

Course No: ATEC 2384.004 Special Topics in Arts and Technology  
Course Title: **Principles of Design**  
Instructor: Patrick Dowling, Lecturer  
Contact Options: Cellphone 469-286-7531  
[dowlingpatrick@ymail.com](mailto:dowlingpatrick@ymail.com)  
Class Day & Time: Fall Semester 2013/Tuesdays & Thursdays 2:30pm – 3:45pm  
Location: ATEC Building, ATC Room 2.811

### **Course Description**

This class is an overview of design principles and practices common to most design professions, to give students a foundation understanding of design rules, laws, and guidelines that they can use throughout their education and career pursuits. Students will learn the language of design, how to think like a designer, how to judge between good and bad design execution, and where to go for additional resources of specialized design practice.

The course work will consist of:

- Weekly textbook reading assignments from – *Universal Principles of Design Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Design*, by Lidwell/Holden/Butler)  
ISBN-13 978-1592535873
- Weekly lectures and class discussion
- Weekly research to identify examples of design principles in practice
- Build a personal Design Reference ‘Morgue’ in area of interest
- A semester-long ‘Personal Career Networking’ project (see figure 1.0 below)

### **Course Requirements**

- Attendance to all classes\*
- All assignments need to be completed on time\*\*
- All students need to participate individually and as a contributing member of the class, especially in sharing discoveries with one another

### **Grading Procedure**

Because this course’s emphasis will be on providing the student with an awareness and understanding of Design methods and practices, it is very important that students participate individually and collectively to insure that everyone has a successful learning experience. Therefore, students will be evaluated on attendance, participation in class, assignments, and the quality of work completed from week to week. Assignments will be discussed throughout the course, with specific requirements spelled out. See grading breakdowns at the end of this document.

### **Classroom Conduct**

- Students are to focus their attention on the subjects at hand in the classroom, i.e., lectures, presentations, discussions, and set aside all other activities.
- All open communication (talking) should be relevant to the subject at hand and have value to the class as a whole.
- Competitiveness between students will be friendly and encouraging at all times.

## Drop Procedures (see <http://utdallas.edu/student/registrar/calendar/>)

If you are unable to complete this course, you should withdraw from it. Withdrawing from a course is a formal procedure, with a specific published deadline, which you must initiate. The instructor cannot do it for you. You must do this through the Registrar's Office.

## Course Schedule & Outline

### Classes

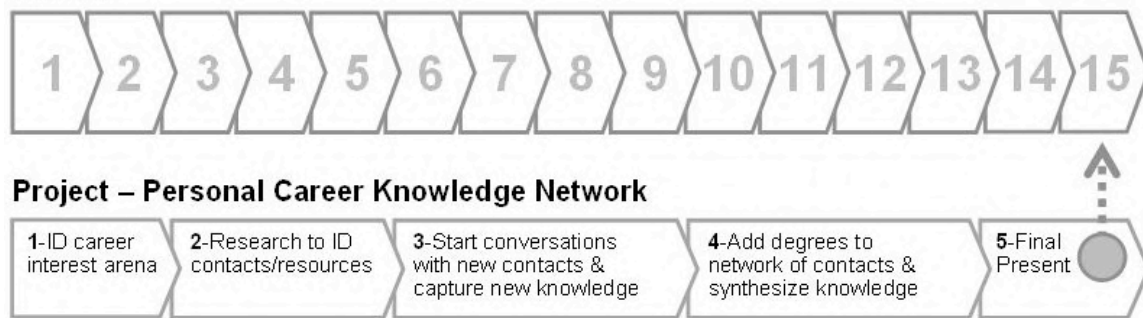


Figure 1.0

- 8/27 **Class 1a** Introductions, syllabus, overview, goals, expectations, textbooks, supplies, etc.  
**Design Principles Discussion – Form Follows Function**  
106. *Form Follows Function* – beauty is purity of function  
172. *Ockham's Razor* – choose simplest of functionally equivalent designs  
Project Assignment – Phase 1: Identify an ATEC professional goal or academic area of interest (by Class 3 in two weeks).
- 8/29 **Class 1b** **New Principles Overview – Less is More**  
Assignment #1: Find examples of Less is More design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain in the next class).
- 9/03 **Class 2a** **Design Principles Assignment Critique – Less is More**  
14. *80/20 Rule* – 80 percent of products use involves 20 percent of its features  
102. *Flexibility-Usability Tradeoff* – as flexibility increases, usability decreases  
224. *Signal-to-Noise Ratio* – choose design that has high signal to noise ratio
- 9/05 **Class 2b** **New Principles Overview – Design Process**  
Assignment #2: Find examples of Design Process design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain in the next class).
- 9/10 **Class 3a** **Project Progress Report**: Share with class area of personal interest (Phase 1).  
Project Assignment – Phase 2: Research & identify target contacts (will review progress during Class 6 in three weeks).  
**Design Principles Assignment Critique – Design Process**  
78. *Development Cycle* – heuristic steps of discovery  
112. *Garbage-In-Garbage-Out* – quality output depends on quality info in

- 142. *Iteration* – repeated operations to reach desired result
- 150. *Life Cycle* – stages of product existence
- 194. *Prototyping* – simplified models to explore ideas
- 230. *Storytelling* – create imagery, emotions and understanding
- 9/12 Class 3b **New Principles Overview – Aesthetic Bias / part 1**  
Assignment #3: Find examples of Aesthetic Bias design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain in the next class).
- 9/17 Class 4a **Design Principles Assignment Critique – Aesthetic Bias / part 1**
  - 20. *Aesthetic-Usability Effect* – aesthetic design perceived to be easy to use
  - 32. *Attractiveness Bias* – why beautiful people excel
  - 34. *Baby-Face Bias* – attraction to all things cute
  - 184. *Picture Superiority Effect* – remember pictures better than words
  - 212. *Savanna Preference* – aboriginal preference for open spaces
- 9/19 Class 4b **New Principles Overview – Aesthetic Bias / part 2**  
Assignment #4: Find examples of Aesthetic Bias design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).
- 9/24 Class 5a **Design Principles Assignment Critique – Aesthetic Bias / part 2**
  - 94. *Fibonacci Sequence* – sequence of numbers that are sum of two preceding
  - 114. *Golden Ratio* – geometric theorem for balance in design
  - 116. *Good Continuation* – Gestalt of perceived connectivity of elements
  - 44. *Closure* – seeing groups of design elements as one large design element
  - 58. *Constancy* – perception of constancy in spite of actual expression
  - 144. *Law of Pragnanz* – tendency to interpret ambiguous info
- 9/26 Class 5b **New Principles Overview – Dimensional Perception Preferences**  
Assignment #5: Find examples of Dimensional Perception Preferences design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).
- 10/01 Class 6a **Project Progress Report**: Show progress with network contacts (Phase 2).  
Project Assignment – Phase 3: Start conversations with targeted contacts (will review progress during Class 10 in four weeks).  
**Design Principles Critique – Dimensional Perception Preferences**
  - 96. *Figure-Ground Relationship* – perceived objects in front of a field
  - 176. *Orientation Sensitivity* – discrimination of directional elements
  - 238. *Three-Dimensional Projection* – tendency to perceive world in 3-D
  - 240. *Top-Down Lighting Bias* – tendency to understand source of lighting
  - 250. *Visibility* – spatial cognitive understanding
  - 260. *Wayfinding* – special information to enhance navigation
- 10/03 Class 6b **New Principles Overview – Aesthetic Toolbox / part 1**  
Assignment #6: Find examples of Aesthetic Toolbox design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).

- 10/08 Class 7a Design Principles Critique – Aesthetic Toolbox / part 1**  
 24. *Alignment* – design elements align along hidden lines  
 48. *Color* – symbolic meanings in color to manipulate and emphasize  
 126. *Highlighting* – bringing visual attention to design elements  
 132. *Iconic Representation* – icons improve recognition and recall  
 196. *Proximity* – info close together perceived to be related  
 226. *Similarity* – elements of similar nature seem related
- 10/10 Class 7b New Principles Overview – Aesthetic Toolbox / part 2**  
Assignment #7: Find examples of Aesthetic Toolbox design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).
- 10/15 Class 8a Design Principles Critique – Aesthetic Toolbox / part 2**  
 66. *Convergence* – synonym for stability in designed solutions  
 166. *Normal Distribution* – symmetrical data, bell-curve  
 160. *Modularity* – complex system divided into smaller compatible parts  
 208. *Rule of Thirds* – composition technique for balance  
 234. *Symmetry* – visual equivalence among elements
- 10/17 Class 8b New Principles Overview – Psychology and Aesthetics**  
Assignment #8: Find examples of Psychology and Aesthetics design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).
- 10/22 Class 9a Design Principles Critique – Psychology and Aesthetics**  
 124. *Hierarchy of Needs* – stratification of aesthetic needs based on Maslow  
 158. *Mnemonic Device* – organize information to make it memorable  
 254. *von Restorff Effect* – well placed discontinuity to engage memory  
 108. *Framing* – manipulating how information is presented  
 174. *Operant Conditioning* – perceptual modification via range of stimuli  
 236. *Threat Detection* – natural abhorrence to negative imagery
- 10/24 Class 9b New Principles Overview – Human Factors / part 1**  
Assignment #9: Find examples of Human Factors design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).
- 10/29 Class 10a Project Progress Report**: Progress with network conversations (Phase 3).  
Project Assignment – Phase 4: Extend network conversations beyond first line of contacts and increase the depth of your active network.
- Design Principles Critique – Human Factors / part 1**  
 22. *Affordance* – physical design telegraphs use and function  
 80. *Entry Point* – obvious point of entry into a design i.e., front door  
 84. *Expectation Effect* – leading the audience to an expected result  
 152. *Mapping* – cognitive understanding to initiate actions  
 154. *Mental Models* – cognitive understanding based on experience  
 156. *Mimicry* – transferring understood properties to new things

**10/31 Class 10b New Principles Overview – Human Factors / part 2**

Assignment #10: Find examples of Human Factors design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).

**11/05 Class 11a Design Principles Critique – Human Factors / part 2**

- 170. *Performance Load* – greater the effort, greater chance of failure
- 180. *Performance vs. Preference* – optimum gives way to preference
- 188. *Progressive Disclosure* – sequentially disclosed information
- 198. *Readability* – quick understandability
- 220. *Serial Position Effects* – info at ends more memorable than middle

**11/07 Class 11b New Principles Overview – Information Architecture / part 1**

Assignment #11: Find examples of Information Architecture design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).

**11/12 Class 12a Design Principles Critique – Information Architecture / part 1**

- 40. *Chunking* – clustering information & elements to make memorable
- 100. *Five Hat Racks* – ways to organize information
- 118. *Gutenberg Diagram* – general pattern of eyes reading information
- 122. *Hierarchy* – complex information organized and structured visually
- 146. *Layering* – organize info into related groups
- 148. *Legibility* – visual clarity, contrast, spacing etc.

**11/14 Class 12b New Principles Overview – Information Architecture / part 2**

Assignment #12: Find examples of Information Architecture design principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).

**11/19 Class 13a Design Principles Discussion – Information Architecture / part 2**

- 54. *Confirmation* – designed barriers to take next steps
- 60. *Constraint* – designed limitations to guide user
- 64. *Control* – put user in the drivers seat according to expertise
- 92. *Feedback Loop* – information return to modify future behavior
- 98. *Fitts' Law* – time to move target is size and distance
- 120. *Hick's Law* – time increases as alternatives increases

**11/21 Class 13b New Principles Overview – Significant Design Practice**

Assignment #13: Find examples of Significant Design Practice principles and send digital samples embedded in PowerPoint slide template to instructor before next week (be ready to explain to class).

**12/03 Class 14a Reference Morgue Sharing: 1<sup>st</sup> half of class - make brief presentation of some of the content from your reference materials gathered all semester.**

**Design Principles Critique – Significant Design Practice**

Final Project – Phase 5: Prepare slide presentation of your Personal Career Knowledge Networking activities and outcomes (will review requirements)

12/05 **Class 14b Reference Morgue Sharing:** 2<sup>nd</sup> half of class - make brief presentation of some of the content from your reference materials gathered all semester.

**Design Principles Critique – Significant Design Practice**

Final Project – Phase 5: Prepare slide presentation of your Personal Career Knowledge Networking activities and outcomes (will review requirements)

12/10 **Class 15a Final Exam: Personal Career Networking Report**

- PowerPoint presentation by 1<sup>st</sup> half of class (everyone required to attend)

12/12 **Class 15b Final Exam: Personal Career Networking Report**

- PowerPoint presentation by 2<sup>nd</sup> half of class (everyone required to attend)

**Grading Scale**

A	91-100	Excellent
B	81-90	Above Average
C	71-80	Average
D	61-70	Poor
F	00-60	Failing

**Grading Weights**

30 Points	Attendance (15 at 2.0 points each)*
30 Points	Assignments (13 at 2.3 points each)**
10 Points	Build a Ref Morgue (slide presentation to class)
30 Points	Final Assignment & Report/Presentation

**Misc. Notes**

\*Attendance & Tardy Policy – Attendance is mandatory. Lack of attendance will affect your grade because absences will not only leave holes in understanding of the lesson content but also degrade the benefit to other students in regard to discussions and work sessions. **Class is divided into two parts each week; missing either one will be counted as an absence for the entire week. Coming to class late or leaving early will also be counted as absences without prior approval from the instructor.**

**\*\*All assignments are to be done in Microsoft's PowerPoint application, either the PC or Mac versions.** Free downloads of substitute versions will not be accepted and therefore will be counted as incomplete. The university bookstore has a student version of the entire Microsoft Office suite for a very affordable price. **Assignments not handed in on time will be docked 1.0 point (i.e., from 2.3 to 1.3)**

Course Content and Schedule – Unforeseen interruptions are possible, due to weather, sickness, etc. which may cause there to be a need to adjust both the content and the schedule of the lesson-plan outlined above. However, every effort will be made to reconcile and compensate for any changes made as we go along.