Integrated Product Design

Last Updated: Fri, 11/14/2025

Course prefix: ID

Course number: 6107

Section: 1

CRN (you may add up to five):
32966

Instructor First Name: Yixiao

Instructor Last Name: Wang

Semester: Spring

Academic year: 2025

Course description:

This course introduces students to interactive product design, including **the basics of sensor technologies, electronics, and programming** required to produce working product concept prototypes. You will be exposed to prototyping interactive products and apply these skills in hands-on projects. More specifically, this course will focus on **1) introducing the basics of Arduino prototyping techniques**, including both electronics wiring and Arduino coding, and **2) introducing the integrated, human-centered design process of an interactive product**, following the basic steps of the "spiral product development process" well-established for developing quick-built products. The key purpose of these two focuses is to cultivate your critical and creative thinking ability to the point that you can propose, develop, prototype, and evaluate novel interactive products confidently. As a result, you will constantly shift your thinking style between critical and creative thinking in this course, making it an exciting design research journey. **The skills you learn from this course will be foundational to your future career as a creative designer, engineer, or both. Please click the links below to see previous student works:** Taily Robot (ID 6107) and Stepping Stones Caterpillar (ID 6107). Finally, for Spring 2026, we will collaborate with the "Robert C. Williams Museum of Papermaking" for the design projects.

Course learning outcomes:

Upon completion of the course, students are expected to demonstrate knowledge, skill, and abilities in the following areas:
○ Understand the basic logic and process of designing an interactive product.
○ Practice skills in physical computing and prototyping as well as how these skills are employed in the product design process.

○ Conceptualize and integrate technical and design elements in projects.
○ Execute an appropriate level of quality, craft, aesthetics, and attention to detail.
○ Communicate and develop product design projects from a human-centered perspective.

Required course materials:

There are no required texts for this course. Whenever possible references and reading materials will be provided in digital format via the class website (on Canvas). However, we do have two books you can look into for reference:
○ Banzi, Massimo, and Michael Shiloh. Getting started with Arduino. Maker Media, Inc., 2022.
○ Ulrich, Karl T., and Steven D. Eppinger. Product design and development. McGraw-hill, 2016.

Grading policy:

Participation (10%) and Collaboration (10%)
○ Attendance. Unexcused absences may result in point deductions.
○ In-class participation & collaboration. In this class, you are expected to help each other in the learning process.
○ Lab policy compliance. Losing Arduino kits or components may result in point deductions.
○ Contributions to collaborative projects/assignments as evaluated by your peers or teammates.
Projects (80%)
○ Assignments.
○ Concept Development and Prototyping.
○ Presentation and Demonstration.
○ Documentation.
Scores for individual submissions, assignments, or any other components will be given based on the general guidelines here:
A 90-100% (Excels in quality and understanding beyond requirements)
B 80-89% (Meets all requirements and no outstanding lack in quality)
C 70-79% (Minor lack in quality or some requirements missing)
D 60-69% (A small part of requirements is delivered but effort is evident)
F 0-59% (Low effort or major lack in quality or no submission)

Extra Credit and Grade Dispute Policies and Procedures
Extra credit will be available as specified in the assignment sheet. You should contact the instructor within one week of grades being posted if they have any concerns about the assigned grade.

Attendance policy:

You are expected to attend and participate during each class session. Attendance for all scheduled exams or any in-class presentation is required. If you know that you will miss a class, please advise your instructor at least 24 hours in advance. If an unexpected situation

occurs, it is your responsibility to contact the instructor within 24 hours of the scheduled class time.
Missing three classes over the course of the semester without prior approval from the instructor will result in the loss of a full letter grade in the final grade for the course. Three late arrivals to class, later than 15minutes after the start of class, will count as an absence. See information about the Institute’s absence policy at http://www.catalog.gatech.edu/rules/4/.
You are expected to actively engage in any in-class discussions and activities. This includes asking and answering questions with the instructors and other classmates, providing supportive critiques when the opportunity is provided, helping other classmates with their projects in class, and working effectively in class teams. Any active disengagement with in-class activities will result in an assessed penalty against the student’s participation grade.

Academic honesty/integrity statement:

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/. Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.