San José State University
Aviation and Technology Department
Tech 190A, Senior Project I, Section 02, Fall, 2019

Course and Contact Information

Instructor:	Dr. David P. Yan
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Office Hours:	Thursday: 10:00AM - 12:00 PM; (and by Arrangement)
Class Days/Time:	Wednesday (Seminar): 1:30PM – 4:15 PM
Classroom:	E 490
Prerequisites:	Completion of major lower division requirements, senior standing, and consent of instructor

Course Description

Half of one-year senior team design projects. Professional Development and Proposal preparation with feasibility plans, specifications, oral/written reports, and career and professional seminar participation. Project proceeds over two semesters from problem definition and design to validation, prototype construction, and testing.

Course Goals

This course emphasizes professional development and senior project development which are outlined as follows with associated objectives.

1. Professional Development:
    1) Resumes and Cover Letters
    2) Soft Skills Improvement
    3) Personal Career Development Plan
    4) Professional Portfolio

   Objectives:
    1) Prepare professional resume
    2) Prepare professional cover letters
    3) Improve listening capability
    4) Improve verbal communications
    5) Improve interviewing and Networking skills
    6) Understand workplace relationships
    7) Understand workplace communication etiquette
    8) Improve written and oral communication
    9) Determine personal career development plan
    10) Produce professional portfolio

2. New Product Proposal:

1) Feasibility plans
2) Specifications
3) Analysis
4) Evaluation
5) Documentation
6) Portfolio

Objectives:

1) Conduct survey and market analysis
2) Determine form, fit, and function with data from market study
3) Understand key design thinking terms and principles
4) Determine material and component specifications
5) Conduct new product analysis
6) Evaluate and checks design against specifications
7) Produce 3-D prototypes
8) Produce new product documentation
9) Produce new product portfolio

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. Work effectively on a team of students to complete a project
2. Define the societal needs, carrying out market study/economic and budget analyses
3. Develop a complete set of functional specifications for the project
4. Develop design models and/or drawings for prototype and final design
5. Develop a schedule, and meet schedule and budget constraints
6. Procure, fabricating, and assembling prototype and final design hardware
7. Evaluate, test, and analyze prototype and final design
8. Describe the global, social or cultural influences of the project
9. Describe the effects of their project on society locally and/or globally
10. Evaluate and describe in detail the environmental and economic impact of the project
11. Evaluate and describe the health and safety of the project and its effect on quality of life
12. Write reports and make presentations effectively

Required Texts/Readings

Textbook

1. Michael G. Luchs, Scott Swan and Abbie Griffinv, "Design Thinking: New Product Development Essentials from the PDMA", 1st Edition, ISBN-13: 978-1118971802, Wiley, eCopy available at https://ebookcentral.proquest.com/lib/sjsu/detail.action?docID=4041673

Readings

1. Business Soft Skill Video available at: https://www.hoopladigital.com/title/11059419
2. Resource Materials from SJSU Career Center located at: http://www.sjsu.edu/careercenter/

3. Handouts and Class Activity Materials

Other technology requirements / equipment / material

1. Student Edition of 2018-2019 SolidWorks CAD software available at: http://www.solidworks.com/sw/education/SDL_form.html (contact your instructor for School License ID Code for a free download when available)
2. Multisim or other appropriate electronic design software
3. A minimum of 8 gigabyte flash drive
4. Laptop/notebook computer with ample memory and speed
5. Scientific hand calculator with trig and square root functions
6. Safety glasses
7. Appropriate test and measurement instruments including rulers, tape measure, digital calipers, multimeters, and voltmeters etc.

Course Requirements and Assignments

All textbook and assigned resource reading assignments must be completed according to the activity schedule, and students must be prepared for discussion of weekly reading topics in class. In addition, students will undertake other assigned readings relevant to topics being discussed and studied in class.

1. Assignments (100 points)

There will be 10 class assignments designed to help students understand the various aspects of Tech 190A. Most of these assignments will come from the reading assignments from the text in the form of synopsis, while the rest will come from topics covered by invited guests and other class topics. These assignments will be issued in class at various times in the semester during and after class discussions. Each of the assignments is worth 10 points and is due in class as required by the instructor.

2. Professional Development (150 points)

The goal in professional development is to have a professional portfolio that describes who you are, who you aspire to be, and how to fulfill that professional aspiration. A professional portfolio, which is an organized collection of relevant documents and artifacts that showcases your talents, most relevant skills, and charts your professional growth, will be developed.

There are four parts to the professional development section of this class. They include your resume and cover letters, soft skills literacy an improvement, personal career development plan, and professional portfolio. A more detailed handout about the assignment will be provided in class.

3. New Product Development (160 points)

The new product development section of Tech 190A will be done in groups of 4-5 students. It has both team aspects and individual aspects. Each individual team member has distinct responsibility to design, document, and prototype the approved product. The goal is to eventually develop a new product portfolio which includes detailed work on the product's feasibility studies, parts and components specifications, analysis, evaluation and full documentation. A more detailed handout about the project will be provided in class.

"Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus."

Final Examination or Evaluation

None.

Grading Information

Your grade will be based on your performances in the assignments, projects, and participation. Grading Schedule: The following items and points are used to determine your course grade:

Item	Number of items evaluated	Total points	Total percentage
1. Assignments	10	100	24
2. Professional development	1	150	37
3. New product development	1	160	39
Total	12	410	100

Determination of Grades

A plus	96 to 100%
A	93 to 95%
A minus	90 to 92%
B plus	86 to 89 %
B	83 to 85%
B minus	80 to 82%
C plus	76 to 79%
C	73 to 75%
C minus	70 to 72%
D plus	66 to 69%
D	63 to 65%
D minus	60 to 62%

Classroom Protocol

Please arrive on time for the class and silence your cell phones during the class period. The homework assignments will be collected at the very start and end of class. If you are late to the class, please hold your assignments to pass in at the end of the class (it is disruptive when students walk up to hand in assignments during the class).

University Policies

Per University Policy S16-9, relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/"

Tech 190A-02 / Senior Project I, Fall 2019, Course Schedule

(Schedule is subject to change with notice)

Course Schedule

Week	Date	Topics (lab contents)	Readings, Assignments, Deadlines
1	Aug. 21 (Wednesday)	1. Orientation to the class 2. Discuss on course goals, logistics, grading, expectations, syllabus, assignments, projects and Project team formation 3. Assignment 1	All readings are from the required texts: 1. Michael G. Luchs, Scott Swan and Abbie Griffinv, "Design Thinking" 2.Outside Materials provided in class
2	Aug. 28	1. Introduction to professional development 2. Introduction to Soft Skills 3. Resume and Cover Letter Writing 4. Introduction to Power Listening 5. Soft Skill Series I	1. Assignment 1 Due
3	Sep. 4	1. Introduction to the Business World 2. Business Verbal Communication 3. Business Written Communication 4. Personal Career Development Plan 5. Soft Skill Series II 6. Assignment 2	1. Resume Due 3. Cover Letter Due 2. Soft Skill Series I Due
4	Sep. 11	1. Finding a Job 2. Workplace Relationships 3. Career Transitions 4. Professional Portfolio 5. Soft Skill Series III 6. Assignment 3	1. Personal Career Development Plan Due 2. Soft Skill Series II Due 3. Assignment 2 Due
5	Sep. 18	1. Interviewing and Networking 2. Phone Etiquette 3. Email Essentials 4. Soft Skill Series IV 5. Assignment 4	1. Soft Skill Series III Due 2. Assignment 3 Due
6	Sep. 25	1. Customer Service Basics 2. Successful Meetings and Events 3. Soft Skill Series V	1. Professional Portfolio Due 2. Report for Professional Portfolio Due 2. Oral Presentation Due 3. Soft Skill Series IV Due 4. Assignment 4 Due
7	Oct. 2	1. Introduction to new product development 2. Definitions 3. Procedure	1. Soft Skill Series V Due 2. Comprehensive Report for Soft Skill Videos Due 3. Readings:

Week	Date	Topics (lab contents)	Readings, Assignments, Deadlines
			1). Chapter 1: A Brief Introduction to Design Thinking 2). Chapter 2: Inspirational Design Briefing 3). Chapter 10: Design Thinking for Non-Designers: A Guide for Team Training and Implementation
8	Oct. 9	1. Introduction to new product development 2. Team formation/confirmation 3. Feasibility plans 4. Conceptualization 5. New Project Proposal Approval Form 6. New Product Development Group Schedule	1. Reading: 1). Chapter 3: Personas: Powerful Tool for Designers 2). Chapter 4: Customer Experience Mapping: The Springboard to Innovative Solutions 3). Chapter 20: Consumer Response to Product Form
9	Oct. 16	1. Specification of Materials and Components 2. Addition of Geometric Features 3. Inclusion of Greater Dimensional Details and Specifications 4. Assignment 5	1. New Project Proposal Approval Form Due 2. New Product Development Group Schedule Due 3. Reading: 1). Chapter 5: Design Thinking to Bridge Research and Concept Design
10	Oct. 23	1. Synthesis 2. Analysis I 3. Evaluation I 4. Prototype Printing I 5. Assignment 6	1. Assignment 5 Due 2. Reading: 1). Chapter 7: The Key Roles of Stories and Prototypes in Design Thinking
11	Oct. 30	1. Analysis II 2. Evaluation II 3. Prototype Printing II 4. Assignment 7	1. Assignment 6 Due
12	Nov. 6	1. Analysis III 2. Evaluation III 3. Prototype Printing III 4. Assignment 8	1. Assignment 7 Due 2. Reading: 1). Chapter 13: Knowledge Management as Intelligence Amplification for Breakthrough Innovations
13	Nov. 13	1. Documentation: product and part/component views in the form of working drawings, detailed and assembly drawings, dimensions, tolerances, special manufacturing notes, and standard components part numbers, bill of materials, circuit design specs and	1. Assignment 8 Due

Week	Date	Topics (lab contents)	Readings, Assignments, Deadlines
		detailed part specifications and product electronic data files	
14	Nov. 20	1. Portfolio Preparation 2. Report Writing	1. Reading: 1). Chapter 22: Future-Friendly Design: Designing for and with Future Consumers
15	Nov. 27	Non-Instructional Day (Campus Closed)	
16	Dec. 4	1. Team Presentations	1. Group Portfolio Due 2. Oral Presentation Due