APSC 486 / COMM 466 – NEW VENTURE DESIGN

Fall - Spring 2014/2015 Tuesday 6-9 pm, Room Angus HA 009 & Design studio EDC 102

This course is an interdisciplinary (traditionally Engineering – Commerce, and more broadly across UBC, starting in 2013) project-based course that has the primary goal of providing students of both faculties with knowledge and practical experience related to the formation of an entrepreneurial enterprise, based on the development of a new product or process. Working in teams, the end-target in the course is to produce a viable product prototype and the necessary business plan to ensure its success in the marketplace.

The course is 6 credits and will encompass the entire school year. Students from the Sauder School of Business who take this course can obtain equivalent course credit for Commerce 468 (3) and 497 (3). Students from Applied Science can obtain credit for an applicable project course within their Department; for example: IGEN get credit for APSC430, EECE may get credit towards EECE4x9 (see Ph. Kruchten), MECH may get credit for some of MECH457 (see A. Hodgson), etc. Other UBC students are register through one of these two codes APSC486 or COMM466, once accepted into the course.

What book will we use?

There is a formal textbook for the course.

- Blank, Steve and Dorf, Bob: *The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company ,* K&S Ranch Press, 2012

It will be available in the UBC bookstore. You can read the first few chapters by way of preparation.

Optional, but recommended, for business models:

- Osterwalder, Alexander, and Yves Pigneur. *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*: Wiley, 2010. ISBN: 978-0470876411
- Osterwalder, Alexander, Yves Pigneur, et al.. *Value Proposition Design: How to Create Products and Services Customers Want,* Wiley, 2014. ISBN: 978-1118968055

Many business students will have seen this. It is also in the Sauder Lam library. We will cross-reference these extensively. There are also free resources online.

Excellent reference textbooks include:

- Timmons, Jeffery, and Stephen Spinelli, New *Venture Creation: Entrepreneurship For The 21st Century*, 8th Edition, McGraw-Hill, 2008.
- Birley, Sue, Dan Muzyka, and Richard Stutely (BM), *Mastering Entrepreneurship*, Financial Times Prentice Hall, 2007.

For product design:

- Ulrich, Karl T, and Steven D. Eppinger, Product Design and Development, McGraw Hill, 2008.

Other assigned readings and project handouts will be provided to student teams as necessary.

How will this course be taught?

This course will be a combination of both lecture instruction and dedicated lab-time in which student teams will advance their new venture concept toward market introduction. Lectures will draw upon knowledge from both the engineering and commerce disciplines. Projects will be conducted in a team-learning format. Dedicated class time is scheduled for Tuesday 6:00 – 9:30 pm each week. Lecture sessions are interspersed throughout the term and significant class time is also proportioned for lab work (see calendar schedule at end of the document). Consultation with course instructors can be done during scheduled lab hours or by appointment. This course requires significant independent effort and effective team management skills.

The premise of the course is that you will develop hypotheses relating to potential customers, their problems and how you might solve these. You will run tests on these hypotheses and validate, kill or pivot to develop a business model, which is less likely to fail. This process will also help you identify the specifications for your minimum viable product so that you do not waste time building features that people do not care about or will not pay for.

Each team will keep a blog throughout the course and all students are expected to contribute actively. This is how your Professors and industry mentors will know what you are doing. It makes consultations and feedback much quicker. You will not have time to verbalize your updates.

On Lab evenings, you should plan to spend the full and allotted class hours meeting with your team. Your assigned time with the Professors could be early, mid or late in the evening, but as you are all scheduled to be together at this time then it is well suited to making progress together.

How will my grade be determined?

Term 1 assignments:

• Research paper (undertaken in pairs)	20 points
• Presentation at the end of term	20 points
• Participation, peer evaluation and team blog	20 points

Term 2 assignments:

• Initial business-plan	15 points
• Initial prototype and technical report	15 points
• Individual paper (book report)	20 points
• Participation, peer evaluation and team blog	20 points
• Final prototype & engineering documentation	25 points
• Final business-plan & go-to-market doc	25 points
• Final presentation	20 points
TOTAL	200

Participation will be graded collectively by the instructors.

Intra-group evaluations will be conducted at the end of each term - your peers within your team will allocate grades based on the level of contribution of each member. Peer evaluation may affect your individual grade significantly, relative to the grade of the group. If all group members contribute equally then there should be no need for adjustments, but low involvement or free-riding behaviour will be penalized.

Attendance:

Attendance is expected at all classes. Classes are scheduled from 6-9.30pm and this should be your priority on Tuesdays. There will be a sign-in sheet for all classes. Over the two terms each student will be allowed one "free pass" for any purpose. Otherwise, unless it is to represent the NVD class at a pre-approved competition, students missing class will lose 5% points from their final grade, for each occurrence.

Professional behaviour:

Treat this as a *business meeting*. In class, you should have your phones on silent and put away. Laptops should be closed unless you are specifically using them for a class purpose. You should arrive to start on time and should refrain from walking in and out – we will take formal breaks. To score well on participation you should be actively involved. You should look to add value to the class conversation.

Teams:

The majority of course requirements are completed in teams. Teams will be self-selected – though we do require a balance of engineering and business students in a group. Although it may be necessary to change group structure to meet specific product design requirements, otherwise group composition will remain consistent throughout the course. If there are any problems in the group (e.g., free-riders, group members being chronically late, etc.) the group members should first try to resolve the issue themselves and if the problem is not sufficiently resolved, only then should the group make one of the instructors aware of the issue.

Individual and small team Assignments

As noted above, individual and small team (pair) assignments will be provided over the year. Each of these assignments is specific to issues inherent within the course. The first assignment (done in pairs) focuses on marketing research and provides the opportunity to get some practice with basic research methodologies. The second assignment is significant in that it requires significant time with respect to reading a book centered in entrepreneurship. Students must choose a book to review early in the course and after title approval is obtained provide a critical analysis of the book's value to entrepreneurship in general. Potential book titles include:

- *The Innovator's Dilemma*, Clayton Christensen, 2003.
- *The Art of the Start*, Guy Kawasaki, 2004.
- *A Good Hard Kick in the Ass: Basic Training for Entrepreneurs*, Rob Adams, 2002.
- *Glorious Accidents*, Michael J. Glauser, 1998.
- *The Book of Entrepreneurs' Wisdom*, 1999.
- *Four steps to the epiphany*, Steven Blank, 2nd ed. 2010
- *The Lean Start-Up*, Eric Ries, 2011

There are many other possibilities. If you find something you are interested in, please get it pre-approved for this assignment before investing time or money in it. A fuller briefing will be forthcoming.

The third assignment runs over both terms but a mark is given for each term. Each student is required to contribute to a team blog. (Details for sign-up will be provided in Piazza, our course learning-management system.) The content of the blog should include at least one update from each team member in each iteration of the project between lab reviews, identifying their personal activity plan and output, and how it fits with the team program. Additionally, team member are encouraged to contribute additional posts, such as: a) my personal activity plan for the week; b) learning reflections on the week. In part a) students should be laying out their forward plan at the start of a week, clearly noting their personal responsibilities and how this fits with overall team goals. Towards the end of the week they should include a write-up of what they actually did and move to part b), reflections on learning from the week. This can be about technical or team process or academic content. Don't look to pad this – make it succinct and useful. Point form is fine. Visuals are good – consider a pasting a photo of your whiteboard discussions around a key issue, etc. Not all students will necessarily post every week, but you should aim to be pro-active. Think of this as a living, collective journal that is helpful as a record for all team members.

Conferences and competitions

A number of business plan competitions have been identified. Teams will be provided information regarding these competitions and are encouraged to think about involvement and participation. Some funding is available through the course endowment to support student participation in conferences. Funding decisions will be made on a case by case basis.

Financial Endowment

The course has received a financial endowment from Ken Spencer. This funding has enabled us to provide each student team with a budget of $2,000.00 to be used in developing a product prototype and conducting necessary market research. Additional funds will also be provided to facilitate student participation in business plan competitions. The process for accessing these funds will be explained in the early stages of the course. Practically, this "seed funding" will get you started, but you should think in terms of leveraging this to win prize money at initial competitions so that you can then enter and travel to additional competitions.

Course Website

We will be using an LMS called Piazza, and not Connect. You will get an invitation to join.

Find our class page at: https://piazza.com/ubc.ca/winterterm12014/apsc486comm466/home

On http://nvd.ubc.ca and http://design.engineering.ubc.ca/design-courses/new-venture-design/ we maintain a public face of the course with some history and past projects.

An NVD alumni Facebook group is also maintained as an additional touchpoint for students and alumni in the course, and a linkedIn group: "UBC Start-up by Alums". Activity on these sites is currently low and students are encouraged to invigorate them.

The "e@ubc" website: www.entrepreneurship@ubc.ca is a good and growing hub of resources, information and links to external events. We direct all such information to this site rather than

duplicating, and so you are encouraged to check it regularly, and/or subscribe to the relevant twitter feed.

Venue

The default venue is HA 009 (external entrance is behind and below White Spot), but some of the classes will take place in the design studio in the *Engineering Design Center, or Kaiser 2020.* On lab nights we will arrange for two rooms as the class will be split with some teams seeing one pair of faculty, and some teams seeing the other. The combination of faculty that teams see will be changed-up from lab to lab.

Lab space

All team have access to dedicated lab space in the Ken Spencer lab, McLeod 458. Access is control by a fob. Details will be given around the 2nd class.

Contact Information?

When e-mailing one of the Professors you should routinely "cc" all of the other Professors involved in this course, and also cc all of your team-mates. Please title your e-mail headers clearly: comm/aspc 486 (NVD) team number, and brief subject topic. Typically, one of us will respond to any one enquiry.

Instructors: *all instructors will be reached if you use: nvd-faculty@lists.apsc.ubc.ca*

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CLASS SCHEDULE

Legend: HA = Henry Angus building

EDC = Engineering Design Center building

KAIS = Kaiser building 2332 main mall, room 2020

All classes on Tuesday from 6pm. Keep your schedule open until 9.30.

TERM 1

Sept 2 BBQ in Kaiser Building, Kaiser 2020- Course Introduction (Paul/Philippe/Tony/Blair)

- Introductions of course participants / get to know one another / initial team pre-formation activities.

Sept 9 Lecture – Course Intro/ Creativity/B-model Canvas (Paul – Philippe-Blair) HA

- Creativity and ideation. Ideas vs. innovation vs. new business potential.
- Business Model Canvas (BMC) & Customer Discovery
  - Right hand side of BMC – Value Proposition & Customer Segments
  - Hypothesis, test, assess → validate and iterate, pivot or invalidate
- Discussion of syllabus and course parameters
  - Scheduling issues, budgets, and team formation guidelines
  - Importance of class participation and interaction during lectures
  - Blogging and interaction with Professors
  - Business plan competitions and grants.

Sept 16 - Lecture – Product/Market Fit & Team Formation (Paul – Philippe - Blair) HA

- Intro to Value Proposition Canvas
  - Articulating pain/gain and benefit a product brings
  - Product/Market fit
  - Analyzing competitive space and market sizing
    - Top down and bottom-up
    - In hybrid categories
- Teams: evolution of a team and roles within a team
  - Good team behaviours and adjustments
  - Early problem diagnosis and peer evaluations at end of term

- Meetings
- Expectation of lab sessions: criteria – report back on hypothesis testing as you iterate your canvas: validate, invalidate or pivot
- Use of blogs to document progress and share updates in Labs and meetings with Professors
- Team agreements - briefed
- **Teams formed**

Sept 23 Lab 1: Initial product proposal meetings (Paul/Philippe/Blair/Tony) HA

- All teams in classroom for full class: group work time
- Teams meet independently for 20-30 mins with Professors to discuss and initial proposals
- Present initial ideas via Value Proposition canvas
    - hypotheses plus sketch of what product or service does for EACH idea

Sept 30 - Market Research – Secondary/Primary (Paul) HA

ASSIGNMENT #1 briefing

- Designing interviews and quick experiments to test your b-model hypotheses
- Running the experiments
- Interpreting messy qualitative data
- The Mammoptics example
- Mapping customer workflows
- Mapping customer buying decision interactions

Oct 7 - Lecture – Formulating a Business Model (Blair and Paul) HA

- B-model design
- Preparing for business model and plan competitions
- In depth look at b-model canvas and using it in context of discovering the business-model for the venture via customer research and a willingness to pivot.
    - Briefing on the 3 maps: day in the life, customer influence ecosystem, customer buying process.
- End of term 1 deliverables

Oct 14 - Lab 2 - Progress Review and Working Session (update meetings) (All) HA

- 2nd round of Reviews on proposals, refined RHS canvas, for lead ideas (v2) reporting on experiments with potential customers to test hypotheses.
- Assessment of ideas to include product/market fit, market sizing and competitive space, and some initial attempt at the 3 maps briefed Oct 7.
- Signed team agreements are DUE.

Oct 21 - Prototyping and introduction to IP (Philippe) EDC

- Prototyping (hardware and software): how and why
  - Access to prototyping facilities and further resources
- IP, patents, how to search for patents, how to write a provisional patent (Roger Miller, UILO)

Oct 28 Lab 3 (HA) – Finalize project topic based on report back on field research on v2 hypotheses, iterating business model canvas- RHS (30 minute update meetings)

Nov 4 Team budgets & how to be reimbursed (Philippe)
Go to market planning (Blair & Paul - HA)

- Completing the RHS of the canvas
- Channel development and early sales pipeline
- Acquisition: getting customers to buy
- Revenue forecasts: pricing and volume

Nov 11 No class

Nov 18 - Product design, fabrication, manufacturing. (Philippe) Dom Kwong
1 hour workshop on technology roadmaps: (Blair)
1st Peer evaluation due

Nov 25 - Lab 4: Term 1 Presentations (All- HA)

- Two parallel rooms presenting
- Teams present proposal to class (½ hour each) / feedback and evaluation
- B-model canvas (RHS) and sketch of product/service are required, along with an account of the hypotheses, research and learning.
- Next steps: deliverables for Jan 6

Dec 2 - (No class; optional checks with instructors; make appointment)

- iPeer evaluation due and team agreements updated
- Meet with mentors before Xmas to work out joint plan for term 2 on how you will ask them to help you.
- Mid-term Product (Draft business plan + initial prototyping plan) due Jan. 6th.
  Draft business plan:
  Latest BMC. Exec summary 2 pages.
  RHS explained. Cust Seg and VP validated, 1 page.
  Go to market plan: Channel, GET, pricing, revenue streams (but not full financials)
  Prototyping plan and technology roadmap

TERM 2 – Dates are fixed; but exact topics are subject to change

Jan 6: Lab 5: 20 mins per team.

- Intro to film-making – your Kickstarter style video. (Bruce Marchfelder)
  - Set up film skills workshop out of class. Needed for march 11 deliverable.
- Teams should be prepared to provide an update of plans for term 2, addressing the feedback from their mentor, and looking to the specifics of prototyping, patent application, early market testing, and competition entry.
  Note, this should not be a simple repeat of the term 1 presentation: this should be a major advance with hypotheses and research plan established.

Jan 13: Financial Projections and Valuation – Blair in HA

- Revenue, Costs, Models and drivers

Jan 20: Telling the story of your venture & presentation skills; Denne Roussow (Philippe – in HA)

Jan 27: Lab 6: b-model canvas update and prototype progress (All – in HA)

Feb 3: Speed-dating for start-ups (Paul- in HA)

Feb 10: Guest speakers: alumni from the NVD course (Philippe – in Kaiser 2020)

Feb 17: no class (reading break)

Feb 24: Lab #7: b-model canvas v6 (all – in HA)

Assignment #2: BOOK REPORT DUE

Mar 3: BMC Left Hand Side (Blair: HA)

- Suppliers and partners.
- Resources.
- Key Activities.
- Costing.

Mar 11: Elevator pitch (Paul) – HA – special location.

- Teams present their videos

Mar 17: Project fair with mentors and other guests (location TBD)

Mar 24: VC, govt programs, SR&ED, IRAP, MITACS (Philippe and Blair in Kaiser 2020) + guests

- Activity: draft applications for funding.

Mar 31: Final b-model canvas, prototypes and Presentations. (All in HA)

- Presentations will be filmed and become part of the course record.

Apr 7: Open House, showcase to UBC and external sponsors and partners (room TBD),
starting exceptionally at 5:00pm, followed by Information Event for future students at 6pm.

Apr 10: final Peer evaluation due

Final documents due (Final b-model canvas, with go to market plan, financial projections, prototypes, technology roadmap and technical report)

Mid-Course Presentation (Nov 25)

Each team is required to present their chosen design project on the above specified date. Each group will be allotted ½ hour of presentation time. The formal presentation should take approximately 15-20 minutes with the remainder of the allotted time reserved for questions. It is expected that each team member will participate in some way in the presentation. The presentation is formal in nature and we expect the groups to adopt this perspective when presenting.

The presentation should cover the following central areas at a minimum (in no particular order):

1. Feasibility – is the product feasible to produce? What types of research and testing has the group conducted to ensure technical viability? What does the product concept currently entail? Provision of sketches and block diagrams for development is expected..
2. Market – is there a market for this product? What evidence has the group gathered that would indicate this? Who is the customer for the product? What defines the market? What market characteristics are critical to success? Are you entering an existing market or disrupting round boundaries or creating in new space? What are the rules of the current game?
3. Competition – is their currently a competitive product on the market? Who are the competitors? What is your differentiated value proposition? Is your product patentable? Have you conducted an exhaustive patent search?
4. Strategy – What is your competitive advantage? How do you plan to proceed? What is the path you are forecasting for your venture?

These areas represent a rough outline of the questions we expect to have answered at this stage of the process – they are not meant to be exhaustive and we expect the groups to push beyond these issues in their presentation.
To do this, use the business model canvas, focusing in particular on the right hand 5 blocks at this stage.

More information will be forthcoming in class.