ECE777/ECE877 Collaborative Engineering
Co-Listed as MGT798 Management Innovation w/Lean Startup Method

Fall 2014

Credits: 4.00 (ECE777 CATALOG DATA)
Study of processes in which engineers from diverse disciplines cooperate to specify, design, manufacture, test, market, and maintain a product. Classes are organized in both technical and nontechnical flexible modules. Technical topics are advanced and relevant to projects being developed, such as related research, technology, design methodology, and CAD tools. Nontechnical topics include ISO9000 quality system, engineering management, budget considerations, team building, communication and leadership skills, and concurrent engineering principles. The course utilizes collaborative engineering by team development of an engineering project, often a research oriented proof-of-concept prototype. Project is developed using ISO9000 principles and the Internet, accompanied by seminars and discussion sessions run by students who have been designated project leaders. Prereq: Senior standing. Lab. 4 cr.

Format: 4 credits, three hour lectures a week using flexible laboratory hours arranged each week with one hour a week discussion session; bLearning, hybrid mode course; labs

Meeting Places: T 5-8 MCCONNELL 245
Collaborative
ISSIP Coaches
Hackathons on www.iotrdl.org
https://iotrdl.atlassian.net/login?dest-url=%2Fsecure%2FDashboard.jspa
http://ipodia.usc.edu/
(Meeting times to be determined)

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Coaches: Jason Jeffords, DeepIS, CEO & UNH Affiliate Professor
Patrick Kane, Cypress University Alliance, Director & UNH Affiliate Professor
Yassi Moghaddam, International Service Science Innovation Professionals, Executive Director
Wendy Murphy, IBM Smarter Planet Program, Director

To Be Updated

http://www.amazon.com/Designing-Internet-Things-Adrian-McEwen/dp/111843062X/ref=pd_sim_b_1?ie=UTF8&refRID=03FAVZB0MY951CPHDV0M
Building the Internet of Things with the Arduino, Charalampos Doukas, 2012
http://www.buildinginternetofthings.com/

This is a service science course of SSME/IoT/bLearning (T-Shaped)/SME supported by IBM and ISSIP where

SSME - Service science in manufacturing and engineering
IoT - Internet of Things
bLearning - Breakthrough Learning
T-Shape - Service science education emphasizing breath and depth
SME - Small Medium Enterprise

SSME Level

Objective: Apply service science principles to innovative education and commerce
References: Service Science; ISSIP
Mentorship: Yassi Moghaddam, ISSIP (yassi@issip.org)

Service Science is an emerging scientific discipline derived from the practical experience of high tech industry in the United States aimed to take advantage of tremendous service innovation opportunities that increasingly reside at the intersection of ICT/IoT (Informatics Communication Technologies/Internet of Things) enabled complex service systems. Service Science is an interdisciplinary approach for the study of diverse, interconnected, complex “human-centered value-cocreation systems” in business and society. Examples of service systems include almost every space of human activities, such as government, education, health, transportation, finance, communication, etc. A major catalyst and engine to promote service innovation globally is the International Service Science Innovation Professionals (www.issip.org) organization. Furthermore, ISSIP is promoting service innovation processes (technology, business model, and organizational design innovation) and sustainable ecosystems (systems) addressing the so-called financial valley of death, a gap precluding a continuous development of innovation, through research towards commercialization.

IOT Level (T-Shaped) Level (the depth segment)
Objective: Employ an IoT Based Enabling Platform to support Intellectual Property of SME

References: DeepIS & Cypress Documentation

Mentorship: Jason Jeffords, Affiliate Professor, UNH/ECE (jason@deep.is)

The Internet of Things (IoT) represents the next global information technology revolution and will have a much larger impact than the WWW introduced 20 years ago. It is carefully predicted that within a decade IoT will dramatically change social life, health services and education.

bLearning (T-Shaped) Level (the breath segment):

Examines the management of change and innovation, especially the role of entrepreneur in managing new ventures. Uses case analysis, guest speakers, and business plan preparation to study the characteristic behavioral, organizational, financial, and marketing problems of entrepreneurs and new enterprises. Prereq: ADMN 570 or ADMN 601, ADMN 575 or ADMN 611, and ADMN 585 or ADMN 651. Writing intensive.

Entrepreneurs attempt to create value for customers, themselves and investors through the exploitation of market opportunities, the management of risk appropriate to the opportunity, and the mobilization of human, technical and organizational resources. This course is intended for students who are exploring whether to pursue an entrepreneurial career. The attributes and skills of entrepreneurs will be examined, including searching for opportunities and evaluating their feasibility, building an entrepreneurial team, and gathering resources to convert opportunities into a business. Each student (either individually or as part of a team) is expected to develop and present a business feasibility study as a major learning vehicle of this course. This course is designed to prepare students to enter the UNH Holloway Prize Innovation-to-Market Competition in the spring of 2014 as well as preparing the student to engage in entrepreneurial ventures.

The course is designed to develop students’ entrepreneurial awareness, skills and qualities. The major learning objectives of the course are:

1. Develop an understanding of the nature of entrepreneurship.
2. Identify and pursue a business opportunity in either an independent or corporate setting with a team of motivated peers.
3. Develop the wide range of strategic, financial, and human-resource planning skills required in new venture creation.
4. Develop strategies to achieve a sustainable competitive advantage for the new venture.
5. Sharpen the written and oral skills necessary to effectively communicate new venture opportunities to potential investors through business feasibility study. The expectation is that the student will spend approximately 8-10 hrs. /wk. in preparation time outside the classroom.
6. We reserve the right to add test(s) if students are not participating up to course standards.

SME Level

Objective: To establish a SME (co-creation) with either a product or a service compliant with (1) the IBM Smarter Planet objectives;
(2) the New Hampshire Smart State objectives; and/or
(3) Smart Household objectives

References  IBM Smarter Planet
Mentorship  Yassi Moghaddam, ISSIP (yassi@issip.org)
Wendy Murphy, IBM, (wendym@us.ibm.com)

Course Evaluation

Course grades will be determined by student’s relative performance on the following course components.

Individual Assignments
  Class Participation  15%
New Venture Feasibility Research  80%
  1. Concept Paper Written (PDR)  10%
     Concept Paper In-Class Presentation  5%
  2. Market Analysis  15%
  3. CDR  25%
  4. Business Plan and Final Presentation (FDR)  25%
SME Readiness  5%
Total  100%

The total points earned will be converted to a course letter grade as follows:

Grading Scale:
A  94 – 100
A-  90 – 93.9
B+  87 – 89.9
B   84 – 86.9
B-  80 – 83.9
C+  77 – 79.9
C   74 – 76.9
C-  70 – 73.9
D   60 – 69.9
F   59 and below