# ARIZONA STATE UNIVERSITY EAST/TEMPE CAMPUS

## GENERAL STUDIES PROGRAM COURSE PROPOSAL COVER FORM

**Courses submitted to the GSC between 2/1 and 4/30 if approved, will be effective the following Spring.**

**Courses submitted between 5/1 and 1/31 if approved, will be effective the following Fall.**

**(SUBMISSION VIA ADOBE.PDF FILES IS PREFERRED)**

DATE February 19, 2009

1. ACADEMIC UNIT: Industrial Design

2. COURSE PROPOSED: IND 465 Collaborative Design & Development II 5
(prefix ) (number) (title) (semester hours)

3. CONTACT PERSON: Name: Prasad Boradkar Phone: 5-8685

Mail Code: 2105 E-Mail: prasad.boradkar@asu.edu

4. ELIGIBILITY: New courses must be approved by the Tempe Campus Curriculum Subcommittee and must have a regular course number. For the rules governing approval of omnibus courses, contact the General Studies Program Office at 965–0739.

5. AREA(S) PROPOSED COURSE WILL SERVE. A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Core Areas

Literacy and Critical Inquiry–L ☒
Mathematical Studies–MA ☐ CS ☐
Humanities and Fine Arts–HU ☐
Social and Behavioral Sciences–SB ☐
Natural Sciences–SQ ☐ SG ☐

Awareness Areas

Global Awareness–G ☐
Historical Awareness–H ☐
Cultural Diversity in the United States–C ☐
(Note: **one course per form**)

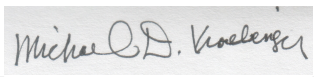
6. DOCUMENTATION REQUIRED.
(1) Course Description
(2) Course Syllabus
(3) Criteria Checklist for the area
(4) Table of Contents from the textbook used, if available

7. ***In the space provided below (or on a separate sheet), please also provide a description of how the course meets the specific criteria in the area for which the course is being proposed.***

CROSS-LISTED COURSES: ☐ No ☒ Yes; Please identify courses: GRA 465, MGT 465

Is this a multisection course?: ☒ No ☐ Yes; Is it governed by a common syllabus? _____

Michael Kroelinger
Chair/Director (Print or Type)



Chair/Director (Signature)

Date: February 20, 2009

Rev. 1/94, 4/95, 7/98, 4/00, 1/02

**Arizona State University Criteria Checklist for**

# LITERACY AND CRITICAL INQUIRY - [L]

## Rationale and Objectives

**Literacy** is here defined broadly as communicative competence in written and oral discourse. **Critical inquiry** involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills which have little to do with language in the usual sense (words), but the analysis of spoken and written evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skills become more expert, as well as more secure, as the student learns challenging subject matter. Thus, the Literacy and Critical Inquiry requirement stipulates two courses beyond First Year English.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.

Students must complete six credit hours from courses designated as [L], at least three credit hours of which must be chosen from approved upper-division courses, preferably in their major. Students must have completed ENG 101, 107, or 105 to take an [L] course.

Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.

**Proposer: Please complete the following section and attach appropriate documentation.**

# ASU - [L] CRITERIA

TO QUALIFY FOR **[L]** DESIGNATION, THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE--**AS EVIDENCED BY THE FOLLOWING CRITERIA:**

| YES | NO | | Identify Documentation Submitted |
|---|---|---|---|
| ☒ | ☐ | **CRITERION 1:** At least 50 percent of the grade in the course should depend upon writing, including prepared essays, speeches, or in-class essay examinations. *Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report* | Syllabus and Justification Document |

1. Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment. (*NOTE: Writing assignments should be graded on the use of writing skills, the quality of the writing, as well as the quality of the ideas.)*
2. **Also:**

Please **circle, underline, or otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-1".**

**C-1**

| YES | NO | | Identify Documentation Submitted |
|---|---|---|---|
| ☒ | ☐ | **CRITERION 2:** The composition tasks involve the gathering, interpretation, and evaluation of evidence | Syllabus and Justification Document |

1. Please describe the way(s) in which this criterion is addressed in the course design. *(NOTE: Describe the course structure, including the expected tasks and activities that students will be engaged in that constitute gathering, interpretation, and evaluation of evidence.)*
2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-2".**

**C-2**

| YES | NO | | Identify Documentation Submitted |
|---|---|---|---|
| ☒ | ☐ | **CRITERION 3:** The syllabus should include a minimum of two substantial writing or speaking tasks, other than or in addition to in-class essay exams | Syllabus, Phases 5, 6 and 7 Document |

1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements. *(NOTE: Lower division L classes are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper division L courses generally are courses in a discipline into which writing and critical thinking have been fully integrated as a means of learning the content.)*

# ASU - [L] CRITERIA

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-3".**

**C-3**

| YES | NO | | **Identify Documentation Submitted** |
|---|---|---|---|
| ☒ | ☐ | **CRITERION 4:** These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. (*NOTE: Intervention at earlier stages in the writing process is especially welcomed*.) | Course Schedule and Justification Document |

1. Please describe the sequence of course assignments -- and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments. *(NOTE: Training in critical thinking and literacy must be sustained in order to create a habitual skill in every student and for the student to become more expert and secure with increasingly challenging material.)*

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-4".**

**C-4**

**Justification Document**

**Submission for L Designation for IND465: Collaborative Design and Development II**

**Introduction to the Course:**

Though I am requesting the L designation for IND465 only (IND464 was granted the L designation last year), I am including some information about both courses as they are connected, and together, they serve as the yearlong capstone project for the students. IND464 and IND465 are courses offered through ASU's InnovationSpace program. InnovationSpace is an entrepreneurial joint venture among the College of Design, Ira A. Fulton School of Engineering and W.P. Carey School of Business at Arizona State University. The goal of our transdisciplinary education and research lab is to teach students how to develop products that create market value while serving real societal needs and minimizing impacts on the environment. Put simply, we seek to create products that are progressive, possible and profitable. At the same time, they must have a meaningful impact on the daily lives of ordinary people.

IND464 and IND465 are courses that focus on teaching students how to design and develop new products, and they involve teams of senior level students from four disciplines. Each team has one student from industrial design, one from visual communication design, one from business and one from engineering. We work in conjunction with external partners and sponsors in these classes. I am the lead instructor for the two courses and faculty members from the other disciplines work directly with the students from their disciplines. The class meets on Mondays and Wednesdays from 3:30pm to 6:30pm. On Mondays, the entire class meets as a group for lectures, presentations, group meetings, etc. while on Wednesdays, the students meet with their disciplinary professors (the engineering students meet with their engineering professor, while the design students meet with me and the business students meet with their business professor) from 3:30pm to 5:30pm and then work in teams in the studio.

IND464 is divided into four phases, and IND465 is divided into three phases. Please refer to the syllabus for details on the phases.

**IND 464:**

Phases 1 and 2 involve the type of research and analysis that is conducted before any product development begins. In Phase 1 students collect information and Phase 2, they analyze it and generate a research report. Though this research and analysis is conducted as a group, each team member has a specific responsibility. For example, the engineering students are required to research existing and emerging technologies that can solve the problem they are exploring while the business students analyze the market opportunities. In Phase 3, students do brainstorming and generate product ideas and in phase 4, they document, present all the work done over the semester.

**IND 465:**

In Phase 5, student teams develop one selected product concept (design concept, brand concept, engineering prototype and business plan) and start writing a final Innovation Proposal for that one product. At this stage, they also do presentations to the faculty members as well as the sponsors about their progress on the projects. The faculty provide feedback to the students on the written materials submitted in

Phase 5. In Phase 6, the teams finalize the design of the product, create additional materials and make modifications to the Innovation Proposal. The faculty review the materials one more time, make suggestions for improvements and in Phase 7, student teams put together final materials for end of the year presentations. This includes the final Innovation Proposal (a compilation of the written and visual materials from all members of the team), a brief product pitch, an executive summary explaining the product, posters that show images of the product, as well as prototypes.

**Criterion 1:**

Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment. (*NOTE: Writing assignments should be graded on the use of writing skills, the quality of the writing, as well as the quality of the ideas.)*

As the syllabus and the explanation above indicate, the course relies on students being able to do thorough research and analysis, write reports, and make public presentations. The end of the semester presentations are public events where the sponsors, other university professionals, as well as faculty and students from the three colleges are present. The students are aware of this and they prepare their presentation materials accordingly.

The students receive an individual grade (50%) as well as a team grade (50%) for the class. As demonstrated in the syllabus in the highlighted areas research, analysis, report writing, and oral+visual presentations are critical activities that the students are expected to engage in alone as well as in teams. As highlighted in the syllabus, a total of 180 out of 300 points of the semester (60%) depend upon analysis, writing and presentation.

**Criterion 2:**

Please describe the way(s) in which this criterion is addressed in the course design. *(NOTE: Describe the course structure, including the expected tasks and activities that students will be engaged in that constitute gathering, interpretation, and evaluation of evidence.)*

The following is a list of all the activities that the students have to perform through the semester.

***Relevant Phase 5 (Developing the Concept) Activities:***

Concept Development
- Look up books, journal articles, and websites on topic
- Digest research reports from sponsors
- Write a project plan

Concept Documentation
- Develop a design language
- Write a list of user needs
- Write research summaries
- Create binders with all relevant information
- Write the first draft of the Innovation Proposal

Presentation
- Make an oral and visual presentation (Powerpoint) of the project

***Relevant Phase 6 (Finalizing the Concept) Activities:***

Concept Finalization
- Finalize and write specifications of product

Concept Documentation
- Incorporate faculty and sponsor feedback
- Write ecodesign strategy document
- Create the human interaction document
- Write the second draft of the Innovation Proposal

Presentation
- Make an oral presentation (Powerpoint) of the project

***Phase 7 (Documentation, Presentation, Exhibition) Activities***

Final Documentation
- Write and design the final Innovation Proposal
- Add to and complete individual disciplinary project reports

Final Presentation
- Create an oral and visual presentation (Powerpoint and movie)
- Finalize product pitch

Final Exhibition
- Create posters that explain design, business, and engineering
- Create models and prototypes for project

**Criterion 3:**

Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements. *(NOTE: Lower division L classes are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper division L courses generally are courses in a discipline into which writing and critical thinking have been fully integrated as a means of learning the content.)*

Please see the attached descriptions of the Phases 5, 6 and 7. The student teams are expected to present complex information through their written Innovation Proposals as well as their presentations. In this case, they are required to make sure that the materials they generate are not only critical but that they also relate to the work done by the other three members of the team. Therefore the documentation and presentation requires substantial coordination and planning.

**Criterion 4:**

Please describe the sequence of course assignments -- and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments. *(NOTE: Training in critical thinking and literacy must be sustained in order to create a habitual skill in every student and for the student to become more expert and secure with increasingly challenging material.)*

Each phase of the class is kicked off with a Phase Lecture, Phase Assignment and a list of Phase Deliverables. Please see the Course Schedule for details.

Written feedback is given to the individual students and the teams at the end of each Phase. They are also given 7 calendar days to improve upon the assignment based upon feedback given. This class has a Teaching Assistant who also sits down with each team individually to explain the reasons for the grades and what they can do to improve. The Innovation Proposal is built gradually through the semester because new components are added in each phase and students are given the opportunity of incorporating. Therefore there are three opportunities for students to get feedback and improve on their content as well as quality of writing.

We also videotape one of the presentations during the semester so that we may share it with our sponsors. The students watch these presentations with the Teaching Assistant so that they may improve their oral skills.

# InnovationSpace Syllabus – Spring 2009

## IND 465 Collaborative Design and Development II

| | | | |
|---|---|---|---|
| All Student Sessions | M W | 3:30pm to 6:30pm | CDN 071 and CDN 365 |
| Disciplinary Sessions | W | 3:30pm to 5:30pm | |

Course texts: *Creating Breakthrough Products*, by Jonathan Cagan and Craig Vogel.

**Background**

*Description*

This course builds on work completed during the preceding fall semester. It provides an opportunity for teams of senior-level students to complete a significant project while also potentially contributing to a better future. It does so by challenging students to work together to create comprehensive proposals around a new product design concept that address meaningful social and/or environmental challenges.

With the work completed during the fall semester as a foundation, each team will develop a comprehensive and detailed proposal structured around a specific product design concept. Each team will exhibit and present its proposal to university researchers and private sector groups late in the semester. Each team's proposal will describe how its product design concept is:

- Valuable (from a consumer's perspective)
- Possible (from a technological perspective)
- Desirable (from a market perspective)
- Good (from a social and environmental perspective)

The course is project-based but includes readings, presentations (by both faculty and students), discussion and the public exhibition/presentation of each team's work to external groups.

**Objectives**

This course has been designed to achieve the following objectives:

- To provide an opportunity for students and faculty to make a positive contribution to a better future through the design of socially and environmentally responsible product solutions.
- To help students develop mechanisms of working in transdisciplinary teams and gaining through their senior year educational experience
- To assist university researchers and other groups in developing socially progressive inventions and moving them closer to the possibility of commercialization

**Goals**

At the conclusion of this course, students will:

- Understand Integrated Innovation and how it can be applied to create progressive proposals featuring design, business and engineering
- Acquire valuable experience in crossfunctional teamwork
- Acquire valuable experience in writing and presenting information and proposals in compelling and persuasive ways
- Appreciate how their work can contribute to improvements for society and the environment

**Biomimicry**

This year, we are introducing the concept of biomimicry to the class with the goal of inspiring creative ideas and enhancing the role of sustainability in the curriculum. Janine Benyus, author of *Biomimicry: Innovation Inspired by Nature*, defines biomimicry (from bios, meaning life, and mimesis, meaning to imitate) as a new discipline that studies nature's best ideas and then imitates these designs and processes to solve human problems.

In her book, Benyus points out to the innumerable and ingenious solutions the natural world has devised to tackle the complex problems of energy usage, resource management, food production, structural engineering, beauty, waste management, reproduction, etc. In doing so, organisms from the animal and plant world operate as creative designers, engineers and business owners. Having evolved over time and having experimented with several solutions, these creatures have found sustainable solutions to their problems.

Students will have the opportunity to learn from biologists and other experts from ASU as well as the Biomimicry Institute. By applying principles of biomimicry, we can learn from nature's experiments and create more sustainable solutions to the global problems we face today around food, energy, waste, pollution, etc. In addition, Janine Benyus will visit ASU and our class during this semester.

**Structure and Deliverables**

This course features three phases with deliverables due at the end of each phase. The phases conducted during this semester will build upon those completed last semester, as shown below:

Fall 2008

Phase 1 – Collecting Information
Phase 2 – Making Discoveries
Phase 3 – Creating Opportunities
Phase 4 – Exhibit and Presentation

Spring 2009

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**Phase 5 – Developing the Concept**
*Activities*
Entails doing research and making all critical decisions and resolving all issues relating to the proposed product design concept, functional prototype, communication strategy and marketing/business plan. Teams will write the first draft of the Innovation Proposal.

*Deliverables*
Details provided in the Phase 5 assignment

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**Phase 6 – Finalizing the Concept**
*Activities*
Entails developing final specifications and producing written and physical materials to communicate all aspects of the project (e.g., the product design concept, functional prototype, manufacturing plan, communication strategy and marketing/business plan). Teams will write the second draft of the Innovation Proposal.

*Deliverables*
Details provided in the Phase 6 assignment

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**Phase 7 – Documentation, Exhibition and Presentation**
*Activities*
Involves the development of materials (text-based, visual, physical and presentational) to communicate/promote the project to a public audience. Teams will finalize the Innovation Proposal.

*Deliverables*
Details provided in the Phase 7 assignment

**Expectations**

**Expectations of Students**

- Energy, commitment and motivation to learn, excel and accomplish
- Dedication to the project (i.e., the opportunity to contribute to a better future)
- A commitment of 10 hours per week (from each student) outside of class time
- Respect for one another and for the knowledge each one of you brings to the project

- Self-motivation, self-discipline and a desire to exceed expectations
- Willingness to help others and to seek help when required

**Expectations of the Faculty Team**

- Articulate a clear vision for the course, maintain a reasonable schedule and define a set of appropriate deliverables
- Be available during scheduled class sessions and during posted office hours (or by appointment)
- Evaluate work and student performance/work fairly and consistently
- Provide honest, direct feedback and help when required
- Challenge all students to achieve the highest level of performance possible

**Policies**

*Attendance*

Attendance is required for all meetings, lectures, discussions, presentations and teamwork sessions. Students who miss any of these activities three times will be warned. Additional absences will result in the student's final grade being lowered by one full grade point (e.g., an "A" will be reduced to a "B").

*Late Deliverables*

Deliverables are due at the beginning of class on the date specified on each assignment sheet. Late deliverables will be accepted at the beginning of the next scheduled class session but will not, under any circumstances, receive a grade higher than a "C."

**Grading**

Grades will be determined based on the following categories and points. Each student will be provided with a written evaluation at the end of each phase of the project.

*Phase Grades*

The total points for the class will be 300, with each phase (5, 6 and 7) worth 100 points. The overall grade for the semester will be calculated on the basis of team performance and individual performance.

*Team Performance* (150 points – 50 points for each phase)

This specifically pertains to the quality of everything your team produces and presents. This includes: the management of the project and the team; the creativity, depth and robustness of your team's work and the effectiveness of your presentations and other deliverables (i.e., physical and print-based). This relates directly to the team's willingness to prompt and facilitate a constructive experience for all members. This may be demonstrated by your willingness to create social cohesiveness, help other team members and (very important) actively seek ways to resolve any team conflicts. Constructive action in resolving conflicts includes contacting the instructors to seek advice, help or intervention. Note: team conflicts are not necessarily a problem; allowing conflicts to progress unchecked, however, is a problem. Teams and/or individuals will be penalized if they do not take action to resolve team problems or conflicts.

Quality of the overall solution to the problem- 10 points
Level of detail in the solution (design, business and engineering)- 10 points
Overall quality of writing in the final Innovation Proposal- 10 points
Team evaluation of clarity and quality of all oral and visual presentations- 10 points
Quality of final exhibit/presentation at the end of the semester- 10 points



*Individual Performance* (150 points – 50 points for each phase)

In addition to your team's performance, you will be evaluated based on your individual performance. This will be measured by comparing what you commit to accomplish at the beginning of each phase (as evidenced in the Plan each team will prepare), and what you actually produce at the end of each phase (as evidenced by the physical and

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print-based materials you hand in and your participation and contribution to the public presentations).
Quality of individual contribution to the Innovation Proposal - 10 points
Level of detail in the (design, business and engineering) solution- 20 points
Clarity and quality of your personal oral presentation- 10 points
Clarity and quality of your visual presentation- 10 points

**Grading Scale and Meaning**

A = consistently excellent, honors quality performance and work. 90 to 100 points.
$A^+$ is 100-96.7, A is 96.6-93.4, $A^-$ is 93.3-90
B = above average performance and work. 80 to 90 points.
$B^+$ is 89.9-86.7, B is 86.6-83.4, $B^-$ is 83.3-80
C = average performance and work. 70 to 80 points.
$C^+$ is 79.9-76.7, C is 76.6-70
D = below average performance and work. 60 to 70 points.
E = unacceptable performance and work. Below 60 points.

**Note**: This class is team-taught by a group of faculty, and therefore the grades will also be determined by **all** the faculty members involved.

**Instructor Info**

The InnovationSpace faculty team is committed to making this the best possible educational experience. As a part of that experience, we encourage students to consult regularly with us outside of class. Each instructor is willing, ready and happy to help you excel. Each is also experienced in new product development and can assist you and your team members to make smart and economical choices as the project progresses.

Take advantage of us!

**Prasad Boradkar** (Industrial Design)
CDN 256
480.965.8685
prasad.boradkar@asu.edu

Office Hours: MW 10am to 12pm
Also available by appointment

**Greg Burkett** (TA)
CDS 126C
480.965.6367
gregsburkett@asu.edu

Office Hours: MW 2:20pm to 3:30pm
Also available by appointment

**Heidi Fischer** (Program Manager)
CDS 126C
480.965.6367
adelheid.fischer@asu.edu

Office Hours: by appointment

**Mario Gomes** (Engineering)
ERC 389
480.727.8083
mario.gomes@asu.edu

Office Hours: by appointment

**Craig Hedges** (Graphic Design)
ASU Fulton Center 5120
480.727.9771
craig.hedges@asu.edu

Office Hours: by appointment

**Adrian Smith** (TA)
ISTB-1 309AB
727.505.3547
adrian.smith@asu.edu

Office Hours: MW 1pm to 3pm

**William Verdini** (Business)
BA 401A
480.965.4330
bill.verdini@asu.edu

Office Hours: by appointment

## InnovationSpace Studio – Spring 2009

# Phase 5 – Developing the Concept

**Goals**

The goals of this phase are to:

- Make critical decisions about your team's product design concept, engineering, communication strategy and marketing plan
- Establish a foundation for final specification in the next phase
- Start writing the Innovation Proposal

**Assignment**

Explore, resolve and finalize the following:

- All technical and functional issues relating to the selected product design concept
- Aesthetic direction for the product design concept
- Message and aesthetic direction for the communication strategy
- Scope and content of the marketing/business plan

**Deliverables**

**Engineering Materials** Due: Wednesday, February 18

Project Plan for Engineering
Technical Research Summary
Technical Specifications Documentation
Product Architecture Documentation
Functional Prototype Testing Plan
DFM (Design for Manufacturing) Documentation
Engineering Summary Information

**Industrial Design Materials** Due: Wednesday, February 18

Product Appearance Benchmarking
Design Language
Sketch Packet
Presentation Renderings
Product Architecture Models
Ecodesign Strategies

**Visual Communication Materials** Due: Wednesday, February 18

Strategic Visual Communication Development
Strategy and Planning
Analysis (written and visual)
Design Language
Brand Benchmarking
Brand Identity Design
Innovation Proposal book (Draft 1)

**Business Materials** Due: Wednesday, February 18

External Environment- Political, Legal
External Environment- Economic, Sociocultural
External Environment- Industry/Competitive, Technology, Suppliers
Market Opportunity Analysis- Existing Customers
Market Opportunity Analysis Potential Customers
Mission Statement and Objectives
Mission Statement- Mantra and Tagline
Business Summary Information

## InnovationSpace Studio – Spring 2009

# Phase 6 – Finalizing the Concept

**Goals**

The goals of this phase are to:

- Define final specifications for all aspects of the product design concept, its engineering, communication strategy and marketing/business plan
- Establish a foundation for the final phase
- Create second draft of the Innovation Proposal

**Assignment**

Explore, resolve and finalize the following:

- The Product Design Concept (i.e., all aspects relating to human interaction, product aesthetics and manufacturing)
- Materials leading up to the Proof-of-Concept/Simulation Prototype
- The Communication Strategy (i.e., final visualization of the strategy in terms of the selected media options – print, web, point-of-purchase, etc.)
- Marketing/Business Plan

**Deliverables**

**Engineering Materials** Due: Monday, March 30

FMEA (Failure Modes and Effects Analysis)
Make vs. Buy Analysis
Enhanced Bill of Materials
Ecological Impact Factor Assessment
Reasonable and Justifiable Social and Environmental Claims
Engineering Summary Information

**Industrial Design Materials** Due: Monday, March 30

Sketch Packet
Form Study/Ergonomic Models
Human Interaction Documentation
Presentation (Powerpoint and movie)

**Visual Communication Materials** Due: Monday, March 30

Implementation Timeline
Innovation Proposal (Draft 2)
Presentation (Powerpoint and movie)
Branding Standards

**Business Materials** Due: Monday, March 30

Internal Environment- History/Mission, Financial
Internal Environment- Management/Org Structure, Personnel
Internal Environment- Technical, Marketing/Sales
Objectives
Strategies and Tactics- Management & Org
Strategies and Tactics- People, Marketing, Sales
Business Summary Information

## InnovationSpace Studio – Spring 2009

# Phase 7 – Documentation, Presentation and Exhibition

**Goals**

The goals of this phase are to:

- Develop materials (text-based, visual and presentational) to communicate/promote the project to an invited audience.
- Set up the exhibit and present the project.

**Assignment**

Finalize and document the following:

- The product design concept (through an appearance model and information in the Innovation Proposal document)
- The communication strategy and brand best suited to the product (through examples of select media options and the Innovation Proposal document)
- All materials and process recommendations, engineering tests, and costing information (through the proof-of-concept prototype and the Innovation Proposal document)
- A viable business model and strategic marketing plan that includes situation analysis, market opportunity analysis, mission statement and objectives, strategies and tactics, and consumer behavior models (in the Innovation Proposal document)
- All sustainability documentation including Okala impact factor assessments and reasonable and justifiable social and environmental claims (in the Innovation Proposal document)
- A presentation geared towards the audience that explains all relevant aspects of the project (through a presentation and an exhibit)

**Deliverables**

**Engineering Materials** — Due: Friday, May 8

Control Drawings
Engineering Cost Estimation
Engineering Summary Information
Engineering Binder
Proof-of-Concept/Functional/Simulation Prototype

**Industrial Design Materials** — Due: Friday, May 8

User Experience Storyboard
Product Graphics Specification Drawing
Final Appearance Model
Exploded View
Virtual Model [Rhino, Solidworks, etc.]

**Visual Communication Materials** — Due: Friday, May 8

Innovation Proposal (Final) 2 copies
Posters
Select Media Options
Project CD

**Business Materials** — Due: Friday, May 8

Strategies and Tactics- Financial
Business Summary Information
Business Binder

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## Information for the Final Innovation Proposal

This is the information that you should include in the final Innovation Proposal. Keep in mind that this Innovation Proposal may be seen by people who are not aware of our process, and so you may have to give very brief description of what some of these things mean (Okala, aesthetic benchmarking, etc.) Divide this document into these major components:

- Introduction
- Product Design Materials
- Engineering Materials
- Brand Identity Design
- Business/Marketing Plan

*Introduction*

Table of contents
Project, team, problem being tackled, sponsor, etc.
Brief description of the product system with images
User profile

*Product Concept Materials*

Design language
Product aesthetic benchmarking
User experience storyboard
Human interaction
Final product renderings
Graphic and detail specification drawing
Product images (virtual or physical model)
Ecodesign strategies

*Visual Communication Design Materials*

Design language
Brand benchmarking
Brand identity (key verbal, visual, positioning elements)
Detailed visualization/illustration of critical media options
Implementation timeline that includes illustrated examples of each selected media

*Engineering Materials*

Photographs of proof-of-concept prototype
Final product architecture
Enhanced bill of materials
Target technical specifications
Engineering cost estimation
Ecological impact factor assessment
Reasonable and justifiable social and environmental claims

*Marketing/Business Plan Materials*

External environment
Internal environment
Market opportunity analysis
Mission statement and objectives
Strategies and tactics
Financial plan, preliminary financials
Consumer behavior model

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## Product Concept Materials

The product designer and the engineer should work closely together to ensure proper aesthetic development of the product chosen.

*Product Appearance Benchmarking - competitors*

Identify products (at least five but no more than ten) in today's marketplace that you consider a competitor to your selected concept. Communicate the results of your analysis by creating a simple benchmarking chart/diagram. Analyze the appearance of all of the competitors based on the following criteria:

- Personality
- Form
- Materials
- Color
- Details

*Design Language*

Develop three variations of a specific, future-oriented *Design Language* (think at least 3 years into the future). The three languages should be entirely different from each other This should include:

- A name that aptly describes the personality of the *Design Language* you're proposing (descriptive names are remembered; boring ones are forgotten).
- A written/visual description of your *Design Language.* Make certain to organize your description around the key elements of design, namely personality, form, materials, color and details.
- A clear articulation of/rationale for why you think your *Design Language* is appropriate to the targeted user group.
- Images/sketches that visually help understand how this language will translate into product form.

Once you have three languages defined, pick one that you think makes best sense for the product/sponsor/environment of use/user, and then work within that visual strategy for the rest of the semester.

*Sketch Packet*

Based on your *Design Language,* begin exploring a wide variety of form solution, through thumbnail drawings as well as concept sketches. Consider conservative ideas, wild ideas, and everything in between (but make certain they all reflect your *Design Language).* Don't forget to resolve human factors issues with form, color or detail. Make sure to compose great pages of drawings with lots of ideas.

*Presentation Renderings*

Select the three best solutions from all of the concepts you explored and create one presentation-quality color rendering of each concept. Each rendering must be made using Photoshop (or Rhino, Solidworks, etc.). Make sure each drawing communicates:

- Scale
- Context of use
- An image of a person (or people)
- Product graphics (logo, product name, etc.)

*Product Architecture Models*

Work closely with your engineer on this assignment. Create three physical models in the appropriate scale of the product's inner components. Use these alternatives to evaluate which product architecture is most appropriate for the target users from an ergonomic perspective and which is the best for the design language. Identify the components either through color, labels or both.

*Form Study/Ergonomic Models*

Create form study models of your top three product ideas. Unless your product is really large, this should be full-scale so that you can evaluate it from a human factors and

ergonomics perspective. The model should be fabricated with appropriate materials (EPS, cardboard, etc.). Include rough graphic depictions (on displays, for example) as required.

*Human Interaction Documentation*
Human factors is, at a gross level, used to figure out whether an object should be carried in a pocket or strapped to the wrist or hung by neck, and it is used at a finer level to specify dimensions of handles, colors of displays, etc. The first kind, also referred to as macro-ergonomics can occur during functional development, and the latter, also referred to as micro-ergonomics, during both functional as well as aesthetic development. Human Factors analysis will be used to select one of the three product architecture variations that you will develop. Only the one selected concept will be used for recommending materials and manufacturing processes. Include the following information:

- A drawing of the product that identifies all the locations and nature of human interaction
- An interface chart that includes pre-operational, operational, as well as post-operational activities.

*Ecodesign Strategies*
The Ecodesign Strategy Wheel is a brainstorming tool that organizes ecodesign strategies in clusters sequentially mirroring the product lifecycle phases. You will explore many ways to potentially improve the ecological performance of your product system with the Ecodesign Strategy Wheel. Brainstorm with your team and create a list of the applicable ecodesign strategies from wheel that make sense for your product concept. Describe each selected strategy as it might be applied to your product and how you think it might improve the ecological performance of your product. Draw a diagram that outlines all the specific strategies that you have devised and applied to your product.

*User Experience Storyboard*
An illustration showing context and how a person interacts/uses the concept. This can be done by drawing the storyboard or by photographing the form study models in use.

*Exploded View*
An illustration showing all the critical components of the product opened up along a vertical or diagonal axis. Make sure you show a center-line and other necessary guide lines to help understand how the components are assembled.

*Appearance Model*
Once your design is finalized, you will build a final appearance model that shows the product as it would look in production. Use the right type of materials, build it in parts, and make sure it is well painted to represent the final design.

*Virtual Model*
Build a virtual model of your final product design using Rhino, Solidworks or any other program you are familiar with.

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## Engineering Materials

The engineer and the product designer should work closely together to ensure proper functional development of the product chosen.

*Project Plan for Engineering*
Use MS Project to produce a list of milestones and realistically scheduled tasks for the spring. Get this approved by the faculty before you begin detailed design. Also, the tasks should be linked according to precedence. For example, constructing the prototype should come only after the detailed design is done and a link should show that precedence.

*Technical Research Summary*
This should serve as a brief appendix for the project that summarizes the archival research found in books, periodicals, on the world-wide-web specifically relating to the technology. Treat this as an annotated bibliography of the 10 to 15 key articles that describe the primary and secondary technologies critical for your product system. [In an annotated bibliography, each citation is followed by a paragraph containing a brief descriptive and/or evaluative summary, synopsis, or abstract]. For example, if you download a ten-page article on the application of optical scanning technology, save the article for yourself in a binder and write a short paragraph about it for the Technical Research Summary. Focus on the most significant information, and steer clear of irrelevant and unnecessary facts. If there are important diagrams that are useful in explaining the technology, include those as well. You are encouraged to work with other teams in InnovationSpace to increase efficiencies and also urged to share information. If there is relevant information in your fall semester research binder, feel free to include that information here.

*Technical Specifications Documentation*
(see Ulrich and Eppinger's Product Design and Development)
The technical specifications of the product are best suited to its function if derived from the needs of the intended users. This information should demonstrate the evolution of a comprehensive list of needs into a list of desirable specifications. A list of your product specifications such as line voltage, selling price, weight, battery power, size, load limit, fatigue life, impact strength, etc., with specific values that you hope to reach. Do this before you create the prototype and then compare the prototype values with your goals. If you don't meet a goal, it doesn't mean you failed; it may mean that you need a redesign of the product or a recalculation of the specification. The documentation should show rationale for each product specification and its numerical value by benchmarking or calculation. The following information should be included:

- A comprehensive list of needs (all stakeholders)
- Competitive benchmarking (technical and needs based)
- A needs-metrics matrix
- A list of target specifications

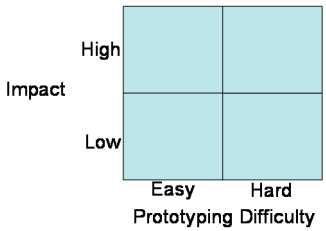
*FMEA (Failure Modes and Effects Analysis)*
FMEA is a formalized procedure used to review designs and components prior to manufacturing launch. This type of analysis helps engineers identify potential failure modes and classify them based on the severity of the failure relative to the system or subsystem. FMEA is especially useful for complicated products where multiple design teams or multiple subsystems are involved. By identifying the highest risk subsystems of the projects, engineers can direct extra attention in both design to these subsystems to ensure that the project remains on time, on budget and the final design meets the specification.

*Product Architecture Documentation*
Product architecture is the arrangement of the functional elements of a product into physical blocks (the layout of the basic components of the product and how things fit together). These blocks are also referred to as subsystems of the product that can further be broken down into subassemblies, components and parts. Functional elements are individual operations and transformations that contribute to the overall performance of the product, whereas the physical elements are the parts, components and subassemblies that implement the product's functions. Your documentation should include the following information:

- A listing of all functional elements organized in a block diagram.
- A listing of all components and their functions.
- Show and explain element interfaces including mechanical, electrical, chemical, etc. Prove that the technical components will FIT in the allotted space.
- Three, alternate exploded views of how the sub-systems could be organized

Physically. (Do not show the interior elements floating in space, create the product housing however rudimentary, and center lines. Take into account the sizes of the components and be realistic based on research of sizes, weights and interfaces. Use www.thomasregister.com and company catalogs for technical components).
- List advantages and disadvantages of each layout.

*Functional Prototype Testing Plan*
Specify what functional aspects of the product you have chosen to prototype and include the specific performance specifications you will demonstrate with the prototype. Lay out a testing plan to evaluate the prototype according to the product specifications and then write up the testing results after the prototype is evaluated. You may not be able to prototype everything in the product, but choose the most interesting, risky and doable functions to test in the prototype. For example, if the product has to support a person's weight, specify the anthropomorphic details and use stress analysis methods to analyze the theoretical product structure and then test it under load conditions to prove that it survives.




Use the diagram above for determining which functions to prototype. Make a list of all of the functions from your decomposition and, for each one, propose a prototype to prove its success. Create a 2x2 grid as shown. Classify all product functions from your decomposition into the quadrants. You will want to concentrate on prototyping the easy/high impact functions, not prototyping any of the low impact functions and maybe trying one of the high impact/hard functions.

*Make vs. Buy Analysis*
A fundamental question in the development of a manufacturing strategy is the determination of what the company will make and what it will buy, i.e. the make vs. buy (MvB) decision. Historically, such decisions were often made primarily on grounds of cost, however, in recent years there has been an increasing recognition of the strategic implications of these decisions and the need to take into account a wide range of factors other than cost. You will strategize along with your business student and decide which parts are best made inhouse and which should be vendor bought.

*Enhanced Bill of Materials*
A list of all components, quantities, costs, part numbers and source. The business student will need this information so they can do an overall economic analysis. Find out when they need this information and then add it to your project schedule. The Enhanced Bill of Materials should also include:
- Material for each component
- Finish for each component
- Process used to manufacture each component
- Justification of material and process selection

*Control Drawings*
Part drawings that highlight key dimensions. Engineering drawings are a formal and precise way of communicating information about the shape, size, features and precision of physical objects. However, with the ubiquitous use of virtual models, in some cases [often for simple products or smaller companies] do not use full engineering drawings but control drawings that specify critical dimensions only.

*Proof-of-Concept/Functional/Simulation Prototype*

Working model demonstrating some of the key functional requirements. In some cases, you may not be able to demonstrate the functionality. In these cases, if there are means of simulating the functionality using other means, that should work as well.

*Ecological Impact Factor Assessment*
An assessment of your new design and an existing comparative product based upon a methodology of sustainable product development called Okala. Calculate the total impact factors for your product as well as a competitor product based upon the Okala Ecological Design Course Guide. Show all your calculations as well as the final numbers for both products.

*Reasonable and Justifiable Social and Environmental Claims*
A set of environmental and social claims that are reasonable and that can be substantiated though research and evidence.

*DFM (Design for Manufacturing) Documentation*
A listing of design strategies you have employed to make the product easier to manufacture. DFM is generally defined as the measure of efficiency with which materials can be processed into product. Strategies for DFM typically include process control (assembly, disassembly, manufacturing process, material selection…) and product form (economy of shape, part number reduction, wall thickness…). Make a list of these strategies that you have employed, using illustrations as and where necessary.

*Engineering Cost Estimation*
Generally, engineering costs are broken down into two major categories—non-recurring fixed initial cost (NRFIC) and recurring cost. NRFIC includes tooling cost, new plant cost (if necessary) and other one-time costs. Recurring costs are typically estimated on the basis of three key factors: labor cost (direct and indirect), material cost, and overhead.

*Engineering Summary Information*
The final Innovation Proposal cannot include all the detailed information that you put together over the semester. Extract the critical components about the engineering of the product in the form of text and diagrams for your graphic designer team mates to insert in the Innovation Proposal. Wherever possible, use bullet points to minimize the volume of text or use diagrams with legends and brief explanations. It might be helpful to create the diagrams in Adobe InDesign or Illustrator, so as to make it easy for the graphic designer on your team to put together the final book with one cohesive look.

*Engineering Binder*
Put all the information that you have generated over the semester in this binder (like you did in Fall Semester).

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## Visual Communication Strategy Materials

*Strategic Visual Communication Development*
This is a comprehensive definition of all aspects of the selected Visual Communication Strategy, including all strategic communication plans and brand identity development. This development MUST be reflective of and consistent with the Marketing Plan and, therefore, should be developed in conjunction with the entire team, but specifically the business student. Please remember that the primary function of the Visual Communication Strategy is to help persuade the faculty, other students, and the sponsors of the viability of your team's proposal. It should also clearly address the communication strategy for connecting with the primary, secondary and tertiary audiences. This will include visual and written descriptions of:

- Strategy and Planning
- Brand Identity Design

*Strategy and Planning*
As you know, before any design activity can start, it is important to examine, understand and analyze the existing conditions of the corporation you are designing for, the needs of the stakeholders, the market conditions, etc. As that is being done, you can start planning the campaign for the new/sub brand being developed.

*I. Analysis*

A. Message analysis
   1. What is the message that we need to get across?
   2. Who is the audience (demographics, psychographics, sociographics)?
   3. What media options does the audience prefer?
   4. What types of messages will they respond to?

B. Market analysis
   1. What is the market that this new/sub brand will go into?
   2. Who are the major and minor players and what are their vizcom strategies?
   3. Is the target audience for the competitors different from ours? How?

C. Brand benchmarking of competition
   1. What do competing brands look like?
   2. What are the strengths and weaknesses of competing brands?
   3. Therefore, what could be the opportunities & threats of this new/sub brand?

D. Brand analysis of existing brand
   1. How is our existing brand positioned in the market?
   2. If there is no existing brand, why?
   3. What are the strengths and weaknesses of the existing brand?

E. Campaign analysis
   1. What kind of a campaign can the company afford to launch?
   2. What are some geographic considerations (national, international)?
   3. How widespread are the campaigns of competitors?

F. New brand/sub-brand analysis
   1. Should this be a new brand, sub-brand, co-brand, etc.?
   2. What are the financial implications of the above?

*II. Planning*

A. Campaign strategy and planning (3 years)
   1. What is the campaign goal and therefore what is the strategy?
   2. Is the campaign local, regional, national, international?
   3. Will the geographic rollout be over time? Where and how?
   4. Do we hire campaign stewards?
   5. What is the implementation timeline?
   6. What is the budget for the campaign?

B. Communication planning
   1. Can we rank order the preferred channels of communication?
   2. Do we have a clear profile of the target audience?
   3. Does the message need to change for different users?
   4. Does the message need to change over the years?
   5. Does the message need to change depending on geography?

C. Advertising plans
   1. What is the precise text for the message? Or messages?
   2. What are the best media options?
   3. What is the budget for advertising?
   4. What are the recommendations of the media buyer?

*Brand Benchmarking - competitors*
Identify brands (at least five but no more than ten) in today's marketplace that you consider a competitor to your brand. Communicate the results of your analysis by creating a simple benchmarking chart/diagram. Analyze the appearance of all of the competitors based on the following criteria:

- Personality/Character
- Form

- Materials And Textures
- Color
- Typographic Treatment

*Design Language*
Develop three variations of a specific, future-oriented *Design Language* (think at least 3 years into the future). The three languages should be entirely different from each other This should include:
- A name that aptly describes the personality of the *Design Language* you're proposing (descriptive names are remembered; boring ones are forgotten).
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- A clear articulation of/rationale for why you think your *Design Language* is appropriate to the targeted user group.
- Images/sketches that visually help understand how this language will translate into the brand.

Once you have three languages defined, pick one that you think makes best sense for the product/sponsor/environment of use/user, and then work within that visual strategy for the rest of the semester.

*Brand Identity Design*
The design elements of the brand include visual, verbal, positioning, and experiential elements based upon a newly developed design language.

The verbal elements (set of meaningful terms) include the following:
- Brand Name
- Descriptor
- Positioning Tag Line (Created for the long run)
- Nomenclature
- Voice/Tone

The visual elements (or other senses too) include:
- Logo
- Packaging
- Website Graphics
- Environmental Design
- Other Communication Graphics

The positioning elements (tactical blueprints for identity in the marketplace) include:
- Core Essence (Basic Elements)
- Positioning Statement
- Proposition Pitch
- Key Features And Benefits (Signature Elements)
- Communication Attributes
- Target Audiences
- Audience Messaging Matrix (a table matching primary and secondary target audiences with features and benefits of the brand)
- Target Markets

The experiential elements include:
- Identity Experience
- Web Site
- Application
- Customer Service
- Tech Support
- Retail Store
- Collateral (Sales brochures, presentations, etc.)

- Tradeshows
- Point of Purchase
- Other Points Of Experience (guerilla marketing, demonstrations…)

*Media Options*
- Media Selection And Justification (print, radio, television, etc.)
- Media Samples
- Pricing
- Impact Assessment

*Implementation Timeline*
- Rollout Timeline
- Implementation Strategy Justification

*Branding Standards*
An explanation of the standards of usage of the brand elements such as logo, color, type, etc.

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**Business/Marketing Materials**

*Situation Analysis For Selected Product/Service Concept*

A. External Environment
1. Political/Legal
    a. What is happening?
    b. What does it mean for this product/service concept?
2. Economic
    a. What is happening?
    b. What does it mean for this product/service concept?
3. Sociocultural
    a. What is happening?
    b. What does it mean for this product/service concept?
4. Industry/Competitive
    a. What is happening in all relevant industries?
    b. What does it mean for this product/service concept?
    c. Who are the key competitors already in the market?
    d. What are the barriers to entry for other potential competitors?
    e. What are the strategies of current and potential competitors?
    f. What does it mean for this product/service concept?
5. Technology
    a. What is happening in all relevant technologies?
    b. What does it mean for this product/service concept?
6. Suppliers
    a. Identify all potential suppliers upstream
    b. What is happening in their business?
    c. What does it mean for this product/service concept?
    d. Identify all potential distributors and retailers downstream
    e. What is happening in their business?
    f. What does it mean for this product/service concept?

B. Internal Environment
1. History/Mission (Who am I or whom do I want to be?)
2. Financial condition
    a. What looks good or promising?
    b. What needs to be established?
    c. How do we improve?
3. Management/Organization Structure
    a. How can we organize and create a succession plan?

b. What strengths can we create and what problems will exist?
c. How do we improve?

4. Personnel
    a. Can we get enough of the right people in the right places?
    b. What will be the limits and problems to overcome?
    c. How do we improve?
5. Technical
    a. What will be are technology needs?
    b. What will be our limitations and problems?
    c. How do we improve?
6. Marketing and Sales
    a. Can we consistently deliver value to customers?
    b. Right product accompanied by the right service?
    c. Product delivered at the right time and place to the right people?
    d. Right price for the right people?
    e. How do we improve?

*Market Opportunity Analysis*

A. Existing Customers
1. In what industries are we or key suggested stakeholders presently active?
2. How much of these markets do we or stakeholders control?
3. Who are our or stakeholders' key accounts in these markets?
4. What is happening in these markets and these accounts that is relevant?
5. What is the potential of target accounts and markets?

B. Potential Customers
1. What industries might offer opportunities?
2. Who are some of the key players (potential accounts) in these markets?
3. What do we know about each of them?
4. What else do we need to know
5. What is the potential of each target

*Mission Statement and Objectives*

A. Mission Statement (Mantra and Tag Line)
Nike example ("authentic athletic performance" and "just do it")
1. What business should we be in and what is its meaning?
2. What product/service bundles do we want to sell?
3. Who should be the primary customer?
4. What partnerships make sense?

B. Objectives: Key standards to meet in order to exploit market targets?
1. Financial
2. Management and Organization
3. People
4. What key marketing and sales standards need to be met?

*Strategies and Tactics*

What do we need to do to accomplish our objectives? (What activities need to occur, who will be responsible for these activities, and over what period of time will they be completed?)

A. Financial
1. Business Model
2. Projected Income Statement
3. Projected Balance Sheet
4. Projected Cash Flow

B. Management and Organization
1. Possible Operational Structures
2. Possible Organizational Structure
3. Alliances and Partners
4. Channel Structures

C. People
    1. What work is to be done?
    2. Where will the workers be?
    3. How will the work be managed?
    4. How will rewards be shared?

D. Marketing and Sales
    1. Product
    2. Promotion
    3. Place
    4. Price
    5. People
    6. Process
    7. Physical environment

*Consumer Behavior Models*
Create a “model of consumer behavior” or a “consumer decision process” model for each potential customer identified. Conceptually prove that you have the right product, accompanied by the right service, delivered to the right people at the right place and time, and at the right price.

*Business Summary Information*
The final Innovation Proposal cannot include all the detailed information that you put together over the semester. Extract the critical business and marketing information for the product in the form of text and diagrams, so that the graphic designer team mates to insert in the Innovation Proposal. Wherever possible, use bullet points to minimize the volume of text or use diagrams with legends and brief explanations. It might be helpful to create the diagrams in Adobe InDesign or Illustrator, so as to make it easy for the graphic designer on your team to put together the final book with one cohesive look.

*Business Binder*
Put all the information that you have generated over the semester in this binder (like you did in Fall Semester).

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# InnovationSpace Studio Schedule – Spring 2009

## Semester Schedule

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|---|---|---|---|---|---|
| January | **Week 1** | 1/19 | Monday | MLK Day, Holiday | |
| | | 1/21 | Wednesday | Intro to Class, Syllabus Discussion, Project Selection<br>Sponsors Present | |
| | **Week 2** | 1/26 | Monday | Phase 5 Kickoff | |
| | | 1/28 | Wednesday | Team Meetings | |
| February | **Week 3** | 2/2 | Monday | Lecture and Discussion | |
| | | 2/4 | Wednesday | Team Meetings/Consultations | |
| | **Week 4** | 2/9 | Monday | Lecture and Discussion | |
| | | *2/10* | *Tuesday* | *Janine Benyus Lecture, MU, 7:00pm* | C-2 |
| | | 2/11 | Wednesday | Team Presentations, Janine Benyus in Class | |
| | **Week 5** | 2/16 | Monday | Team Meetings/Consultations | |
| | | 2/18 | Wednesday | Phase 5 Deliverables Due | |
| | **Week 6** | 2/23 | Monday | Team Presentations, Sponsors Present | C-2 |
| | | 2/25 | Wednesday | Phase 6 Kickoff Lecture | |
| | **Week 7** | 3/2 | Monday | Team Meetings/Consultations | |
| | | 3/4 | Wednesday | Lecture and Discussion | |
| March | - | 3/9 | Monday | Spring Break | |
| | | 3/11 | Wednesday | Spring Break | |
| | **Week 8** | 3/16 | Monday | Team Meetings/Consultations | |
| | | 3/18 | Wednesday | Team Meetings/Consultations | |
| | **Week 9** | 3/23 | Monday | Lecture and Discussion | |
| | | 3/25 | Wednesday | Team Meetings/Consultations | |
| | **Week 10** | 3/30 | Monday | Team Presentations, Sponsor Meetings | |
| April | | 4/1 | Wednesday | Team Meetings/Consultations | |
| | **Week 11** | 4/6 | Monday | Phase 6 Deliverables Due<br>Team Presentations | C-2 |
| | | 4/8 | Wednesday | Phase 7 Kick-off Lecture | |
| | **Week 12** | 4/13 | Monday | Team Meetings/Consultations | |
| | | 4/15 | Wednesday | Lecture and Discussion | |
| | **Week 13** | 4/20 | Monday | Team Meetings/Consultations | |
| | | 4/22 | Wednesday | Lecture and Discussion | |
| | **Week 14** | 4/27 | Monday | Team Meetings/Consultations | |
| | | 4/29 | Wednesday | Lecture and Discussion | |
| | **Week 15** | 4/28 | Monday | Team Meetings/Consultations | |
| | | 4/30 | Wednesday | Team Meetings/Consultations | |
| May | **Week 16** | 5/4 | Monday | Last Class | |
| | | 5/6 | Wednesday | Reading Day | |
| | **Week 17** | 5/11 | Monday | Final Exhibit, 6pm | C-2 |