Topics in Management: Commercializing Innovation MGT 5155F & MGT 8114A

Class: Thursdays, 5-8pm starting Jan, 10th, Rm. 1101 Worrell Reynolda Campus
Instructor: Tom Clarkson, with assistance from Dean Stell
Office: Babcock Demon Incubator: Room 7
Email: tom.clarkson@mba.wfu.edu

Overview

Learning to recognize, evaluate, prioritize new ideas from a practical and commercial standpoint is a differentiating skill for leaders in all organizations and a key determinant of success.

- **Scientists** need to be able to recognize the best translational research opportunities.
- **Management** needs the ability to spot innovation, prioritize among competing investments, and have the skills to know how to plan for successful commercialization.
- **Consultants** must be able to teach and support their clients with commercialization skills.
- **University leaders** need the ability to triage IP portfolios and determine the best approach to monetizing each innovation.
- **Investors** must accurately evaluate deal flow and ensure effective commercialization.

The course will teach techniques to evaluate ideas for commercial viability, how to select the best innovation to pursue from several candidates, and how to begin to bring an innovation to reality. The course will be lecture and project based using actual innovations needing evaluation from a variety of sources including OTAM, TSI, WFU Institute for Regenerative Medicine, WFU Health Sciences, The Nanotech Center, BDI, and North Carolina startup companies. Expert guest lecturers will also be used.

Learning Objectives

After taking the course, you will have learned techniques to evaluate innovations for commercial viability, developed the critical thinking skills to know how to apply the techniques to real world situations, and understand how to develop a commercialization plan. Specifically, you should be able to:

Innovation

- Locate and harvest intellectual capital and creative ideas
- Explain the university tech transfer process and how to use it.
- Know where to look for ideas that can be licensed to create a new business venture.

Evaluation

- Evaluate the viability of an innovation or technology from a commercial perspective
- Explain why an innovation is or is not commercially viable
- Develop your own metrics and system for effective idea evaluation
- Apply feasibility analysis tools to test your own business concepts, the concepts of other entrepreneurs, or to determine the commercial feasibility of a technology your company is developing
- Intuitively triage new ideas quickly without research
- Explain what venture investors look for in a new idea

- Analyze all of the business questions that must be answered before resources can be applied
- Evaluate the viability of a real world innovation from a commercial perspective

Selection

- Explain the differences between corporate, startup, and university commercialization
- Learning how to evaluate multiple innovations/ideas to determine the ones with the most potential for an existing organization or startup.
- Select the most appropriate and best fit innovation to commercialize from competing alternatives
- Select the best approach for commercialization. Develop? License? Spin-Out? Startup?

Realization

- Learn how to get started with a commercialization plan
- Learning how to spot, nurture, and harvest innovations for new business within established corporations.
- Work effectively with inventors and other sources of innovation
- Be the most data driven and articulate manager when making new product/idea decisions.
- Apply business modeling to specify how a viable opportunity can be commercialized.
- Learning how to craft plans that support investment decisions and plans of action
- Know how to incorporate entrepreneurial activities within well established organizations.

Presentation

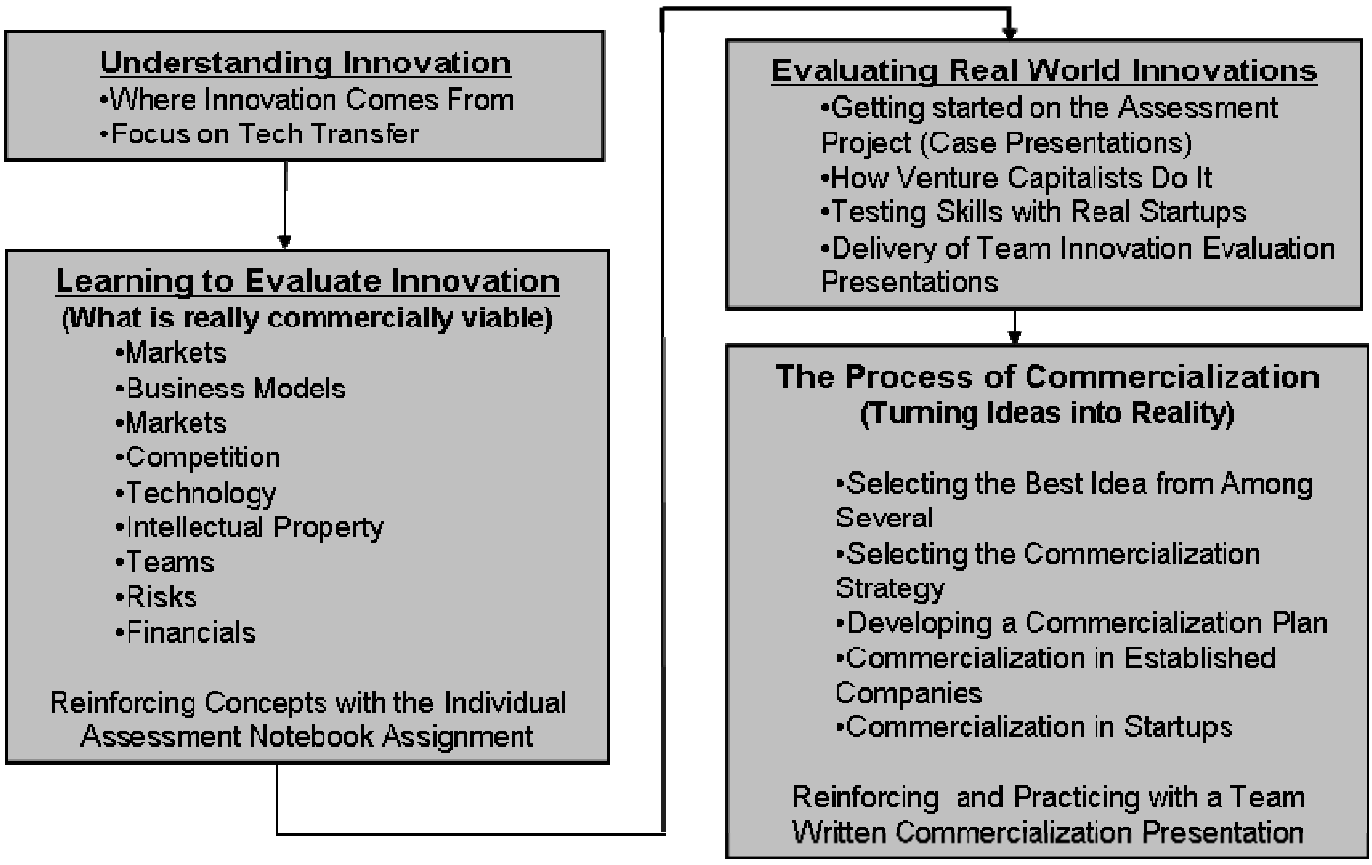
- Present findings and recommendations in a convincing and supported way to different constituencies such as Boards of Directors, Senior Management, investors, etc.
- Know how to capably present business ideas and conclusions in real life settings.

Course Roadmap

The course will begin with a session on understanding innovation. The session will also cover university tech transfer since universities are key sources of innovation and will be the source of most of the real cases that are studied later in the course.

Next, several sessions will be spent learning how to evaluate an idea or technology for commercial viability. These techniques will be reinforced with the Assessment Workbook Assignment on the On The Spot Evaluation test. After the basic evaluation techniques have been covered, real world cases will be presented for evaluation by student teams. This evaluation will culminate in a presentation to be made that assesses the commercial viability of the case.

After learning how to evaluate the viability of an innovation, the course will cover how to select the best opportunity from among several. Next time will be spent on how to develop a commercialization plan as well as specific techniques that can be used in existing corporations and startups. Finally, the course will end with the presentation of commercialization plans for the cases that have been studied during the course.



Learning Methods

The course will use a combination of approaches to help you learn and apply concepts. These are listed below.

- **Innovation Lab Sessions.** This portion of the course will be a part of the course where you will listen to, evaluate, and discuss actual technology transfer innovations from the university for viability. You will also learn to create your own tools for idea evaluation that can be used throughout a career. The case lab will take place in a team setting and frequently include the inventor.
- **Written Deliverables**. Learn to craft compelling presentations that help you sell concepts to others is a fundamental skill. This course requires the development of several presentations where you will present findings and recommendations about the innovations that you evaluate as well as recommendations about commercialization approaches and implementation. These presentations will be developed as a team. There will also be the delivery of an Excel work book where you will capture methods to evaluate innovations as the class moves forward.
- **Oral Presentations.** Presenting ideas to a group is an essential skill. Each of the slide deck deliverables will be presented to the class for review, discussion, and critique.
- **On the Spot Idea Evaluations**. Several startups will present to you and you will be required to make an on the spot analysis of the idea and plan. You will immediately email your thoughts on the viability of the plan to the instructor. This scenario is very real world and reflects how quickly decisions are often made by investors and executives within corporations.
- **Venture Investor Discussions**. Venture investors are one of the most skilled groups at evaluating the viability of an innovation. Venture investors will be asked to share how they do their evaluations throughout the course. Knowing how venture investors analyze an idea will be very valuable to you in

the future whether you are interested in startups, intrepreneurship, family businesses, or larger corporations.

- **Case Analysis**. Cases provide an excellent vehicle to learn and apply concepts. Real world situations from OTAM will be used as well as a mix of selected written cases. Traditional written cases may be selected to demonstrate how commercialization of innovation is accomplished in other firms.
- **Guest Speakers**. Guest speakers will be used extensively. In some cases they will be used to amplify a particular topic is being studied, and in other cases will be used to present real life experiences with commercializing innovation. Sometimes the lead inventor of an OTAM technology will be available to speak.
- **Readings and Additional Material.** Each class will have readings that have been selected to add context, background, and depth to the class lectures and discussions.

Deliverables and Grading

As the class schedule below indicates, there are written deliverables. Due dates can be found on the class schedule.

- **Class Participation**. You are evaluated on your participation in class and/or by asking questions or making observations. Analyzing presentations, discussing readings, and questioning guests are three best opportunities you have to express your thoughts.
- **On the Spot Idea Evaluation**. During a class, you will be presented with several startup ideas and you will be given some time to draft an on the spot analysis which will be immediately emailed to the instructor. The purpose of this test is to learn how to reach and express conclusions quickly as often happens in corporate and venture settings.
- **Innovation Assessment Workbook:** This deliverable will be a spreadsheet that contains evaluation metrics to be applied and understood when evaluating a new innovation or business opportunity. The spreadsheet should be comprehensive and have special metrics to be applied when depending on whether the purpose of the evaluation. These metrics to use will be discussed in class and you will have the opportunity to revise your spreadsheet as the course develops. There will be at least one checkpoint to see how you are doing. This is an individual assignment. The workbook will become a valuable tool that you can apply in your careers.
- **Innovation Evaluation Presentation:** This will be team based and the culmination of all of the learning in the first Mini. The slide deck will present the analysis and recommendation of viability for one of the OTAM innovations that were presented to the class. PowerPoint will be used for the slides. The presentation should last about 30 minutes. The class will then discuss the presentation and whether they agree with the conclusions and recommendations. Part of the grade will be determined by your defense and explanation of the conclusions.
- **Commercialization Plan Presentation**: This presentation will be team based. The assignment is to create a real world commercialization plan. This exercise may be done from the perspective of a corporation or startup. PowerPoint will be used for the slides. The presentation should last about 30 minutes. The class will then discuss the presentation and whether they agree with the conclusions and recommendations. Part of the grade will be determined by your defense and explanation of the conclusions.

The following weights will be used to determine your grade.

Deliverables	Points
1. On The Spot Analysis Exercise	200
2. Innovation Assessment Workbook	200
3. Innovation Evaluation Presentation	200
4. Commercialization Plan Presentation	200
5. Participation	200
Total Points	**1000**

For the team projects, your contribution will also be confidentially reviewed by your peers based on your contribution to the project. This will be accomplished by each student coming up with a forced rank for each member of the team. The team grade and the confidential ranking from your peers will determine the grade for group projects.

Reading Materials

The reading materials for the course have been uploaded to the Blackboard system. The readings can be found in the course documents section. In addition the readings, there are also additional resource documents, e-books, links, and templates that have been loaded on the system.

Optional Texts:

- *Venture Capital Due Diligence: A Guide to Making Smart Investment Choices and Increasing Your Portfolio Returns (Hardcover) by Justin J. Camp*
- *The New Business Road Test by John Mullins*
- *Academic Entrepreneurship by Scott Shane*
- *Winning Angels: The 7 Fundamentals of Early Stage Investing (Paperback) by David Amis, Howard Stevenson, Howard H. Stevenson*
- *Innovation that Fits by Michael Lord*
- *Building Biotechnology – Starting, managing, and understanding biotechnology companies by Yali Friedman*

Required Readings:

- Accelerating Technology Transfer and Innovation (an inspiring context for the course)
- Technology Transfer at US Universities (an overview of the tech transfer process)
- Accidental Innovation (A look at the role of accident in innovation)
- Breakthroughs and The Long Tail of Innovation
- Venture Capital Due Diligence Chapter 3 Business Opportunity Due Diligence
- Winning Angels Book - Evaluating Section
- Note on Business Model Analysis for the Entrepreneur
- The Business Model - Chesbrough
- Technical Note - Innovation and Invention - A Patent Guide for Inventors and Managers
- Intellectual Property--The Ground Rules
- Hiring for Smarts
- A Method for Valuing High-Risk, Long-Term Investments: The "Venture Capital Method"
- Is It Real? Can We Win? Is It Worth Doing? Managing Risk and Reward in an Innovation Portfolio
- Moving Innovation to Market - Will It Fly?
- Guide to the Venture Capital Galaxy

- How Venture Capitalists Evaluate Potential Venture Opportunities
- The Top Ten Lies of Entrepreneurs
- The Top Ten Lies of Venture Capitalists
- The Four Secrets of Successful Idea Practitioners
- Storytelling That Moves People
- Innovating for Cash
- Models of Innovation - Startups and Mature Corporations
- How to Write a Great Business Plan
- How to Make Your Case in 30 Seconds or Less
- Four Models of Corporate Entrepreneurship
- Commercializing Technology: What the Best Companies Do
- The Questions Every Entrepreneur Must Answer
- Auditioning for Money
- Strategic Alliances for Funding Early Stage Ventures

Optional Readings:
- The Discipline of Innovation
- Prior Knowledge and the Discovery of Entrepreneurial Opportunities
- Association of University Technology Managers Report for 2006
- Technology Transfer and Commercial Partnerships
- Spudspy (a humorous case study of what can go wrong in course like this)
- Understanding Industry Structure
- Why Business Models Matter
- IP-Enabled Business Models
- Competitor Analysis: Anticipating Competitive Actions
- The Impact of a Stronger IP on the Business Model
- The New Environment for Business Models
- In Search of Inexperience (another view of serial entrepreneurs)
- Five Myths About Entrepreneurs
- Stan Lapidus: Profile of a Medical Entrepreneur
- Innovating in Healthcare – Framework
- Angel Investing - Innovation Within the Establishment
- CommonAngels
- Valhalla Partners Due Diligence
- NVCA VentureCapital 07 - The Economic Importance of Venture Backed Companies
- New Product Commercialization Common Mistakes
- Market Segmentation - Target Market Selection - And Positioning
- Getting the Scope of the Business Right
- A Framework for Advancing Your Business Model
- Creating Competitive Advantage
- Forecasting the Adoption of a New Product
- Building Breakthrough Businesses Within Established Organizations
- Making Sense of Corporate Venture Capital
- Discovery Driven Planning
- Cynthia Fisher and the Rearing of ViaCell
- Small Business Guide to the FDA
- U.S. Food and Drug Administration Note

- Note on the FDA Review Process for Medical Devices
- Stanford Entrepreneurship Term Sheet Exercise
- Understanding Term Sheets - Hutchison
- DJ Venture Capital Deal Terms Report 5th edition

Schedule and Topics

Inclement weather: If a class is missed due to inclement weather, a makeup class will be scheduled for the following week. The decision on whether to hold class follows the Reynolda campus weather decision. This information is always posted on the Window on Wake Forest website (http://www.wfu.edu/wowf/).

January 10: Course Introduction & The Sources of Innovation	
Agenda	Course Introduction • Class Participant Introductions • Overview and Roadmap of the Course • Discussion of Deliverables and Projects The Nature of Innovation • Where does innovation come from? • What kinds of innovation are there? Developing an Innovation Evaluation Framework How Innovation is Managed at Universities -Dean Stell Wake Forest Office of Technology Asset Management (OTAM) Discussion: Where does Innovation Really Come From?
Required Readings	Accelerating Technology Transfer and Innovation (an inspiring context for the course) Technology Transfer at US Universities (an overview of the tech transfer process) Accidental Innovation (A look at the role of accident in innovation) Breakthroughs and The Long Tail of Innovation
Optional Readings	The Discipline of Innovation Prior Knowledge and the Discovery of Entrepreneurial Opportunities Association of University Technology Managers Report for 2006 Technology Transfer and Commercial Partnerships Spudspy (a humorous case study of what can go wrong in course like this)
Deliverables	None
Session Learning Objectives	Understand the plan for the course and expected deliverables Be able to discuss sources and kinds of innovation Understand the role of tech transfer at universities Know how to contact OTAM at WFU if needed

January 17: Evaluating The Business Model, Market, and Competition	
Agenda	First Steps in Evaluating an Innovation • The assumed or real business model • The market for the innovation • Potential competition Case Presentation: iSpace, Dr. Dwayne Godwin, WFU Health Sciences http://www1.wfubmc.edu/Nba/Faculty/Dwayne+Godwin.htm Discussion of the case. How would on begin to evaluate the idea?
Required Readings	Venture Capital Due Diligence Chapter 3 Business Opportunity Due Diligence Winning Angels Book - Evaluating Section Note on Business Model Analysis for the Entrepreneur The Business Model - Chesbrough
Optional Readings	Understanding Industry Structure Why Business Models Matter IP-Enabled Business Models Competitor Analysis: Anticipating Competitive Actions
Deliverables	None
Session Learning Objectives	Determine a business model for an idea or technology Analyze the market for a new technology or idea Apply quick to evaluate techniques to determine market viability Analyze real and potential competition for an innovation Get comfortable brainstorming business models and product ideas originating from an innovation.

January 24: Evaluating the Technology and Intellectual Property	
Agenda	Evaluating technology for commercial viability Understanding and Evaluating Intellectual Property – Kenneth D. Sibley Myers Bigel Sibley & Sajovec, P.A. Discussion on IP and its relation to the business model.
Required Readings	Technical Note - Innovation and Invention - A Patent Guide for Inventors and Managers Intellectual Property--The Ground Rules
Optional Readings	The Impact of a Stronger IP on the Business Model The New Environment for Business Models
Deliverables	Nothing Due
Session Learning Objectives	Know common problems and pitfalls inherent with technology based innovations. Know the key questions to ask in assessing a technological idea. Be able to identify the types of intellectual property protection and how to use each.

January 31: Evaluating the Team, Identifying Risks, and Financial Analysis Overview	
Agenda	Evaluating an Opportunity from a Financial Standpoint – Short Summary Evaluating Teams and People What to look for in people – Kim Foster, Managing Director, Elinvar
Required Readings	Hiring for Smarts A Method for Valuing High-Risk, Long-Term Investments: The "Venture Capital Method"
Optional Readings	In Search of Inexperience (another view of serial entrepreneurs) Five Myths About Entrepreneurs Stan Lapidus: Profile of a Medical Entrepreneur
Deliverables	Nothing Due
Session Learning Objectives	Explain what to look for in evaluating a team and key management associated with an innovation. Spot potential risks inherent in commercializing an innovation. Be able to analyze the financial aspects of commercializing an innovation. Know when the financials just don't make sense. Understand what it takes to create plausible and realistic financial models.

February 7: Innovation Case Presentations and Discussion	
Agenda	Presentations of the innovation cases that will be the basis of subsequent assignments. Steve Hodges / Chris Sullivan's Catheter Improvement Technology Abdou Lachgar's Hydrogen Fuel Innovation Nerve conduits for nerve regeneration – Paulina Sierpinski Autologous Cell Muscle Therapy for Incontinence – Dr. Yoo
Required Readings	Is It Real? Can We Win? Is It Worth Doing? Managing Risk and Reward in an Innovation Portfolio
Optional Readings	None
Deliverables	Assessment Notebook Check Point
Session Learning Objectives	Apply previous lectures to develop a listening evaluation framework to begin to assess an opportunity in real time.

February 14: Innovation Case Presentations and Discussion	
Agenda	Presentations of the innovation cases that will be the basis of subsequent assignments. Cell Printing – Tao Xu Dr. Rudel's Biomarker Work Paulina Sierpinski / Mark Van Dyke - Wound Healing Technology
Required Readings	Moving Innovation to Market - Will It Fly?
Optional Readings	Innovating in Healthcare – Framework
Deliverables	Nothing Due
Session Learning Objectives	Apply previous lectures to develop a listening evaluation framework to begin to assess an opportunity in real time.

February 21: How Venture Capitalists Evaluate Opportunities & On the Spot Evaluation	
Agenda	How Venture Capitalists Evaluate Opportunities - Venture Panel Presentations by several startup companies On The Spot Evaluation of the Startups
Required Readings	Guide to the Venture Capital Galaxy How Venture Capitalists Evaluate Potential Venture Opportunities The Top Ten Lies of Entrepreneurs The Top Ten Lies of Venture Capitalists
Optional Readings	Angel Investing - Innovation Within the Establishment CommonAngels Valhalla Partners Due Diligence NVCA VentureCapital 07 - The Economic Importance of Venture Backed Companies
Deliverables	Assessment Notebook Spreadsheet Project Due On The Spot Evaluation
Session Learning Objectives	Learn what venture capitalists look for when evaluating opportunities. Be able to explain the types of venture firms and the typical role they play. Apply what has been learned to date by evaluating real world startups.

February 28: Optional Class Working Session (There are no official classes on this day)	
Agenda	Creating Outstanding Presentations Team and advice working sessions
Required Readings	None
Optional Readings	The Four Secrets of Successful Idea Practitioners Storytelling That Moves People
Deliverables	Nothing Due
Session Learning Objectives	Learn how to create an outstanding presentation tailored to the audience. Get assistance through a working session on outstanding assignments.

March 6: Strategies For Commercialization & The Commercialization Plan	
Agenda	Commercialization Strategies and Options • For corporations, internal development, the spinout, licensing • Using Startups Choosing the best innovation among several The Commercialization Plan
Required Readings	Innovating for Cash Models of Innovation - Startups and Mature Corporations How to Write a Great Business Plan How to Make Your Case in 30 Seconds or Less
Optional Readings	New Product Commercialization Common Mistakes Market Segmentation - Target Market Selection - And Positioning Getting the Scope of the Business Right A Framework for Advancing Your Business Model Creating Competitive Advantage Forecasting the Adoption of a New Product
Deliverables	Nothing Due
Session Learning Objectives	Understand and know when to apply different commercialization strategies. Be able to choose which innovation to commercialize depending on the company circumstances. Be able to outline the essential elements of a commercialization plan.

March 13: Spring Break No Class

March 20: Assessment Presentations and Critique	
Agenda	Student teams present the Innovation Assessment Presentations for critique and defense of conclusions. Guests will be invited to assist with the critique of conclusions.
Required Readings	None
Optional Readings	None
Deliverables	Assessment Presentation Project Due
Session Learning Objectives	Make compelling presentations that lead to solid conclusions Defend conclusions under intense questioning Select the best team members to present certain presentation sections

March 27: Commercializing Innovation in Existing Corporations	
Agenda	Commercialization techniques and approaches in established companies Real world Example - Alastair Upton RFMD, Biotech CEO TBD Real world Example - Biotech CEO TBD Discussion
Required Readings	Four Models of Corporate Entrepreneurship Commercializing Technology: What the Best Companies Do
Optional Readings	Building Breakthrough Businesses Within Established Organizations Making Sense of Corporate Venture Capital Discovery Driven Planning
Deliverables	Nothing Due
Session Learning Objectives	See commercialization of innovation as part of the product development and strategy process in established companies. Be able to potential approaches to innovation and subsequent commercialization at an established company. Describe some best commercialization practices at real world firms.

April 3: Commercializing Innovation in Startup Companies	
Agenda	Context and Background Panel Discussion – Successful NC Startup Entrepreneurs How to get started – Rob Tyler, Hutchison Law Group
Required Readings	The Questions Every Entrepreneur Must Answer
Optional Readings	Cynthia Fisher and the Rearing of ViaCell
Deliverables	Nothing Due
Session Learning Objectives	Understand how to use a startup as a commercialization technique Model what success looks and feels like from successful startup company executives Be able to explain how to get a company started the right way form a legal and structural standpoint

April 10: Commercializing Innovation in Startup Companies	
Agenda	Challenges and Things to Consider Helpful Resources Licensing Approaches and Term Sheets – Rob Tyler and Dean Stell Regulatory Issues - John Wilson, SpringMed
Required Readings	None
Optional Readings	Small Business Guide to the FDA U.S. Food and Drug Administration Note Note on the FDA Review Process for Medical Devices
Deliverables	Nothing Due
Session Learning Objectives	Understand the practical challenges and tasks that must be accomplished in a startup. Know how to find resources designed to assist startups. Understand the process and terms involved in university technology licensing. Understand the kinds of regulatory hurdles that are frequently encountered in startups.

April 17: Getting Money for a Startup Commercialization Project	
Agenda	Overview and Introduction Strategic Alliances Speaker from the Venture Capital Community – Speaker TBD Government Grants - SBIR/STTR Approaches – John Ujvari Debt Financing – Adam Smith, Square 1 Bank North Carolina Biotech Center Grants – Gwynn Riddick
Required Readings	Auditioning for Money Strategic Alliances for Funding Early Stage Ventures
Optional Readings	Stanford Entrepreneurship Term Sheet Exercise Understanding Term Sheets - Hutchison DJ Venture Capital Deal Terms Report 5th edition Private Equity Investing - Janke
Deliverables	Nothing Due
Session Learning Objectives	Explain the characteristics of the types of funding approaches available to startups Be able to find and contact potential funding sources Determine which funding approach has the best chance of success given the opportunity and stage of the startup company

April 24: Commercialization Plan Presentations	
Agenda	Student teams present the Final Commercialization Presentations for critique and defense of techniques and approaches selected.
Required Readings	None
Optional Readings	None
Deliverables	Final Commercialization Plan Presentations Due
Session Learning Objectives	Make compelling presentations that build consensus, rally resources, and drive action Defend conclusions and approaches under intense questioning Select the best team members to present certain sections