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Information Systems Entrepreneurship: Building Interest in Technology through an Online Business Course for Undergraduates, MBAs, and Executives

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Nomination for the Association for Information Systems Innovation in Teaching Award

“Information Systems Entrepreneurship: Building Interest in
Technology through an Online Business Course for Undergraduates,
MBAs, and Executives”

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Note: This nomination won the 2014 AIS Award for Innovation in Teaching.
<https://ais.site-ym.com/?EduTeachingAward>

Why I'm nominating this course?

Simply put, this course, and the thinking behind the course, has fundamentally changed my thinking of what IS education can and should offer to our undergraduate and graduate students. JP has refined this course over several years to now provide an undergraduate and graduate offering that is now organically growing, not only at USF, but at other campuses across the country. For example, this course has influenced our offerings at UMass, where I'm currently planning to offer this type of course next spring. Other education innovators at the University of Montana have also taken the concept of entrepreneurship thinking and applied them to the core MBA course.

Clearly, this innovative course offers a new way of getting students excited about IS education. The word about this course needs to get out! I could not offer a stronger nomination.

Below, I have outlined specifics on the course, which includes an introduction to IS Entrepreneurship. Next, I provide metrics on how effective this course has been at USF. Subsequently, you will see detailed descriptions on the learning objectives that are covered in this course. Finally, I provide sample course material for your review.

Why is a course on IS Entrepreneurship innovative and unique?

At the University of San Francisco School of Management over the past seven years, the Information Systems faculty has established a unique partnership with our Entrepreneurship and Innovation Department to teach students how to design and deploy an online business. The formal aspect of this collaboration is a required course for Entrepreneurship and Innovation majors, focusing on using Information Systems as a tool for entrepreneurship. The course, known as Internet Business Applications (USF Catalog, 2013) allows all business students, regardless of technology background, to use digital technology to offer new products and services, acquire and retain customers, analyze customer data, and provide satisfying user experiences online, using low cost cloud services and open source technology.

For the Entrepreneurship and Innovation Department, the course addresses their critical need to provide a real-world entrepreneurial and business experience for their students. Despite calls for more experiential learning in entrepreneurship (e.g., Neck and Greene, 2011; Rasmussen and Sørheim, 2006), traditional solutions such as requiring students to start an actual business are rarely used because of their expense and difficulty. In the online world, however, students can engage customers and begin to raise revenue within weeks. The course also provides entrepreneurship students with the ability to design and deploys solutions based on a modern, cloud-based architecture. Knowledge of cloud design and deployment

places students in a much better position to manage technology projects and technology specialists in their future entrepreneurial endeavors.

For the Information Systems faculty, the course provides access to a substantial new audience of business students who, because IS had been greatly reduced as a core subject in our curriculum, would not otherwise be exposed to IS topics. By grappling with issues such as website architecture, analytics, user requirements and testing, cloud deployment, security, and legal and ethical issues in the context of a real, hands-on project, students are motivated to learn more, because they can see how better IS will directly lead to better business outcomes such as customer purchases, signups, donations, downloads, user contributions, or contact requests.

Versions of the course have been offered to undergraduate business majors, MBA students, and executive MBA students over the past seven years. The popularity and success of the course has grown to the point where the Entrepreneurship and Innovation Department has made the course a requirement for all Entrepreneurship and Innovation majors, and view it as a strategic differentiator for their program. A version of the course is currently being proposed as a required component of a new undergraduate Entrepreneurship and Innovation minor for all students at the university.

There are six features of this IS Entrepreneurship learning experience that we believe are innovative and unique:

1. The course is accessible to all business students. There are no technical prerequisites for the course. Services such as shared hosting, content management, and analytics have matured to the point where non-technical students can create sophisticated, business-quality offerings online quickly. By using mature open source platforms such as WordPress and Drupal, and free services such as Google Analytics, non-technical students can start building solutions that have real business value without coding experience. Non-coders can be invited into technology by first showing them what production code looks like, then encouraging them to make simple changes and see the results immediately. Coders, on the other hand, can customize the open source code as much as they wish, allowing them to take advantage of their previous technical mastery.

2. The course allows students to deliver business value quickly. Rather than be assigned classroom or 'toy' projects, all students in the course create an online business offering using their own domain name, and open their projects to customers around the world. The actions they take in their project work lead directly to revenue, new customer leads, and other outcomes of obvious interest to every business student (and business person).

3. The course material can be offered in a variety of formats. The course content has been delivered in formats ranging from a 45 or 90 minute sample lecture, to a half day seminar, to a traditional 8 or 15 week course. The content of

Information Systems Entrepreneurship can be divided into three phases: the **design** of an online business, which specifies objectives, competitors, a customer acquisition strategy, and the most important conversion goals (or online activities that have business value, such as clicking to buy); the **delivery** on an online business, using online services and open source technology to build a web site that will satisfy customer and business needs; and **experimentation**, or attempted changes to website content and functionality that are intended to result in more conversions and better business outcomes. Shorter formats can use techniques such as the Online Business Design Canvas (included at the end of this document) to help students create a preliminary business design, either in a stand-alone introductory session, or as an activity within a larger course. Longer formats allow students to actually deliver, or implement, their designs. Full 8 or 15 week courses allow time for rounds of experiments, such as A/B testing, on real customers.

Table 1 shows suggested amounts of classroom time to be allocated for the design, delivery, and experimentation phases, depending on the length of the course. All of the formats listed below have been offered at our university.

Table 1. Suggested Hours Spent on Phase, by Delivery Mode.			
	Design	Delivery	Experimentation
45 Minute Sample	0.75	0	0
90 Minute Briefing	1.25	0.25 (demo)	0
Half Day Seminar	3	0.5 (demo)	0.5 (demo)
1 Week Module	5	2.5	0.5 (demo)
8 Week Course	8	20	4
15 Week Course	12	28	20

4. The course reflects the new world of IS design and delivery. The course only uses services and technologies that are available through the cloud. The only technical infrastructure required for students is a working internet connection. There is no need to create or maintain a separate computer lab. Because these cloud services are equally accessible inside or outside of class, there are fewer barriers to immediately translating these skills to real businesses. IS management issues, such as security and network performance, demand serious attention in the class projects, as they would in any other modern cloud-based IS deployment.

5. The course covers a broad range of business objectives. While students might be more familiar with traditional electronic commerce revenue models, such as

online stores, when they begin the course, they soon learn that there are many different ways to create business value online. Businesses can make money directly through advertisement publishing, affiliate marketing programs, transaction fees, or donations. Easy to use cloud services such as advertising networks (e.g., Google AdSense) and payment systems (e.g., PayPal) allow these revenue models to be implemented by non-technical business students. Other business objectives, such as generating customer leads, subscription requests, or information downloads, may not generate revenue directly online, but still create measurable business value. While choosing among these business models for their online business design, students are exposed to the wide variety of ways that IS can contribute to business success.

6. The course allows for the experimental testing of business concepts.

Increasingly, analytics technology allows businesses to not only search for valuable patterns in data retrospectively, but also to conduct experiments with their own customers and analyze the results. Students identify conversion equations in their online business designs, specifying how many customer visits and conversion activities are needed to satisfy their business objectives. The equations serve as a kind of hypothesis for their business, which then can be tested against reality as their online offering attracts real customers. If the business does not attract enough customers, then better search engine optimization or other customer acquisition strategies can be pursued to increase numbers. If not enough customers are converting (e.g., signing up, clicking on ads, or clicking to buy), then the online experience might need to be changed. With the content experiment capability built into Google Analytics, students can randomly assign half their customers to one version of a page, and half to a second version, and see which version results in more successful business outcomes. The full-length IS Entrepreneurship course gives students enough time to participate in this new experimental mode of continuous business improvement.

These unique features of the IS Entrepreneurship course have led to high student demand for the course. Because entrepreneurship and general business students believe they are learning relevant skills, the positive word of mouth continues to generate course enrollments.

How effective is the IS Entrepreneurship course in the classroom?

As measured by the university's standard classroom assessment tool, the course is performing extremely well. One of the most scrutinized questions on the assessment tool is agreement with the statement "In this course, I am learning much". On a scale from 5 (strongly agree) to 1 (strongly disagree), the course is consistently rated as higher than the mean scores for management undergraduate and MBA courses in our school, as shown in table 2 below.

Table 2. Student Agreement with Statement "In this course, I am learning much".				
Year	Undergraduate Course	<i>(vs. School Mean)</i>	MBA Course	<i>(vs. School Mean)</i>
2013-2			4.86	4.29
2013-1	4.72	4.29	4.71	4.29
2012-3			4.86	4.35
2012-2	4.82	4.23	4.61	4.35
2012-1	4.68	4.43	4.61	4.19
2011	4.82	4.29	4.62	4.25
2010	4.94	4.35	4.26	4.12
2009	4.84	4.26		
2008	4.68	4.33		
2007	4.9	4.28		

This table covers results through the first half of 2013. Dashes after the year indicate section numbers. As course enrollment has grown in recent years, multiple sections of the course have been offered in a single year. The undergraduate course is a standard 15 week semester course. The MBA course, which began in 2010, is an 8 week course.

Other evaluation questions on which the course consistently scored higher than school means include "The methods being used to evaluate my work (such as tests, projects, etc.) are reasonable" and "Compared with other courses on this level carrying an equal amount of credit, the effort I put into this course is as much as in other courses". These results indicate that the assignments and projects used in the course are effective from a student point of view, yet do not require an excessive time commitment, even from non-technical students.

What are the educational objectives of the IS Entrepreneurship course?

Our overall objective is to provide a technology education for every business student, regardless of background, that would give them the ability to create business value immediately through technology, introduce them to many important Information Systems issues in a hands-on way, and entice them to learn more about the power of IS. More precisely, we divide our education objectives into high-level learning objectives, and specific learning objectives, as listed below:

High-Level Learning Objectives:

ENTREPRENEURSHIP: Learn how entrepreneurial ventures use digital technology to design and offer new products and services, acquire and retain customers, analyze customer data, and provide satisfying user experiences online. Learn how to identify and exploit business opportunities online.

TECHNOLOGY: Without coding, learn how modern technology applications are designed and deployed. Be able to exploit modern business technology trends, including: cloud, open technology, mobile, social, data analytics, software-driven services, and experimental business.

Specific Learning Objectives:

- Create an online business design, consisting of a coherent set of activities for attracting customers online, providing a satisfactory online experience, and achieving business objectives digitally.
- Launch a business-quality online presence, using widely available services and software for deployment.
- Understand the basics of a content management system, and how it can be used as the foundation for an internet business presence.
- Set measurable business objectives (such as conversion goals), and monitor the success of those objectives through the use of web analytics.
- Implement multiple revenue streams, including web payments.
- Perform basic search engine optimization techniques for attracting online customers.
- Create a basic social media plan to attract and engage online customers.
- Perform basic usability and user experience tests; use simple experimental techniques such as A/B testing to optimize conversions.
- Create a plan for scaling up the online business activity through cloud deployment, a security plan, a backup and disaster recovery strategy, and consideration of legal and ethical issues.

Sample teaching and learning materials

Course Topics

Online Business Design Presentation and Critique

Present and obtain feedback on first online business design, using the online business design canvas.

Online Presence Basics: Internet, Web Hosting, Web Sites

The basics of how to get pages and apps online. Choose a domain name. Sign up for a web hosting service. Learn how to create basic web pages using HTML and CSS. Load pages to site via FTP.

Suggested downloads: Browser (Firefox; Firebug); Text Editor (TextWrangler; Notepad ++); FTP Client (Filezilla, Cyberduck); Web Page Editor (KompoZer).

Content Management Basics

Begin using content management systems (CMS) to deliver high quality web apps. Install and configure a leading CMS (WordPress). Begin to add and organize content.

Content Management: Appearance and Functionality

Add new functionality, and edit appearance, of CMS-backed sites. Install and configure other popular open software packages.

Web Analytics Introduction

Basic features of web analytics, especially Google Analytics. Install and configure web analytics to work with your online business offering.

Suggested signups: Web Analytics (Google Analytics).

Web Analytics: Conversion Goals and Testing

Define and implement conversion goals. Create simple A/B tests for continuous improvement.

Usability and User Experience

Perform basic usability tests to improve user experience for your online offerings.

Alpha Release - Prototype Presentation

Demo your prototype business site. Identify how business objectives will be fulfilled. Present initial analytics results.

Online Revenue Streams

Collect payments or subscription fees through online services such as PayPal. Strategize and implement revenue models such as advertisements and affiliate marketing.

Suggested signups: Payment Processor (PayPal).

Search Engine Optimization

Perform keyword research. Identify competition and open niches. Implement basic SEO on your online offering.

Suggested signups: Search Advertising Tools (Google AdWords).

Social Media and Other Traffic Generators

Assess and strategize other potential sources of visitors, including social media, email marketing, advertising, and other techniques. Ensure enough traffic to reach business objectives.

Scaling Up

Discuss topics related to scaling up sites beyond the first few thousand customers, such as backup/recovery, security, cloud deployment, and legal/ethical issues.

The Online Business Design Canvas

The online business design canvas offers an overview of the basic features of an online business: the objective, how customers will be attracted, what online experience (or use case) will lead to customer satisfaction, and the conversion goals, or specific actions customers will complete online that will lead to business value. The conversion equations are a brief summary of how many visitors are required, and what percentage of them must go on to successfully perform the desired action, in order to achieve business objectives.

BUSINESS GOALS AND OBJECTIVES Business Objective: Customers:		COMPETITORS Competitor 1: Competitor 2:
ACQUIRING CUSTOMERS Search phrase: Search volume: Top 10 competitor: Other acquisition activity What: How often:	ONLINE EXPERIENCE Domain name: Main use case:	BUSINESS OUTCOMES Main conversion goal: Secondary conversion goal: Revenue stream:
CONVERSION EQUATIONS Main conversion goal: _____ visitors/month * _____ conversion rate = _____ conversions/month Secondary conversion goal: _____ visitors/month * _____ conversion rate = _____ conversions/month		

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