

## Technology Based Startups: Biomimicry Certificate

<b>Course Name:</b>	Technology Based Startups
<b>Course Credit:</b>	3
<b>Course Number:</b>	4600:481 (as a follow through to 4600:471 Senior Design Projects)
<b>Department:</b>	Mechanical Engineering
<b>Pre-Requisites:</b>	None
<b>Instructor:</b>	Gopal Nadkarni
<b>Semester:</b>	Spring

**Typical Student Profile:** 3<sup>rd</sup>/Junior/Senior students in Science, Arts and Engineering from all disciplines as with an interest in technology based entrepreneurship

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**Summary:** This is a hybrid “design thinking” plus “business fundamentals” course for students interested in starting, joining

## TECHNOLOGY BASED STARTUPS SYLLABUS

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**Description:** This course will provide senior students with the opportunity to extend their fundamental knowledge of entrepreneurship within the specific interdisciplinary context of technology commercialization. Working in interdisciplinary groups the student teams/groups will be taught design thinking approaches that put the customer at the center of the creative process. Brainstorming exercises will be held to solve open ended problems on special topics (e.g. biomimicry, software, medical devices, sensors etc.) so that teams can ideate and conceptualize product, process or service based ideas that solve real problems. In some cases, students can be assigned known research technologies and learn how to come up with applications that have commercialization potential. The evaluation will include, but not be limited to, evaluation of the underlying technology, determination of potential customer value proposition(s), determination of market feasibility, examination of licensing/spin-off options, identification of potential licensees, estimation of potential market size and value, and development of recommendations for further funding, growth (or abandonment). By working in teams, students will learn how to create/invent a product prototype, learn how to listen to potential customers and come back to describe the value proposition that will make the startup successful.

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### Textbooks

1. Disciplined Entrepreneurship: 24 Steps to a Successful Startup by Bill Aulet, Wiley 2014
2. The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company Hardcover – March 1, 2012 by [Steve Blank](#) (Author), [Bob Dorf](#) (Author)

**Reference Websites** How to Build a Startup : <https://www.udacity.com/course/how-to-build-a-startup--ep245>

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**Course Objectives:** There are five main objectives that coincide with the preliminary steps of the 5i model (ideate-invent-innovate-invest-impact) model.

**1 Ideate:** The student will learn how to brainstorm and ideate using well known techniques e.g. mind mapping and design thinking approaches. Focused sessions from experts will be offered as a platform to launch ideas e.g. biomimicry, medical problems etc.

**2 Invent:** The student will learn how to form a cohesive team that narrows down the idea, fleshes out the scope based on initial customer interviews and makes a proof of concept/prototype

**3 Innovate:** The student will learn how to conduct detail market understanding and customer discovery of the ecosystem to see whether there is a genuine demonstrated need from customers. They will learn how to derisk their ideas using scientific formulation and testing of business hypothesis using the Lean Launchpad model. They will learn how to bring their product-market fit interview results back for critical feedback every week.

**4 Invest:**

- Customer Discovery Interviews: 40 points (minimum 25 interviews)
- Final Presentation: 10 points
- Final Report : 15 points
- Attendance: 10 points

90-100 Points: A  
80-90 Points : B, B+, A-  
60-80 Points: C- to B-  
<60 Points: D  
<50 Points: F

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**Assignments:** Student teams will be required to present the results of their project work and their customer discovery every week in the Class Presentation session. Every student will to present as part of their team and will be given critical feedback.

**Final Presentation:** Teams are required to prepare a final presentation to the judging team with external judges in the format of a incorporated company requesting funding with a defined go-to-market model and business plan with metrics on cost, validated customer need and a prototype that they can demonstrate.

**Attendance:** The instructor will use the textbook along with other web resources to supplement the learning experience. To

