CANVAS Dropbox 9/18</td>
</tr>
<tr>
<td>4</td>
<td>Patents, Trademarks, &amp; Copyrights Portfolio Logo Asst.</td>
<td>Isometric, Annotated, and Exploded sketching</td>
<td>Tex. Stage 3, pp 71-96</td>
</tr>
<tr>
<td></td>
<td>9/21</td>
<td>9/24</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>The Design Process Stages 2&amp;3</td>
<td>Perspective sketching 1 &amp; 2 – point</td>
<td>Orthographic Due 10/1</td>
</tr>
<tr>
<td></td>
<td>9/28</td>
<td>10/1</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Period #1</td>
<td>Period #2</td>
<td>Reading Asst’s Due Dates</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>-----------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>6</td>
<td>Shading &amp; Shadowing, Techniques Assignment 10/9</td>
<td>Color Theory 10/8</td>
<td>Isometric Due 10/8</td>
</tr>
<tr>
<td>7</td>
<td>Fall Break 10/12</td>
<td>Meet w/groups Review for Midterm 10/15</td>
<td>Portfolio Cover &amp; Logo Due, CANVAS Dropbox 10/16</td>
</tr>
<tr>
<td>8</td>
<td>MIDTERM EXAM (1st ½) 10/19</td>
<td>MIDTERM EXAM (2nd ½) 10/22</td>
<td>Tht. Stage 4, pp 97-115</td>
</tr>
<tr>
<td>9</td>
<td>Ergonomics &amp; Human Factors Manikin Asst. 10/26</td>
<td>Meet Groups Cont. 10/29</td>
<td>Tht. Stage 5, pp 117-139 Perspective Check (For Presentation Drawing) 10/29</td>
</tr>
<tr>
<td>11</td>
<td>ePortfolio Organization review, Documentation review 11/9</td>
<td>Term Proj. lab./Studio Session 11/12</td>
<td>Manikin Asst. Due 11/12</td>
</tr>
<tr>
<td>12</td>
<td>Principles of Design Stages 6&amp;7 11/16</td>
<td>Term Proj. lab./Studio Session 11/19</td>
<td>ePortfolio Due CANVAS Dropbox 11/20</td>
</tr>
<tr>
<td>13</td>
<td>Materials Selection &amp; Packaging 11/23</td>
<td>Thanksgiving Break 11/26</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Term Project Presentation and Competition 11/30</td>
<td>Review for Final Course Evaluation Group Evaluation 12/3</td>
<td>Term Project Documentation Due CANVAS 12/4</td>
</tr>
<tr>
<td>15</td>
<td>FINAL EXAMINATION Comprehensive</td>
<td></td>
<td>***********************</td>
</tr>
</tbody>
</table>
Course Requirements:

1. Students are expected to attend all classes, held in Armstrong room 102. This "Design Room" is used by several classes, and instructors, and must be maintained as a pleasant working environment. There are also tools and materials for fabrication available in Armstrong 135. In both rooms you are always responsible for cleanup before you leave. It would make both rooms more pleasant to work if you not only cleaned up the mess you've made, but also of any other messes that you spot. At the end of each class period, tools and materials must always be put away and both rooms must be ready for future groups or classes. Note: There are no classes scheduled for AR135.

2. All written assignments will be individually prepared on a word processor, and will incorporate appropriate graphic design elements. All assignments will be graded equally on both content accuracy and aesthetic value.

3. Students are expected to complete all design assignments that will demonstrate the development of graphic design and modeling skills. The due dates for these activities are listed in the outline. At the end of the semester, all of the activities will be presented in an electronic portfolio format. The average of the original design assignments will contribute 25% to the final grade, and the electronic portfolio will contribute 5% to the final grade. The last date for the ePortfolio submission will be listed in the CANVAS Dropbox.

4. Each student will be assigned to a design team which will complete a "Term Design Project". The project will include an operating prototype, a competitive performance event, a design presentation evaluation, and a documentation report. The competitive/performance event will determine the relative effectiveness of the design solution, and the design evaluation will determine the aesthetic value of the project. These elements will contribute 25% towards your final grade. At the end of the semester, each team will complete a team evaluation form which will be used in the calculation of individual term project grades on the prototype development. Each team will also prepare a documentation report of their design and construction activities relating to the project. This report will be due the 14th week of the semester, and contribute 10% to the final grade.

5. There will be one (1) midterm test plus one (1) final exam. The Midterm test is scheduled for the seventh week of the class, and the final exam will be scheduled during the finals week. The midterm test will contribute 15% to the final grade, and the final exam will contribute 20% to the final grade.
6. Additional Graphic supplies needed:
   - an inexpensive sketchpad, **larger than 8 ½"x 11" but no larger than 14"x17"** plain bond (drawing) paper.
   - a carrier/protective envelope at least large enough to hold the sketch pad listed above.
   - a couple of 2B and 2H pencils
   - a "Mars-Plastic" eraser.

   "Optional" supplies (if working at home)
   - a metal ruler, at least 12 inches long.
   - an architect’s scale in inches.
   - an Xacto knife to hold no. 11 or no. 24 blades.
      Get some extra blades.

**Grading Procedures:**

1. Percentage make-up of grades:
   a. Midterm Test.............................................@ 15% = ______
   b. Final Exam ............................................@ 20% = ______
   c. Design Activities .....(30%)
      (1) Weekly assignments (avg.).....@ 25% = ______
      (2) ePortfolio ...........................................@ 5% = ______
   d. Term Design Project..25% (+/-) X
      (1) Prototype Aesthetics...@ 9% = ______
      (2) Working prototype......@ 9% = ______
      (3) Competitive Success...@ 7% = ______
      (4) Group Eval. Multiplier...... (X) = ______
          Total term project ______  ➔  ______
   e. Term Project Documentation .....@ 10% = ______
       Total ...................... ______

2. Letter Grade Equivalent:
   A    = 100 - 93
   A-   = 92.9 - 90
   B+   = 89.9 - 87
   B    = 86.9 - 83
   B-   = 82.9 - 80
   C+   = 79.9 - 77
   C    = 76.9 - 73
   C-   = 72.9 - 70
   D+   = 69.9 - 67
   D    = 66.9 - 60
   F    = 59.9 – 0