April 14, 2011

MEMORANDUM

TO: Darryll Pines
   Dean, A. James Clark School of Engineering

FROM: Elizabeth Beise
   Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Establish a Minor in Technology Entrepreneurship (PCC log no. 10040)

On April 1, 2011, the Senate PCC committee approved your proposal to establish a Minor in Technology Entrepreneurship. A copy of the approved proposal is attached.

The changes are effective Fall 2011. The School should ensure that the changes are fully described in the Undergraduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

MDC/

Enclosure

cc: David Salness, Chair, Senate PCC Committee
    Sarah Bauder, Office of Student Financial Aid
    Reka Montfort, University Senate
    Erin Howard, Data Administration
    Donna Williams, Institutional Research & Planning
    Anne Turkos, Archives
    Linda Yokoi, Office of the Registrar
    James Dietz, Undergraduate Studies
    William Fournier, A. James Clark School of Engineering
    James Green, Maryland Technology Enterprise Institute
**THE UNIVERSITY OF MARYLAND, COLLEGE PARK**
**PROGRAM/CURRICULUM/UNIT PROPOSAL**

**PCC LOG NO.** 10040

**College/School:** A. James Clark School of Engineering  
**College/School Unit Code-First 8 digits:** 01203200  
**Unit Codes can be found at:** https://byprod.umd.edu/html_Reports/units.htm

**Department/Program:** Maryland Technology Enterprise Institute (Mtech)  
**Department/Program Unit Code-Last 7 digits:** 1321101

**Type of Action (choose one):**
- Curriculum change (including informal specializations)
- Renaming of program or formal Area of Concentration
- Addition/deletion of formal Area of Concentration
- Suspend/delete program
- New academic degree/award program
- New Professional Studies award iteration
- New Minor
- Other

**Summary of Proposed Action:** Establish a new undergraduate "Minor in Technology Entrepreneurship"

**APPROVAL SIGNATURES - Please print name, sign, and date. Use additional lines for multi-unit programs.**

1. Department Committee Chair
   
   **Department Committee Chair**  
   **Herbert Rabin**  
   **10/21/10**

2. Department Chair
   
   **Department Chair**  
   **Herbert Rabin**  
   **10/21/10**

3. College/School PCC Chair
   
   **College/School PCC Chair**  
   **David Bied**  
   **12/11**

4. Dean
   
   **Dean**  
   **WL Fourney**  
   **11/15/11**

5. Dean of the Graduate School (if required)
   
   **Dean**  
   **WL Fourney**  
   **11/15/11**

6. Chair, Senate PCC
   
   **Chair, Senate PCC**  
   **David Salinas**  
   **4/1/11**

7. University Senate Chair (if required)
   
   **University Senate Chair**
   
   **4/13/11**

8. Vice President for Academic Affairs & Provost
   
   **Vice President for Academic Affairs & Provost**
   
   **4/13/11**
PROPOSAL TO ESTABLISH A NEW UNDERGRADUATE MINOR IN
"TECHNOLOGY ENTREPRENEURSHIP"

JUSTIFICATION FOR THE MINOR AS A COHERENT FIELD OF STUDY

A firm grasp of the entrepreneurial process and mind-set benefits every person engaged in developing technology. Our goal is to infuse technology-creating students with that knowledge and its accompanying skills. Armed with an entrepreneurial mind-set, technology creators drive economic growth by launching successful ventures and bringing life-changing products and services to market.

CATALOG DESCRIPTION

The minor in Technology Entrepreneurship will prepare students for launching successful technology ventures and bringing life-changing products and services to market. The minor will develop the entrepreneurial mind-set and functional skillsets of students to improve their ability to create, launch, and manage technology ventures. Students may earn a minor in Technology Entrepreneurship by completing coursework which focuses on entrepreneurial opportunity analysis, marketing high-technology products, strategies for managing innovation, and international entrepreneurship and innovation.

LIST OF COURSES

The 15-credit minor will consist of five topic areas that may be fulfilled from nine courses taught by Mtech. The Minor encompasses many existing courses required by the two living-learning entrepreneurship programs on campus, Hinman CEOs and EIP, thereby enhancing the experience of these students and increasing the likelihood of strong student enrollments in the minor. The minor will also be open to all undergraduates of the campus who are accepted into the minor program.

At least 9 credits must be completed at the upper level to earn the minor. While course options are available for several topic areas, application of 100 and 200-level courses is limited to a total of 6 non-upper level credits.

1. Topic: Fundamentals of Technology Start-Up Ventures

   Course Option 1: “ENES 460: Fundamentals of Technology Start-Up Ventures”. This course helps students learn the processes and skills needed to launch and manage technology start-up ventures. Students will learn how to assess the feasibility of a startup venture, as well as how to apply best practices for planning, launching, and managing new companies. Students will discuss a wide range of issues of importance and concern to entrepreneurs and learn to recognize opportunity, assess the skills and talents of successful entrepreneurs, and learn models and approaches that help them navigate uncertainty. 3 credits.

   -or-

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Course Option 2: The second option to fulfilling this topic requirement is to complete two courses, a one-credit course and a two-credit course, as listed below.

(a) "HEIP 143: Foundations of Entrepreneurship and Innovation". This course introduces foundational ideas and terms in entrepreneurship and innovation, with attention to developing students understanding of cultivating a business in diverse, global environments; leading and collaborating in a competitive world; developing an entrepreneurial mind for an entrepreneurial world; and industry dynamics of technological innovation. 1 credit.

(and)

(b) "HEIP 241: Social Entrepreneurship Practicum". This capstone course is for enhancing strategic capabilities and leadership skills through the development of an innovative for-profit product or service concept with social benefits. 2 credits.

2. Topic: Entrepreneurial Opportunity Analysis in Technology Ventures

Course Option 1: "ENES 461: Advanced Entrepreneurial Opportunity Analysis in Technology Ventures". This course explores the factors that influence entrepreneurial opportunity analysis in technology-based ventures, to include, but not limited to, software, IT, biotech, and energy startups. Using a cognitive theoretical framework the course examines the integration of motivation, emotions and information processing modes to make complex entrepreneurial decisions in fast pace technology venture environments. The course is an informed and interesting exploration of entrepreneurial cognition with both theoretical and methodological contributions for active and aspiring student technology entrepreneurs. 3 credits.

(or)

Course Option 2: "ENES210: Entrepreneurial Opportunity Analysis & Decision-Making in Technology Ventures". This interdisciplinary course helps students learn the principles of entrepreneurial opportunity analysis and decision-making in an increasingly dynamic and technically-inclined society. Emphasis is placed on how aspiring technology entrepreneurs can develop their entrepreneurial mindset and opportunity recognition capabilities to develop winning entrepreneurial plans for future ventures. 3 credits.

3. Topic: Marketing High-Technology Products and Innovations

Course: "ENES 462: Marketing High-Technology Products and Innovations". Marketing of high-technology products occurs in turbulent environments, and requires rapid decision making with incomplete information. Innovations are introduced at frequent intervals, research-and-development spending is vital, and there are high mortality rates for both products and businesses. The course will provide a balance between conceptual discussions (based on readings of concepts and practices) and applied/hands-on analysis (industry analyses, cases, guest speakers, and a semester project). 3 credits.
4. **Topic: Strategies for Managing Innovation**

**Course:** "ENES 463: Strategies for Managing Innovation". This course emphasizes how the technology entrepreneur can use strategic management of innovation and technology to enhance firm performance. It helps students to understand the process of technological change; the ways that firms come up with innovations; the strategies that firms use to benefit from innovation; and the process of formulating technology strategy. It provides frameworks for analyzing key aspects of these industries and teaches students how to apply these frameworks. 3 credits.

5. **Topic: International Entrepreneurship**

**Course Option 1:** "ENES 464: International Entrepreneurship & Innovation." This course focuses on the need for every entrepreneur and innovator to understand the global market in today’s hypercompetitive world, and to appreciate how to compete effectively in domestic markets by managing international competitors, suppliers, and influencers. As an ever-growing number of countries become market oriented and developed, students explore how the distinction between foreign and domestic markets is becoming less pronounced. Students also develop skills to identify and manage opportunities on a global basis. 3 credits.

-or-

**Course Option 2:** "HEIP 240: Exploring International Entrepreneurship & Innovation". This course provides an introduction to the opportunities and challenges of entrepreneurship and innovation from an international perspective through lectures and guest speakers with international experiences. 3 credits.

All courses counted toward the minor must be completed with a 2.0 or better.

**List of Faculty Overseeing the Minor**

Dr. James V. Green  
Senior Lecturer  
Director, Entrepreneurship Education, Mtech  
A. James Clark School of Engineering

**Admissions and Advising**

Admission and advising will be managed by Mtech’s Director of Entrepreneurship Education in collaboration with Mtech’s Executive Director. A coordinator and an administrative assistant will support this effort. Students will apply to the program on a rolling basis. To enroll in the minor, students will complete an advising worksheet and meet with the minor advisory team. Student must apply for the minor no later than one year before their graduation date.
**ANTICIPATED NUMBER OF STUDENTS TO BE SERVED BY THE MINOR AT STEADY STATE**

Within the Hinman CEOs living-learning entrepreneurship program managed by Mtech, approximately 90 juniors and seniors are enrolling in 12 credits of coursework over their two years in the Program. These 12 credits include 12 of the credits offered within this minor (ENES 461, 462, 463, and 464). It is anticipated that 50% of the Hinman CEOs will complete the 5th course required for the minor. This alone accounts 50% of 90 students, or 45 students, that are expected to be served by the minor.

Within the Entrepreneurship and Innovation living-learning program (EIP) managed by Mtech and the Honors College, approximately 150 students are enrolling in 6 of the credits offered within this minor (HEIP 143, 240, and 241). It is anticipated that 20% of these EIP students, or 30 students, will be served by the minor.

Additionally, as the minor will be open to all undergraduate students on campus, it is expected that these 75 students from Mtech’s programs will be matched by another 75 student from throughout campus to result in approximately 150 students being served by the minor at steady state.