**Title: Startup Lab: Introduction to Technology Ventures**

**Abbreviated Title: Startup Lab: TechVentures**

**Course Numbers: ECE 2893, ME 2803, BME 2803**

**Instructors**: Raghupathy Sivakumar, Ray Vito, Wilbur Lam, James Raines, Nishant Dass, Keith McGreggor

**Guest Instructors**: Paul Freet, Sanjay Parekh

**Year**: Sophomore/Junior/Senior

**Description**: Introduction to technology ventures/startups. Different elements of technology venture creation including opportunity identification and validation, ideation, customer discovery, market analysis, minimum viable product development, business models, intellectual property, and capital raises, will be covered.

**Pre-requisites**: None

**Credits**: 2-3-3

**Class size:** 120 students (4 sections). Students admitted on a first come first served basis.

**Purpose of course**: Provide BME/ECE/ME undergraduate students with the necessary vocabulary, knowledge, skills, and experience to conceive technology for solving market pain, to translate technology into a commercially viable and relevant offering, and to develop a viable business model for a startup idea. The course will emphasize cross-pollination of ideas, team members, etc., from different disciplines.

**Topical Outline Overview**

The course has two phases, with the phases organized in parallel.

The first phase is a lecture series that will focus on the elements of a startup ranging from how opportunities are identified, to how ideas are conceived, to what customer discovery means, etc. Guest lecturers will be invited representing young entrepreneurs, experienced entrepreneurs, embedded entrepreneurs, angel investors, venture capital investors, customers, technology venture lawyers, and venture catalysts.

The second phase is a laboratory that will focus on developing the core of a business model for an actual startup idea. In this second phase, students will conceive a startup idea, perform customer discovery to discover a compelling business model, and customer validation to prove market viability of the startup concept.

**Topical Outline Details**

**Phase 1: Startup Basics**

The education phase will focus on a variety of elements of a startup creation and building. This will be a weekly lecture delivered by a guest instructor. The guest instructors will be a combination of successful entrepreneurs and investors. Special emphasis will be made to showcase Georgia Tech alumni.

The first lecture, the first week of the course will feature a rock-star entrepreneur, such as Chris Klaus.

The guest lecturers will talk about their founder stories with emphasis on one of the following topics:

**Opportunity**: How are opportunities identified? What makes opportunities more or less monetizable? How can different opportunities be evaluated?

**Ideation**: Technology driven ideation of solutions to address market opportunities. How can technology be leveraged to achieve both differentiation and entry barriers? How can the time to market be balanced against completeness of technology?

**Customer Discovery**: Do customers validate business hypothesis consisting of the opportunity and potential solution? How should customer discovery be done?

**Market Analysis**: How should market research be performed? What is the competitive landscape? How big is the market? What are likely go to market strategies?

**Teaming**: What kind of a team is required for fulfilling the vision of the venture? When should the team members be added? How should the team members be compensated?

**MVP/Validation**: How to define the minimum viable product to take to market? How to use customer discovery in defining the MVP? How to build POCs for specific customer use-cases? How to learn from deployments and product adaptation?

**Business Models/Metrics**: What is the business model for the venture? What are alternatives and trade-offs? What metrics should be tracked to verify chosen business model?

**Pivoting**: How to pivot product and business models based on customer discovery and validation? How to choose pivot direction?

**IP/Legal**: What is the importance of IP? When to protect IP? How to license IP that might already exist? What legal help will the venture require?

**Capital**: How much capital does the venture require? How to raise this capital? In what increments should the capital be raised?

**Liquidity/Exit**: What are likely liquidity events? What are the trade-offs?

**Phase 2: Customer Discovery and Validation**

For this phase of the class, students will divide and work in four-person teams. The cross-disciplinary teams will consist of at least one EE, ME and BME student. The teams will each pursue a startup concept that they propose. The concept must be a tangible product that supports the Ga Tech “maker culture” and can be built by them using their skills in the EE/ME/BME realm. It must be a concept that allows for customer discovery, with a sufficiently large local market. The instructor team must approve the concept.

This course follows an evidence-based startup methodology. The class will use the Business Model Canvas as a tool for defining the startup business model. There are no facts in the building, it is only by interviewing potential customers that the viability of a startup business model can be discovered and validated. Each week, students will identify hypotheses about who their customers might be and what problems or needs they have. They will then interview 15 potential customers and partners in their market’s ecosystem. The results of these interviews will be presented in class. The instructor team will review the progress and help to set the teams in the right direction. Much of the learning comes from watching and even participating in this interaction with other teams. Teams will use this process to set the details on their business model.

The first class features a workshop on how to perform Customer Discovery interviews. The nuts and bolts of how to make good hypotheses, how to identify people to interview, how to get the meetings and what to ask, and finally, how to interpret the results will be covered.

During the next 4-6 weeks of the course, there will be short presentations on the parts of the canvas. These presentations can be a mix of in-class and flipped-instruction. The sections of the canvas to be covered are:

- Customer Segments

- Value Proposition

- Revenue Models and Channels

- Metrics

- Key Resources and Activities

- Cost Structure and Partners

The first half of the class, teams will focus intensely on finding product-market fit. The second half of the class, teams will shift to gathering proof that the there is a successful business model that can be deployed.

The lab instructors will offer sufficient time for office hours to allow teams to get individualized help. The goal of this portion of the class is to learn a method for going from a vision to a proved business concept.

**Grading:**

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| Assignments | 20% |
| Weekly presentations of lab work | 20% |
| Startup hypothesis refined through customer discovery | 20% |
| MVP/Prototype development | 20% |
| Business model defense | 20% |

**Textbook**: None

**Suggested reading**:

1. Technology Ventures, Byers, Dorf, and Nelson.
2. The Startup Owners Manual: The Step-By-Step Guide for Building a Great Company, Blank.

**Weekly Timeline**

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| Week 1 | **Startup basics overview**: focus, and organization. Team formations. Startup basics overview. Business Model Canvas overview. Workshop on customer discovery interviews. |
| Week 2 | **Customer Discovery**: How should customer discovery be done? Do customers validate business hypothesis consisting of the opportunity and potential solution? |
| Week 3 | **Opportunity**: How are opportunities identified? What makes opportunities more or less monetizable? How can different opportunities be evaluated? Customer discovery with at least 15 interviews. Results presentation and hypothesis refinement. Focus on customer segments of the business model canvas. |
| Week 4 | **Ideation**: Technology driven ideation of solutions to address market opportunities. How can technology be leveraged to achieve both differentiation and entry barriers? How can the time to market be balanced against completeness of technology? Continued customer discovery and updates to hypothesis. Focus on value proposition of business model canvas. |
| Week 5 | **Teaming**: What kind of a team is required for fulfilling the vision of the venture? When should the team members be added? How should the team members be compensated? Focus on revenue models of business model canvas. |
| Week 6 | **Market Analysis**: How should market research be performed? What is the competitive landscape? How big is the market? What are likely go-to market strategies? Continued customer discovery and updates to hypothesis. Focus on channels of business model canvas. |
| Week 7 | Mid-term presentation on startup idea, refined hypothesis through customer discovery. |
| Week 8 | **MVP/Validation**: How to define the minimum viable product to take to market? How to use customer discovery in defining the MVP? How to build POCs for specific customer use-cases? How to learn from deployments and product adaptation? Focus on metrics of business model canvas. |
| Week 9 | **Business Models/Metrics**: What is the business model for the venture? What are alternatives and trade-offs? What metrics should be tracked to verify chosen business model? Focus on key resources/activities of business model canvas. Start customer validation phase. |
| Week 10 | **Pivoting**: How to pivot product and business models based on customer discovery and validation? How to choose pivot direction? Focus on cost structures and partners of business model canvas. Continued customer validation. |
| Week 11 | Mid-term presentation on startup prototype, preliminary results from customer validation, prototype refinements and plan. |
| Week 12 | **IP/Legal**: What is the importance of IP? When to protect IP? How to license IP that might already exist? What legal help will the venture require? Continued customer validation. |
| Week 13 | **Capital**: How much capital does the venture require? How to raise this capital? In what increments should the capital be raised? Continued customer validation. |
| Week 14 | **Liquidity/Exit**: What are likely liquidity events? What are the trade-offs? |
| Week 15 | Final presentations of startup idea, refined prototype, customer validation, and future plans. |