San José State University
Department of Design / Industrial Design Program
DSID 128, Advanced Projects in ID, Sect. 02, Fall 2017

<table>
<thead>
<tr>
<th>Instructor:</th>
<th>Chris Whittall</th>
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<tbody>
<tr>
<td>Office Location:</td>
<td>Art 205</td>
</tr>
<tr>
<td>Telephone:</td>
<td>408.596.6739</td>
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</tr>
<tr>
<td>Office Hours:</td>
<td>Fridays from 12:00 – 2:00 (no drop-ins, please make appointment)</td>
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<tr>
<td>Class Days/Time:</td>
<td>T 3:00pm-8:50pm</td>
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<td>Classroom:</td>
<td>Art 205</td>
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<tr>
<td>Prerequisites:</td>
<td>DSID 125A; DSGN 127</td>
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**Canvas Course Management Website & Course Format**

This course uses a hybrid method of teaching. A hybrid course means that there are components of the course that are done in the classroom and other components that require using the online course management system. Course materials such as the syllabus, assignment handouts, grading, etc. may be found on the DSID 128 course Canvas website. You may find your link to this website on MySJSU, along with your login/password info. You are responsible for regularly checking with the messaging system in Canvas for course updates, assignments, etc. All class correspondence and grading will also be managed through the class Canvas site. If you do not check Canvas often, you should set up your email forwarding to forward all class correspondence to your preferred email address. You must have access to a computer and the internet to be able to access the Canvas site. You may also use a tablet or your phone. Some assignments will be required to be turned in on Canvas, in which case you will need to have access to some basic software such as MS Office (MS Word) or some writing software, Adobe Acrobat, and basic scanning software for scanning sketches to upload to the assignment portal. See [University Policy F13-2](http://www.sjsu.edu/senate/docs/F13-2.pdf) at http://www.sjsu.edu/senate/docs/F13-2.pdf for more details.
Course Description

The Advanced Projects in ID Studio (DSID 128) is intended to build upon and reinforce your previous coursework experience by emphasizing the manner in which one designs, plans and builds a real product concept. We will therefore focus on the further development of your design skills and process as it applies to design in today’s professional product development process. Similar to most professional design work, this class is set up as a team project. As a member of a design team, you will be required to share the process of design with your team-mates, which means designing, planning and building your product together as a unified group with the ultimate goal of creating the most appropriate and compelling design solution.

Course Goals:

Student Learning Objectives

This course will focus on design theories, methods and techniques used by product designers working with complex product design in a team environment. Appropriate brand/visual cohesiveness, a variety of technologies, an understanding of lifestyles and working within the constraints of governmental agency requirements. It will stress application of all the knowledge you have gained while a student in this program including, but not limited to: design theory, persuasive presentation, quality and craftsmanship, ergonomics, materials and manufacturing processes used in mass and/or low volume manufacturing processes, mechanical complexity, invention, production techniques, human factors (physical and behavioral), ethnography, surveys, detailed design development techniques, sustainable design strategies, sketching, model making, good aesthetics principles, and use of a variety of software and hardware tools.

Class assignments will include readings from a variety of sources, videos and guest lectures, and design of a product solution for the defined problem. A field trip or two may be included. Reading from the assigned readings and other sources from Canvas will be required each week and will be reviewed and applied in class through discussions and exercises.

Course Learning Outcomes (CLO)

On successful completion of the course students shall be able to:

(LO1) Identify and demonstrate the role of the designer in a professional setting.
(LO2) Create a design project from idea through to final design in a highly refined manner during all phases of the project.
(LO3) Demonstrate systematic thinking through of complex problems and systems and apply industry standards of ergonomics, sustainability, user research, and manufacturing processes to a project.

(LO4) Practice problem identification and discovery and apply empathic design methods.

(LO5) Demonstrate advanced problem solving skills and tools, engage in active learning in and outside the classroom, and apply lessons learned to the project. Participation is key to active learning and students will demonstrate the methods associated with active learning in a creative environment.

(LO6) Know the role of the designer in scenario development in the design industry.

(LO7) Apply physical and behavioral ergonomics and human factors and successfully use scientific methods to find the most appropriate solutions.

(LO8) Perform advanced critical and technical writing skills as applied to design briefs and documentation of project work.

(LO10) Produce clear and compelling communication of ideas in 2D, 3D, and 4D formats.

(LO11) Apply the principles of time management through the use of scheduling tools.

(LO12) Evaluate appropriate aesthetics and brand and apply to the entire design project.

Course Project Deliverables

1) **Proposals and Gantt Chart.** Each team must adhere to their Project Proposal and Revised Gantt Chart for team project definition, timing and deliverables. Late changes or detours from your plan are typically a result of bad planning, and will be costly to the team.  
*Note: Proposal and Gantt Chart were created during your previous semester, but will be refined during the first 2-3 weeks of this class.*

2) **Project Research Summary Document.** This document summarizes all user interviews, cultural reference/context, functional and technical research, relevant or comparable transport systems, competitive products, empathic research, materials research, etc. Each Summary Document should conclude with analysis of all research that leads to a clear problem statement and opportunity statement. The problem and opportunity statements shall serve as the basis for your Project Proposal and shall inform your visual design goals and Product Requirements Document (PRD).
3) **Product Requirements Document (PRD).** This document outlines all the fundamental requirements of your product from a functional point of view, but also from a cultural point of view. Requirements such as special features, functions, capabilities, capacities, interaction requirements, size, weight, modularity, transformability, agency compliance, and all other design constraints should be clearly spelled out in this document.

4) **Final Model BoM (Bill of Materials).** This is an itemized cost summary of all the parts, materials and components that will be required to build your final model for this class. This deliverable should be taken seriously, as the cost of your project will be shared equally between all team members. You can build a great model with a relatively low cost, if you are frugal as a team. Plan your costs realistically, and try to put your money where it matters most to the end user experience.

5) **Production BoM (Bill of Materials).** This is an itemized cost summary of parts, materials and components that would be required to build a production run of 5,000 units. This cost summary is extremely important to your team and to the ultimate success of your product. A product that is too expensive or complicated will most likely never find a willing financial backer or manufacturer. Additionally, a product that is too expensive to build will ultimately be too expensive for the end consumer to buy, and fail in the marketplace. Consider that a general rule of thumb is that the retail price should be 5X the BoM cost; that is if you intend to make a profit.

6) **Drawings.** A minimum of 40 pages per week/per team (8.5” x 11” or larger) filled with sketches, weeks 4-12.

7) **Models.** Sketch models and scale mock-ups throughout the semester as part of phase deliverables and sketches each week.

8) **Midterm Presentation.** Midterm Presentation that shows your selected direction with a full-scale mock-up, renders and sketches; all thoroughly vetted through a solid design process.

9) **Final 3D Appearance Model.** This full-scale appearance model is to be presented at your final critique. It shall exhibit all fundamental functionality and features (where technically feasible), and be made to look like an actual production unit.
10) **Final 3D CAD.** 3D CAD renderings of the product alone (orthographic views plus perspective shot) and in-context renderings with product being used or in various states of functionality.

11) **Clear Communication of Functions.** Any functionality, capability, or “state changes” that are not evident in the Final 3D Appearance Model must be demonstrated through 3D CAD animations, movies, highly refined storyboards, or other methods, in order to clearly communicate their function and benefit.

12) **Presentation Board.** A final visual presentation (BOTH digital and hard copy on the wall) will take place during the last two weeks of class and will be presented at your Final Presentation.

13) **Process Book.** A digital process book, well organized, well crafted, and with a Table of Contents, Section Dividers, and submitted at the Final Exam date.

14) **Upload to Canvas.** Pdf file(s) uploaded to Canvas of the all work created during the semester, including work presented on the final presentation, the process book and any other relevant work related to the project. This is due with your Process Book on the Final Exam date.

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**Required Texts/Readings**

**Textbook**

The required textbook for this class is: N/A

Other required reading and resources are located on Canvas.

**Required Materials List**

Materials that will be required for this course will vary depending upon your specific project, and are not covered by Course Fees. An estimate is as follows:

- One ream (500 sheets) of copy paper (letter or tabloid size). ~$15
- Various mock-up materials, such as: foam core, cardboard, plywood, fabric, wooden dowel, aluminum rod or channel, various fasteners, tape, glue, string, etc. ~$125
- Higher density materials such as urethane foam, renshape, or casting materials for the final model (some can be bought at the Spartan Bookstore). ~$150

- 3D Printer consumables will be provided up to 3 cubic inches of volume. ~$50

  Any material after that will be charged to the student. See Student Assistant for more information about how to submit files, calculate and pay fees.

- Plastics (acrylic, styrene, polycarbonate, PVC, etc.). ~$50

- Pens, pencils, measuring tools for working in shop. ~$35

- Standard set of drill bits for working in shop. ~$25

- Paint. ~$50

- Ink cartridges for printing. $120

- A variety of functional prototyping materials that may include: batteries, wiring, soldering equipment, lighting, wheels, bearings, cables, locks, etc. ~$150

The total cost of these materials is estimated to be $650 - $850 per student.

**Shop Test**
The Department of Design requires that Industrial Design students attend and pass the shop safety orientation at least once each year. You are responsible for viewing the Shop Safety Video on your own as it is posted online. The shop test date will be announced the first day of class and is listed on the syllabus. That will be the only date that you will be able to take the shop test for this course so make sure you have studied up and paid your shop test fee at the Bursars Office before that date. You must provide proof of enrollment and the original receipt from the Bursar’s Office that you have paid the required $20 shop fee to fund #62089 prior to taking the test.

**Library Liaison**
Elisabeth Thomas, Liaison Librarian for Design Department
Email: elisabeth.thomas@sjsu.edu
Phone: (408) 808-2193
Classroom Protocol

Active participation in class activities is a significant factor in a student's success in the Industrial Design program. Active learning facilitates mental growth, skill enhancement, creates a life long learner and improves the goals of becoming a good designer. Students are expected to be on time to class and when a class critique is planned, work is to be taped/pinned up to the walls by 10 minutes after the official start of the class as we will make all efforts to begin the critique at that point. Arriving late to class without prior arrangement and approval from the professor is considered disruptive. If the student cannot be in the classroom by the start of class, please do not interrupt the class in session by entering the classroom. If a student encounters any problems that inhibit their ability to participate in the class, please provide as much advance notice as possible to the instructor so that he/she may respond and inform the student in a timely manner. Students are to be respectful of the professor and their peers and any disruptive activities in the classroom will result in the student being asked to leave the class. Students are expected to leave the classroom in a clean condition at the end of each class meeting so that the next class has an organized, clean room waiting for them.

Cell phones, tablets, and even laptops can be disruptive and inconsiderate to your classmates and the instructor. Unless it is being used for a class activity, please turn off all electronic devices that can potentially disrupt class. **Phones are NOT permitted in this class** and you will be asked to turn off and store your phone at the start of each class. If you disrupt or withdraw from class activities due to your inability to silence and ignore any of these devices, it will count against the participation portion of your final grade and you may be asked to leave the classroom. Additionally, talking in class during a lecture is considered disruptive to the class and will adversely affect the participation grade and you may be asked to leave the classroom. If emergency personal issues (documented family, medical, etc) require you to leave your phone on, please make arrangements with the instructor prior to and in advance of the start of class.

Assignments and Grading Policy

Students will be engaged in lectures, research and design activities, and lab time during class meeting times and they will be assessed on engagement in those activities in their Participation grade (LO 5). Students will have homework assignments to do outside of class (up to 12 hours per week) that include reading and sketching in their sketchbook, plus drawing and concept development assignments (LO 1-6). Students will be required to turn in a mid-term body of work done-to-date, along with keeping up to date on uploading all assignments to Canvas for grade assessment (LO 7-12). You
will be required to turn in your final project on the final presentation date (LO 7-12). The assigned final will be the turning in of your project process book AND your project laid out in your portfolio format in both printed hard copy format in professors’ office and digital format on Canvas (LO 1-12). Grading will follow the standard SJSU A-F system.

All grades are assessed on the following three criteria: Quality, Effort, and Completeness. Each assignment, presentation and deliverable will be graded on these three criteria, with each criteria holding equal value (33.33%).

A+, A, A- / 100+ - 91% / Excellent
B+, B, B- / 90 – 81% / Above Average
C+, C, C- / 80-71% / Average
D / 70-61% / Below Average
F / Below 61% / Failure

Grading is weighted during the semester as follows:

Individual Class Participation, Attendance, Punctuality 10%
Individual Contribution to Team's Project Work 15%
Individual Contribution Research and Concept Presentation 10%
Team Midterm Presentation and Deliverables 20%
Team Final Project Presentation and Project Deliverables 20%
Peer Evaluations 10%
Final Exam: Process Book 15%

All assignments are due on time. No late work is accepted without documented justification. If you miss the Canvas deadline for uploading a project deliverable, you will receive a failing grade for that deliverable, however you will still receive feedback on the submission, but only at the next available time that the professor has. Project work for in-class critiques must be 100% complete and pinned up on time in order to receive in-class feedback and anything more than a failing grade. Extra credit is not possible in this course as the workload is significant enough. The Participation grade in this course will be assessed through your engagement in Activities/Exercise sessions, discussions in class, online engagement through Canvas, and critiques. Actively engaging and exhibiting life-long learning skills during class are the mode by which participation is assessed.

Student Technology Resources

It is a requirement for ID students to have their own computer with the required software (Adobe CS, Solidworks, MS Office), and it is required for DSID 125A that all ID students have a large format printer (11”x17” or
A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include digital and VHS camcorders, VHS and Beta video players, 16 mm, slide, overhead, DVD, CD, and audiotape players, sound systems, wireless microphones, projection screens and monitors. The ID Program will provide access to the large format printer for critiques and presentations. Students will be given an 8 linear foot allotment of paper for this course (enough for 1 draft and 1 final print). Any additional needs for printing can be accommodated by payment through the IDSA Student Chapter or going to Plotter Pros (http://www.plotterpros.net/index.shtml) in San Jose.

Adobe Creative Suite licenses is available through the SJSU Adobe software program for faculty, staff, and students. Students can access Adobe Creative Suite 6 Design and Web Premium, and should be able to download it from http://its.sjsu.edu/services/software/adobe/index.html.

For access to a Solidworks License, send an email to the professor of this course or your Major Advisor, from the email address you wish to have the license listed under, and the professor will email you the instructions within 48 hours.

University Policies

SJSU’s Office of Graduate and Undergraduate Programs maintains university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. You may find all syllabus related University Policies and resources information listed on GUP’s Syllabus Information Web Page at http://www.sjsu.edu/gup/syllabusinfo/.
# DSID 128 / Advanced Projects in ID / Fall 2017

## Course Schedule

*Schedule is subject to change with fair notice (one class period) in class or via Canvas.*

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Demos, Assignments, Deadlines</th>
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</thead>
</table>
| 1    | 8/29 | **Project Kickoff + Research Phase**  
- Instructor/class introductions  
- Review syllabus, course expectations, Canvas & how to use it for this course, project deliverables and requirements, admin issues, and grading criteria  
- Begin researching target use cases and user groups  
- Begin PRD  
- Begin Process Book  
  
*Lecture/Discussion:* Project Planning & Design Research & PRD  
*Activity:* Individual reviews with instructor and each team to discuss their project.  
*Assignment #1:* Revise Project Proposal and Gantt Chart - Revisions due 9/4 on Canvas.  
*Assignment #2:* Begin building PRD – Due 9/18 on Canvas |
| 2    | 9/5  | **Research Phase - Interviews**  
- Mandatory Shop Test from 3:30 – 5:30 (any students who have already completed the shop test must still attend to check-in with shop and confirm their status for this semester).  
- Teamwork session to plan/coordinate user research interviews, etc.  
- Continue researching target use cases and user groups  
- Work on PRD  
- Update Process Book  
  
*No Lecture*  
*Activity:* Instructor will meet with each team to discuss revised proposals and initial research findings.  
*Due the day before class:* Assignment #1  
*Assignment #3:* Research Interviews Summary/Conclusions - Due 9/11 on Canvas |
| 3    | 9/12 | **Research Phase – Target Use Case**  
- Studio teamwork session to organize research findings and narrow in on final problem/opportunity statement, use case scenarios and design requirements.  
- Work on PRD  
- Update Process Book |
<table>
<thead>
<tr>
<th>Lecture/Discussion: Teamwork in Design</th>
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<tbody>
<tr>
<td>Activity: Instructor to meet with each team to review interview progress and problem/opportunity hypotheses.</td>
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<tr>
<td><strong>Due the day before class:</strong> Assignment #3</td>
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**Assignment #4:** Project Research Summary (with Problem/Opportunity Statement, and Clear Use) - Due 9/18 on Canvas.

**Assignment #5:** Product Requirements Document - Due 9/18 on Canvas.

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<tr>
<th>4</th>
<th>9/19</th>
<th>Concept Ideation</th>
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<tr>
<td></td>
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<td>• Studio team brainstorm to kick off concept ideation based upon research findings, use cases, problem/opportunity statement and PRD.</td>
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<td>• Update Process Book</td>
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**Lecture and Discussion:** Concept Ideation Approach, Techniques and Presentation

**Activity:** Instructor to meet with each team during brainstorming activities.

**Due the day before class:** Assignments #2, #4 and #5

**Assignment #6:** Each team member to create at least 15 unique and viable product concepts. Due 9/26

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<th>5</th>
<th>9/26</th>
<th>Concept Ideation</th>
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<tr>
<td></td>
<td></td>
<td>• Individual teams to present and critique one another’s concepts. Are there common themes? Which concepts are working well, which are not working? Which concepts support the Problem/Opportunity Statement best? Merge concepts where possible. Establish distinct categories and continue to explore.</td>
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<td>• Update Process Book</td>
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**No Lecture**

**Activity:** Instructor to individually review product concepts with each team in the form of a “group critique” and help with creation of concept categories.

**Due:** Assignment #6

**Assignment #7:** Each team member to create an additional 10 (new or significantly evolved) concepts that are related to new sub-categories. Due 10/3

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<thead>
<tr>
<th>6</th>
<th>10/3</th>
<th>Concept Ideation</th>
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<tr>
<td></td>
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<td>• Individual teams to share, critique and combine each other’s concepts. Evaluate concept categories – are they all still valid? Evaluate strongest product categories and concepts – which concepts best support the problem/opportunity statement and provide the best user experience? Narrow down to 3 finalist concepts.</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Activity</td>
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<tr>
<td>7</td>
<td>10/10</td>
<td><strong>Concept Refinement</strong></td>
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</table>
|      |      | - Begin 3D CAD investigations for 3 concepts  
|      |      | - Explore final 3 concepts in physical mock-ups  
|      |      | - Update Process Book  

**No Lecture**  
**Activity:** Instructor to individually review product concepts with each team in the form of a “group critique” and help with evaluating concepts and down-selecting to 3 final concepts.  
**Due:** Assignment #7  
**Assignment #8:** Each team to refine 3 final concepts and prepare presentation boards of each concept to present to the whole class. Each concept should be represented in 1/4 scale mock-ups, detailed drawings and preliminary CAD renderings. Due 10/10

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<th>Week</th>
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<th>Activity</th>
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<tr>
<td>8</td>
<td>10/17</td>
<td><strong>Concept Refinement</strong></td>
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|      |      | - Down-select to one final concept  
|      |      | - Explore/refine structural aspects (in 2D and 3D)  
|      |      | - Explore/refine functional aspects (in 2D and 3D)  
|      |      | - Explore/refine visual design language  
|      |      | - Begin 3 dimensional prototyping of entire project.  
|      |      | - Update Process Book  

**Lecture and Discussion:** Concept Refinement –  
**Activity:** Class Critique: each team to present their 3 final design concepts to the entire class for review and discussion.  
**Due:** Assignment #8  
**Assignment #9:** Each team to explore/refine their final design with regard to architectural strategy, functionality, structure, visual proportions and ergonomics. Due 10/17

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<th>Week</th>
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<th>Activity</th>
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| 9    | 10/24| MIDTERM PRESENTATION  
|      |      | - Each team to present their preliminary full-scale prototypes  

**Lecture:** TBD  
**Activity:** Instructor to meet with individual teams and review pre-Midterm progress.  
**Due:** Assignment #9
along with functional detail mock-ups, CAD renderings and support drawings. All presentations shall portray process-to-date from initial research to current mock-up. Projects must be presented in an organized manner that clearly demonstrates the design intention. Each team will have 15 minutes to present and 45 minutes for classmate/instructor/guest feedback.

**Note:** This presentation will include guests from the local design community, and so it is very important that each team is well prepared to present, and well rested enough to represent their ideas and comprehend valuable feedback.

<table>
<thead>
<tr>
<th>10</th>
<th>10/31</th>
<th>Concept Refinement, BoM and Plan</th>
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<tr>
<td></td>
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<td>• Make revisions to design, as needed, per Midterm feedback.</td>
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<td>• Make functional or ergonomic improvements that were learned through interaction with the Midterm mock-up.</td>
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<td>• Establish Bill of Materials (BoM) for final functional appearance model.</td>
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<td>• Begin planning final “full scale” functional appearance model</td>
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<td>• Update Process Book</td>
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**Lecture:** TBD  
**Activity:** Instructor to meet with individual teams and review progress

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<thead>
<tr>
<th>11</th>
<th>11/7</th>
<th>Build</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>• Build final “full scale” functional appearance model</td>
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<td>• Update Process Book</td>
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**Lecture:** TBD  
**Activity:** Instructor to meet with individual teams and review progress

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<tr>
<th>12</th>
<th>11/14</th>
<th>Build</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>• Build final “full scale” functional appearance model</td>
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<td>• Update Process Book</td>
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**Lecture:** TBD  
**Activity:** Instructor to meet with individual teams and review progress

<table>
<thead>
<tr>
<th>13</th>
<th>11/21</th>
<th>Build</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>• Build final “full scale” functional appearance model</td>
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<td>• Begin creating final presentation materials i.e. renders, storyboards, info-graphics, charts, user profile, Presentation Board, etc…</td>
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<td>• Update Process Book</td>
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**Lecture:** TBD  
**Activity:** Instructor to meet with individual teams and review progress

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<thead>
<tr>
<th>14</th>
<th>11/28</th>
<th>Build</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>• Build final “full scale” functional appearance model</td>
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</table>
|   | • Continue creating final presentation materials i.e. renders, storyboards, info-graphics, charts, user profile, Presentation Board, etc…  
|   | • Update Process Book  
| Lecture: | TBD  
| Activity: | Instructor to meet with individual teams and review progress  
| 15 | 12/5  
| **Finish Build - Documentation** |  
|   | • Finish up final details on final model  
|   | • Take photos of model, as needed  
|   | • Finish all presentation materials  
|   | • Finish Presentation Board  
|   | • Finish process book  
| No Lecture | Activity: Instructor to meet with individual teams and review progress  
| 16 | 12/12  
| **FINAL PRESENTATION** |  
| **Due:** | Final Project Presentation (see Canvas for details)  
| **Assignment 10:** Peer Evaluations  
| **Assignment 11:** Process Book  
| Final Class | 12/19  
| **Final Class:** | 3:00 – 6:00  
|   | Final Class to review Final Process Books, and discuss the semester overall.  
| **Due:** | Peer Evaluation of individual contributions to Final Project  
| **Due:** | Final Process Book (spiral bound hard copy and uploaded pdf to Canvas).