

Entrepreneurship in the Biomedical Space Certificate Syllabus



I. Meeting and Contact Information:

Class Meets	See course schedule	
Virtual Office Hours	Wednesdays, 9am-10am	Microsoft Teams
Contact	Scott Davis James Bezjian	davissco@musc.edu 512-516-3442 jbezjian@gmail.com 714-642-3824

II. Course Overview:

At the beginning of the program you will either (1) Come up with a novel technology that you wish to use as the foundation for your virtual company or (2) work with the MUSC Foundation for Research Development to assess an existing technology from MUSC. As you progress through the course content, you will complete exercises based on the content to assess the translational potential of your technology.

The program will close with learning economic practicality, how to pitch your idea, and how and where you can raise money. Resources you can use to help you move forward with a forming and developing a company will be provided during the course. This course will be layered in such a way that a business canvas and pitch deck is formed. At the end of the course, you will pitch your idea to a panel of judges in a pitch competition.

The course will be structured into six main modules – four of which will require full completion, and two of which will require completion for a minimum number of desired topics depending on which track you choose. The track should be chosen based on the technology you are working on in this course. Below you will find an overview of each of the modules and a description of the online lessons within each module.

III. Evaluation Criteria

Evaluation	Percent
Online Quizzes	10%
Getting Started Project	5%
IP Project	10%
Business Canvas	30%
Pitch Deck and Pitch	25%
Participation/Attendance	10%
Feedback	10%

The course will be evaluated according the table on the left. As this is a certificate course, you will not be receiving a letter grade. However, you must obtain an 80% in order to receive a certificate for the course. Provided you actively participate, complete the assignments and refine assignments based on feedback provided, all attendees should obtain at least an 80%.

IV. **Course Policies**

GROUP WORK: We aim to have two-three people per project in this course. This is to reduce the workload and provide the opportunity for discussions around a project. It is up to you how you divide up responsibilities and how often you interact.

PARTICIPATION: The class will be online. Several videoconferences are scheduled for Thursday morning. Please be sure you are current on the course material, prepared to provide updates on your project and actively participate. At least 1 person from each group to participate (preferably the entire team) in the videoconference updates.

GRADING: Most of the projects here are meant to be discussed and refined (sometimes multiple times). You will have a chance to take feedback and update your project assignments for a change in grade.

FEEDBACK: This course is meant to help promote entrepreneurship training throughout the MUSC enterprise (and long term beyond), and therefore your feedback is critical. Feedback on what worked, and what did not, will be helpful for continued development of the course

V. **Identifying a Technology:**

The technology you identify can be one you are currently researching or an idea you have that you think has potential. If you need help coming up with a project, message the course administrator who can help provide ideas or brainstorm with you to identify a project that fits well with the course. Further, the technology must be approved by the end of the Getting Started Section to make sure it is a good fit for the course.

Examples of projects:

1. A novel biologic that possesses anti-inflammatory qualities
2. A known small molecule that failed for efficacy in fibrosis, but could be repurposed as an anti-cancer agent
3. An imaging diagnostic for early detection of Alzheimer's Disease
4. A medical device knee implant that retains mechanical stability over time compared to current devices
5. A new antimicrobial material that has uses in implantable medical devices
6. A software that can help a provider diagnose and treat injuries remotely

Properties of Technologies that would be the best fit:

You do not need to have a complete product profile for the technology in terms of what it would look like on the market. However, you should have an idea that is formed enough to perform a prior art search and/or assessment of the technology compared to competitors. In the case of therapeutics, that would mean knowing the sequence, formula or use of known compound. For a diagnostic, that would mean knowing the target or

method needed to diagnose a disease. For a medical device, it would be at minimum a drawing (preferably a CAD drawing) or prototype of the device. For a software, it would be having either a workable product or design features that can be implemented that will distinguish the technology from other technologies. If you have questions, the course administrator will work with you on determining if the technology is a fit.

**You should be in contact with your Technology Transfer Office (At MUSC frd@musc.edu) if the technology you are working on is associated with your University.*

VI. Course Schedule:

Welcome and Getting Started		<i>Required.</i>	Weeks 1-2 Jan 11 th -24 th
<i>Virtual Class Introductions</i>		<i>10-11am, Introductions and course overview and purpose</i>	Jan 13 st
Lessons:	<ol style="list-style-type: none"> 1. Science vs Invention vs Business - Understanding Key Issues in Innovation and New Product/Service Development. 2. Business Opportunity - Defining and evaluating opportunity 3. Entrepreneurial Overview - How to determine if starting a company is the right move for you. 4. Understanding Intellectual Property - Review of the types of IP and protections afforded by each. 		3.5 hrs. Due Jan 20 th
<i>Pick technology</i>		Work with course administrator to identify and pick a technology for the course	Jan 11 th – 20 th
<i>Virtual Class Update</i>		<i>10-11am, provide class update on technology and team</i>	Jan 20 th
<i>Class Project</i>		<i>Write out a preliminary target product profile on your technology</i>	Due: Jan 24 th
Intellectual Property		<i>Copyright or Patent Track required</i>	Weeks 3-4 Jan 25 th – Feb 7 th
Lessons:	<ol style="list-style-type: none"> 1. US Patents Deep Dive - Process, requirements, timeline and associated costs. (Patent Track) 2. Case Laws that have Changed the Face of Patents - Myriad, Prometheus & Alice. (Patent Track) 3. Foreign Patenting Strategies - How to determine in what countries to file patent applications. (Patent Track) 4. Freedom to Operate - Differences between being patentable and not infringing. (All Tracks) 5. Copyright Deep Dive - What is protectable, how to secure, and advantages provided (Copyright Track) 6. Open Innovation - open source software licenses (BSD, etc). (Copyright Track) 7. Trademarks & Service Marks Deep Dive - What is protectable, how to secure, and advantages provided. (All Tracks) 		4-5 hr. Due Feb 4 th

	8. Balancing Act of Innovating in Academia - Balancing publications, presentations, and grants, while protecting IP. Strategies and trade-offs. <i>(All Tracks)</i>	
<i>Virtual Class Update</i>	<i>10-11am: Discuss IP questions, concerns and draft of assignment</i>	Feb 4 th
<i>Class Project</i>	<i>Perform a prior art search and preliminary assessment on your technology. (Patent Track). Identify similar products either in the market or being developed that could compete with your idea (Copyright Track)</i>	Due: Feb 7 th
Building Your Company	<i>Required</i>	Weeks 5-7 Feb 8 th – 28 th
Lessons:	<ol style="list-style-type: none"> 1. Developing a Business - Overview of Developing a Successful Business 2. Economics of a Start-Up - Expectations about size, growth, returns, and risk. 3. Fundamentals of Startup Law - Company Creation, Structure and mistakes to avoid 4. Building a Team - Identify your company's management team. 	6 hrs. Due Feb 17 th
<i>Virtual Class Update</i>	<i>10-11am: Discuss model canvas draft, questions, concerns etc.</i>	Feb 17 th
<i>Class Project</i>	<i>Use the handout to build or refine your Business Model Canvas. Identify 15 people that you can target for a discussion to help further refine your canvas throughout the course.</i>	Due Feb 28 th
Tangent: Regulatory and Reimbursement	<i>Device, Diagnostic or Therapeutic Track</i>	Weeks 8-10 March 1 st – 21 st
Lessons	<ol style="list-style-type: none"> 1. Lessons Regulatory Overview - History and role of FDA in regulatory oversight <i>(All Tracks)</i> 2. FDA Medical Devices Regulation Deep Dive - Deep dive into device paths and review processes. (Device Track) 3. FDA Regulation of Therapeutics Deep Dive - Deep dive into FDA review and clinical trials. (Therapeutic Track) 4. FDA Regulation of Diagnostics Deep Dive - Deep dive into diagnostic development and review processes. (Diagnostic Track) 5. FDA regulation of Software - Deep dive into FDA regulation of digital health innovation development and review process. (Device and Diagnostic Tracks) 6. Developing Products for Rare Diseases and Special Conditions - Orphan Diseases; Humanitarian Use Exemption (HUD). (Therapeutic Track) 7. Waxman-Hatch Provisions - Effects on drug approval, changes in formulations & dosing. (Therapeutic Track) 8. Reimbursement - Commercial challenges, obtainment of a reimbursement code. (Device and Diagnostic Tracks) 	3-3.5 hrs. Due March 17 th
Spring Break	Break for a week	March 8 th -12 th
<i>Virtual Class Update</i>	<i>10-11am: Discuss regulatory strategy, question, concerns etc.</i>	March 17 th
<i>Class Project</i>	<i>Determine how your technology will be regulated, and what studies will need to be done on the preclinical and clinical side, as well as a timeline of how long it will take for you to get to market.</i>	Due March 21 st

Tangent: Required		Week 11 March 22nd -28th
Agreements		
	<ol style="list-style-type: none"> 1. Material Transfer and Confidentiality Agreements Terms - implications of Confidentially Agreement, Material Transfer Agreement purpose when sending and receiving materials. 2. Options and Licenses - Differences, structure, terms, definitions and purpose 3. Consulting Agreements - Management and provisions to watch for 	2 hrs. Due March 24 th
<i>Virtual Class Update</i>	<i>10-11am: Project update, Discuss questions regarding agreements, business model canvas or otherwise</i>	March 24 th
<i>Class Project</i>	<i>Interview at least 5 people you identified in the “Building your Company” section to further refine your canvas.</i>	March 28 th
Financing Required		Weeks 12-15 March 29th – April 23rd
Lessons	<ol style="list-style-type: none"> 1. Primer on Finance - Sources of funding; how and when to go for which source. 2. SBIR/STTR Funding - Purpose, rule, requirements, agencies, etc. 3. Art of the Pitch - Attracting investors. 4. Dilutive Funding - Sources and implications. 5. Valuation and Deal Structure - How much is the product or company worth. Maximizing returns. 6. Constructing a Business Plan - Product to Business Concept to Business Model to Business Plan. 	7 hrs. Due April 11 th
<i>Virtual Class Update</i>	<i>10-11am: Project update, feedback for pitch deck or elevator pitch</i>	April 7 th
<i>Class Project</i>	<i>Draft of a pitch deck</i>	April 11 th
<i>Final Class Project</i>	<i>Refine your target product profile and business model canvas with what you learned from this course, interviews and the regulatory assignment</i>	Due April 23 rd
Final Pitch	<i>Pitch your project to judges. Hand in final pitch deck</i>	Pitch Innovation Week April 28 th
Policies and Resources Optional		OPTIONAL
IP Policy & Disclosures	Overview of IP policy, record of inventions, etc.	0.25 hrs.
Startup Policy	Overview of the MUSC startup Policy	0.5 hrs
Local Resources	Regional services, facilities and companies geared towards fostering innovation.	0.5 hrs.