Technology Innovation

Instructor: Travis J. Brown (trabrown@indiana.edu)
Office Hours: By appointment (Informatics West 209)
Class Times: Monday, Wednesday – 11:15am-12:30pm
Class Location: Informatics West 107
Associate Instructor: Daniela Oliveira Gobbo (dgobbo@umail.iu.edu)

Course Description
This course will teach students the process of innovation, specifically in respect to technological innovation. Students will be required to ideate technological concepts given a set of constraints and an opportunity space. The focus of the course will be for students to invent and implement without considering the commercial potential of their innovations. Concepts covered will include abductive reasoning, problem framing, pattern recognition, and trend analysis. Students will be required to rapidly prototype their concepts in order to present their innovations in class. The class will culminate in an innovation competition, which will entail students completing an innovation challenge and presenting their solutions to a panel of judges who will evaluate their technologies based on the depth of innovative thinking demonstrated.

Course Goals and Objectives
Successful students in this course will be able to:
1. Distinguish innovation from creativity through learning to practice both.
2. Analyze the factors which led to past innovations in order to leverage them for future innovations.
3.Recognize and dissect patterns in order to more effectively develop innovative technologies.
4. Identify shifts in social behavior, government policy, and technological advances in order to better anticipate emerging trends and new opportunities for innovative solutions.
Readings
The following book is required:


You might also find these books useful:


Structure
You will be required to complete projects individually according to the innovation themes discussed in class bi-weekly. There are a total of 7 projects, with the culmination of the course being the presentation of the final innovation project completed at the end of the course.

Lectures
We will cover new material and discuss the new assignment. Assignment instructions will be posted on Canvas prior to each lecture. Lectures will focus on innovation techniques and methods, specifically focusing on the 4 lenses of innovation presented in the required reading for the course.

Innovation Exercises
We will complete an innovation exercise for each innovation project to inspire students to consider novel approaches to utilizing technology in the development of innovative solutions. You are expected to actively participate in the exercises as well as the discussions which follow.

Individual Presentations & Critiques
You will present the innovations you build throughout the course in class to solicit critiques from the instructor and your classmates. You will be expected to explain your inspiration for your innovation,
your development process, why you consider your solution to be innovation rather than simply creative, and who you think would derive the most benefit from using your innovation.

**Grading**

**Projects**
There are 7 innovation projects organized in 7 themes. Projects will be completed individually. For each project, you will be responsible for submitting a personal reflection through which you will be expected to discuss what you have learned from the readings, the speakers, and the process of honing your innovation skills. Completed assignments are to be submitted via Canvas by the assignment deadline. The point allocation for the course is as follows:

- 6 Innovation Projects * 100 points = 600 points
- Final Innovation Project = 200 points

**Innovator Profile & Innovation Analysis**

**H400 and I590 Students Only:** You are required to profile a technology innovator who you admire and discuss how the concepts discussed in class apply to the innovations she/he developed and allowed her/him to successfully develop them. Additional instructions will be provided in class.

**I590 Students Only:** You are required to develop your own innovation that could disrupt one of the innovations you identified, which will include how you applied the 4 lenses of innovation to come to your innovation, a sketch of your innovation, and who would benefit from using your innovation over the one developed by the innovator you profiled.

**H400 and I590 Students Only:** Interview & Analysis = 100 points

**Attendance & Participation**
Attendance is critical to this type of course structure. Accordingly, attendance is MANDATORY to all classes, and attendance will be taken during class. Attendance means being present, which entails actively listening, participating in class discussions, and providing design critiques during presentations; if you’re not present, you didn’t attend class and will be counted absent. There are 100 points allotted for attendance. **You are allowed exactly two absences without penalty.** Otherwise, you will lose points as reflected in the following table for each absence unexcused by University policies:

<table>
<thead>
<tr>
<th>Number of Absences</th>
<th>Points</th>
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<tbody>
<tr>
<td>0-2</td>
<td>100</td>
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<tr>
<td>3</td>
<td>95</td>
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<tr>
<td>4</td>
<td>85</td>
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<td>70</td>
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<td>6</td>
<td>50</td>
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<tr>
<td>7</td>
<td>25</td>
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<tr>
<td>More than 7</td>
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The total number of possible points awarded during the class is 900 for I400 students and 1000 for H400 and I590 students:

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<thead>
<tr>
<th></th>
<th>I400</th>
<th>H400</th>
<th>I590</th>
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<tbody>
<tr>
<td>Projects</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Profile &amp; Analysis</td>
<td>-</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Attendance &amp; Participation</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Total</td>
<td>900</td>
<td>1000</td>
<td>1000</td>
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The percentage of the points received will not be rounded off and will be used to assign a letter grade as follows (e.g., 867 out of 1000 = 86.7% = B):

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<tr>
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<th>Points</th>
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<tbody>
<tr>
<td>A+</td>
<td>97 - 100</td>
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<tr>
<td>A</td>
<td>93 - &lt; 97</td>
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<tr>
<td>A-</td>
<td>90 - &lt; 93</td>
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<tr>
<td>B+</td>
<td>87 - &lt; 90</td>
</tr>
<tr>
<td>B</td>
<td>83 - &lt; 87</td>
</tr>
<tr>
<td>B-</td>
<td>80 - &lt; 83</td>
</tr>
<tr>
<td>C+</td>
<td>77 - &lt; 80</td>
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<tr>
<td>C</td>
<td>73 - &lt; 77</td>
</tr>
<tr>
<td>C-</td>
<td>70 - &lt; 73</td>
</tr>
<tr>
<td>D+</td>
<td>67 - &lt; 70</td>
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<tr>
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<tr>
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<td>60 - &lt; 63</td>
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<tr>
<td>F</td>
<td>0 - &lt; 60</td>
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<tr>
<td>Week</td>
<td>Dates</td>
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| 1    | JAN 11 JAN 13 | Lecture: Introduction & Course Overview  
*Due:* 4LOI - Introduction  
*Assigned:* 4LOI - Part 1 & IP1 | Innovation Show & Tell |
| 2    | JAN 18 JAN 20 | MLK, Jr. Day JAN 18  
NO CLASS | Class Presentations  
*Due:* IP1 |
| 3    | JAN 25 JAN 27 | Lecture: Distinguishing Innovation from Creativity  
*Due:* 4LOI - Part 1  
*Assigned:* 4LOI - Part 2 & IP2 | Innovation Exercise  
“Repurposing” |
| 4    | FEB 1 FEB 3 | Concept Review, Evaluation, & Selection | Class Presentations |
| 5    | FEB 8 FEB 10 | Lecture: The Power of Patterns  
*Due:* 4LOI - Part 2 & IP2  
*Assigned:* 4LOI - Part 3: Challenging Orthodoxies & IP3 | Innovation Exercise  
“Refocusing” |
| 6    | FEB 15 FEB 17 | Concept Review, Evaluation, & Selection | Class Presentations |
| 7    | FEB 22 FEB 24 | Lecture: Challenging Orthodoxies  
*Due:* 4LOI - Part 3: Challenging Orthodoxies & IP3  
*Assigned:* 4LOI - Part 3: Leveraging Trends & IP4 | Innovation Exercise  
“Challenging Orthodoxies” |
| 8    | FEB 29 MAR 2 | Concept Review, Evaluation, & Selection | Class Presentations |
| 9    | MAR 7 MAR 9 | Lecture: Harnessing Trends  
*Due:* 4LOI - Part 3: Harnessing Trends & IP4  
*Assigned:* 4LOI - Part 3: Leveraging Resources & IP5 | Innovation Exercise  
“Harnessing Trends” |
| 10   | MAR 21 MAR 23 | Concept Review, Evaluation, & Selection | Class Presentations |
| 11   | MAR 28 MAR 30 | Lecture: Leveraging Resources  
*Due:* 4LOI - Part 3: Leveraging Resources & IP5  
*Assigned:* 4LOI - Part 3: Understanding Needs & IP6 | Innovation Exercise  
“Leveraging Resources” |
| 12   | APR 4 APR 6 | Concept Review, Evaluation, & Selection | Class Presentations |
| 13   | APR 11 APR 13 | Lecture: Understanding Needs  
*Due:* 4LOI - Part 3: Understanding Needs & IP6  
*Assigned:* 4LOI - Part 4 & Final Innovation Project | Innovation Exercise  
“Understanding Needs” |
| 14   | APR 18 APR 20 | Concept Review, Evaluation, & Selection | Practice Presentations & Critiques |
| 15   | APR 25 APR 27 | “Free Week”  
Innovation Competition Semi-finals  
*Due:* 4LOI - Part 4 & Final Innovation Project | Innovation Competition Finals |
| 16   | MAY 2 MAY 6 | Final Exam Week (NO EXAM) | |
**Timeliness**

Timeliness is critical in professional settings. Managers and clients don’t like to pay for work that’s turned in late, and they aren’t interested in hearing about why something is late. Start early and manage your projects so that you have plenty of time at the end to deal with unexpected surprises.

**Free Week**

The final project is due on the first class of “Free Week.” The project will be assigned well in advance on April 11th in keeping with University policy. There is also a post-evaluation task that does not affect your grade (except as a matter of attendance and participation) and is used to evaluate the effectiveness of the class only.

**Doing Your Own Work and Sharing and Attributing Others**

In the real world, it is important to build on the work of others. When you present or submit your work, you need to be prepared to give an account of what part of a concept or research is your own work and which part was inspired or informed by the work of others. You must properly attribute the work of others.

If you use the work of others without attribution and acknowledgement, you will be subject to academic sanctions concerning plagiarism with all deliberate intent. Acts of plagiarism—using the work of others without attribution or reusing your own work without attributing prior use—will be subject to a zero-tolerance policy in this class. If you believe that someone else in the class has used your work without attributing you, please talk to the instructor or one of the AI’s.

**Digital Photography & Other Tools**

IU has worked out a special licensing arrangement with Adobe and students can now download the latest Adobe software suites from http://iuware.iu.edu using your student IU login for your own educational use.

You can also access http://lynda.com from http://iuware.iu.edu, which provides instruction for how to use Adobe tools. There are a lot of Adobe software tools worth mastering. You are expected to learn these tools on your own using the instructions that come with the software or any of the myriad of self-tutor books on the topics, but this class is an opportunity to learn-by-doing in practicing your use of these tools.

**Academic Misconduct**

The class is morally and procedurally bound by IU’s policies on academic misconduct, the details of which you can read about at the following website: http://www.indiana.edu/~code/.

**Religious Observance**

In accordance with the Office of the Dean of Faculties, any student who wishes to receive an excused absence from class must submit a request form available from the Dean of Faculties for each day to be absent. This form must be presented to the course professor by the end of the second week of the semester. A separate form must be submitted for each day. The form must be signed by the instructor,

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1 “The week prior to the exam period shall be free of major or final exams, except for practical tests at the end of lab periods. Paper projects may be due only if assigned well in advance.”
with a copy retained by the instructor, and the original returned to the student. Information about the policy on religious observance can be found at http://teaching.iub.edu/policies_religious.php?nav=policies.

**English**
If English is not your native language or you are otherwise shy about speaking in class, please do not worry. You will not be penalized in any way for making contributions to the class in less than perfect English or for taking time to compose your answers. The instructor will frequently emphasize to the class the need for all of us to be supportive of each other when it comes to contributing to the discussions. There is no need to feel rushed when responding to questions in class—an important part of the class is the construction of a feeling of community with the faculty, the AI’s, and your peers. You are encouraged to utilize the free writing tutorial service provided by the university. You can learn more about it at http://www.indiana.edu/~wts/.

**Laptops**
In order to encourage you to read on screen, rather than print the resources out on paper, you will be permitted to use laptops in class. The expectation is that you will use the laptops to look up things that are relevant to class. Please do not use the laptops to do things that are not related to the class. If the AI’s or the instructor notice that you are doing things on your laptop unrelated to the class, you may lose your attendance points for that day.