University of Michigan-Shanghai Jiao-Tong University

VX425: Technology Entrepreneurship (技术创业)

Course Syllabus

A. Course Description

This is a 3 credit core practicum course for the Minor in Entrepreneurship.
High technology, such as Artificial Intelligence, biomedical and space technologies improve the quality of life in the society and their growing acceptance offer tremendous opportunities for engineers and technologists to become entrepreneurs. For example, mobile devices (e.g., smart phones, drones and robots) provide one of the most prolific and popular ways to implement entrepreneurship ideas in the service industry today. Since UM-SJTU JI is primarily an engineering education provider, students here can learn and exploit opportunities in technology entrepreneurship in a big way.
This course will build upon the entrepreneurship knowledge gained in the prerequisite core course VX420-Entrepreneurship Basics on fundamentals of entrepreneurship and the use of Business Model Canvas to validate new business ideas.
The course will discuss best practices in entrepreneurship in the context of technology entrepreneurship. Students will learn to apply entrepreneurship business models in technologies they are familiar with. They will start with a technology they have used in their first engineering project in UM-SJTU JI (e.g., VG100 course) or in their past internship experience and then apply various commercialization techniques including customer development, design thinking and practical entrepreneurial development environment (patents, regulations, incubators, accelerators etc.) and discussions with mentors to commercialize the technology they understand. They would also learn how corporates encourage entrepreneurship in this process. Also there will be case studies on technology entrepreneurship.

B. Course Length, Lecture Schedule & Office Hours

- Course Length: **13 weeks/ (see Section G. for detailed schedules)**
- Classroom: CRQ105(M), D501(W)

- Lecture/Workshop/Group Meeting Schedule
  - Monday @ 10 am-12 pm
  - Wednesday @ 10 am-12 pm

- Office Hours
  - Monday @ 2pm-4pm (Appointment needed), Room409B

C. References

- Thomas Duening, Robert Hisrich, Michael Lechter, **Technology Entrepreneurship, 2nd Edition**, Academic Press (2014), eBook ISBN: 9780124202344, Paperback ISBN: 9780124201750
- Alexander Ostenwalder, Yves Pigneur, **Business Model Generation,** Published by Wiley (2010), ISBN: 9780470876411
- Steve Blank, Why the Lean Start-Up Changes Everything, Harvard Business Review, May 2013

Recommended readings to be provided at the course web site on weekly basis, students should check regularly

D. Credit & Instructors

- Prerequisite: VX420, VG100.
- Preference will be given to students enrolled in the Minor for Entrepreneurship (subject to a limit of max 30 students), no student will be allowed to leave or join the course after week 2 (when the project groups will be finalized)
- Level: 400
- Number of Units: 3
- Instructor: Pradeep Ray and Industry Experts
    - Email: Pradeep.ray@sjtu.edu.cn
        - *Refer to communication policy and preference at Part I.*
- TA: Jerry Zhu (jerry.zyn@gmail.com)

Dr. Pradeep Ray is Teaching Professor & Director of Centre For Entrepreneurship at University of Michigan—Shanghai Jiao Tong University Joint Institute (JI). He is also an IEEE Distinguished Lecturer for the Society for Social Implications of Technology. He has taught in the UNSW Business School in Australia for nearly 17 years before joining JI. He led many projects on mHealth (healthcare using mobile applications) in various countries in Asia-Pacific.

His main academic contribution has been in the area of mobile technologies for service management in healthcare through the collaboration of multiple stakeholders. Mobile apps are the Minimum Viable Product for many entrepreneurship ideas and requires multi-disciplinary collaboration that Pradeep Ray has been practicing across the UNSW schools of business, engineering and public health over since 1999 to 2016. These concepts have been applied in various application areas, such as finance, telecommunications and healthcare.

In VE449, the Instructor will be supported by industry experts working on mobile applications and an experienced young entrepreneur Mr. Jerry Zhu who has strong business expertise in the context of both China and international markets.

E. Methods of Instruction & Communication

- Lectures
    - Instructor's lecture (first few weeks)
    - Guest lectures
    - Workshops (Group project meetings from Week 4)
- Interactive classroom discussion
- Communication policy & preference
    - Course related subject & technical question: In−person discussion preferred (during class break or office hours).
    - Personal or career related: In−person discussion preferred
    - *Class absence related: Contact the instructor*

F. Learning Objectives

Upon successful completion of the course, students will be able to

- Learn the basics of entrepreneurship including pitching a business idea
- Understanding Value Proposition with a technology known to the student
- Learn technology commercialization opportunities in selected areas
- Designing a Minimum Viable Product as an agile development
- Validation of the design with customers
- Understanding the role of incubators, accelerators and government regulations

G. Session Plan

Each Session=90-minute contact, 2 sessions per week. Sessions will involve lectures (by JI faculty, industry experts), student individual or group presentations and group project meetings. In addition, there will be whole day in-depth workshops on some Saturdays (schedule provided below) to be conducted by industry experts. The course will end with a 48 hour Final Innovation Project Delivery of the group project (based on feedback received from customers as part of Business Model Canvas) from Saturday Nov 30-Dec2 for students to complete the final MVP prototype for the group project to be demonstrated on Dec 2 class. They may use the JI Innovation Centre facilities, if required.

The activities of the weeks will be as follows (Saturday Workshops in Red):

- **Week 1 (September 9, 11)**
  - Overview and Syllabus, Intro & background+ Chapters 1-2 textbook
- **Week 2 (September 16, 18)**
  - Business Model Canvas+ Idea Generation, Chapters 3-4 textbook
- **Week 3 (September 23, 25)**
  - Emerging Technologies + Role of Incubators (Zhigang Zhang, CEO-neoBay)
- **Week 4**
  - PUBLIC HOLIDAY
- **Week 5 (Saturday October 12)**
  - WORKSHOP: Design Thinking
- **Week 6 (Saturday October 19)**
  - WORKSHOP: Technology Entrepreneurship Case Studies Saturday
- **Week 7 (October 21, 23)**
  - IP and Legal Issues+ Business Plan Chapters 5-7 of Textbook
- **Week 8 (October 28, 30)**

- Student Group Project Presentations

- **Week 9 (Saturday Nov 9)**
  - Workshop: AI+ Regulatory and visa issues
- **Week 10 (Saturday Nov 16)**
  - Workshop: Corp Entrepreneurship &Accelerators
- **Week 11 (November 18,20)**
  - Funding Sources+ Contracts+ exit plan, Chapters 8, 11 and 12
- **Week 12-13 (Sat Nov30-Mon Dec2)**
  - **Workshop: Innovation Project Delivery+ Final Presentations**
- Note: The timeline and course events are subject to change.

H. Grade Structure

- Group Score: 50 points
  - Group Presentation-1 (Week 8): 10 points
    - Initial Assessment of Idea based on Business Model Canvas: 20 points
  - Group Presentation-2 (Week 12): 40 points
    - customer validation of an entrepreneurship idea (Week 12): 10 points
    - Final MVP launch and demo: 30 points
- INDIVIDUAL Score: 50 points
  - Individual report (week 3): 20 points
  - Class Exercise: 20 points
  - Class Participation: 10points

Note: The grade structure is subject to change with a minor adjustment.

I. Honor Code

We will maintain a high standard on honor code and pay more attention on honor code violation. Please refer to JI's policy.

J. Additional Classroom Info

Additional information will be posted and updated on Canvas.

The syllabus will be updated on the regular basis.