March 31, 2014

MEMORANDUM

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

Charles Caramello  
Associate Provost and Dean, Graduate School  

FROM: Elizabeth Beise  
Associate Provost for Academic Planning and Programs  

SUBJECT: Proposal to Establish a Master of Professional Studies in Technology Entrepreneurship (PCC log no. 13038)  

On March 5, 2014, Chancellor Kirwan gave final approval to your proposal to offer a new iteration of the Master of Professional Studies with a focus in Technology Entrepreneurship.  

This Master of Professional Studies program is effective Fall 2014. Please ensure that this Master of Professional Studies program is fully described in the Graduate Catalog and in all relevant descriptive materials, and that all advisors are informed.

MDC/  
Enclosure  

cc: Marilee Lindemann, Chair, Senate PCC Committee  
Barbara Gill, Office of Student Financial Aid  
Reka Montfort, University Senate  
Erin Howard, Division of Information Technology  
Pam Phillips, Institutional Research, Planning & Assessment  
Anne Turkos, University Archives  
Linda Yokoi, Office of the Registrar  
Alex Chen, Graduate School  
William Fourney, A. James Clark School of Engineering  
George Syrmos, Office of Advanced Engineering Education
March 5, 2014

Dr. Wallace D. Loh
President
Main Administration Building
University of Maryland College Park
CAMPUS

Dear Wallace:

Thank you for forwarding the request from University of Maryland College Park for a new iteration of the existing Master of Professional Studies with focus in Technology Entrepreneurship.

I am delighted to approve this request. Please express my appreciation to departmental faculty and administrative committees for their careful work.

Sincerely yours,

[Signature]

William E. Kirwan
Chancellor

cc: Joann Boughman, Sr. Vice Chancellor for Academic Affairs
Theresa Hollander, Associate Vice Chancellor for Academic Affairs
Mary Ann Rankin, Vice President and Provost
Charles Caramello, Assoc. and Dean, Graduate School
SUMMARY OF PROPOSED ACTION:
The online Master of Professional Studies in Technology Entrepreneurship unites academic insights with startup incubator skills and resources to empower students to launch and grow technology ventures. The University of Maryland is the #1 public university in technology entrepreneurship in the U.S. Its comprehensive entrepreneurship and innovation ecosystem on and beyond campus is uniquely positioned for students to acquire the knowledge, competencies, and relationships to solve today’s and tomorrow’s innovation challenges.

APPROVAL SIGNATURES: Please print name, sign, and date

1. Department Committee Chair: James V. Green 12/11/13
2. Department Chair: Peter Sandborn 11/18/13
3. College/School PCC Chair: John Smith 11/12/13
4. Dean: Joe Johnson 12/16/13
5. Dean of the Graduate School (if required): John Doe 2/18/14
6. Chair, Senate PCC: Mary Lee Jones 12/13
7. Chair of University Senate (if required): John Doe 3/31/2014
8. Vice President of Academic Affairs & Provost: Elizabeth Jones 3/31/2014
PROPOSAL FOR

NEW INSTRUCTIONAL PROGRAM

UNIVERSITY OF MARYLAND AT COLLEGE PARK, MARYLAND

Master of Professional Studies in Technology Entrepreneurship

PROPOSED INITIATION DATE: Fall 2014
I. OVERVIEW and RATIONALE

A. Briefly describe the nature of the proposed program and explain why the institution should offer it.

The online Master of Professional Studies in Technology Entrepreneurship unites academic insights with startup incubator skills and resources to empower students to launch and grow technology ventures. The University of Maryland is the #1 public university in technology entrepreneurship in the U.S. Its comprehensive entrepreneurship and innovation ecosystem on and beyond campus is uniquely positioned for students to acquire the knowledge, competencies, and relationships to solve today's and tomorrow's innovation challenges.

The program aims to first equip students with a conceptual understanding of the principles and action steps of effective new venture creation and launch. While “doing” is achieved through the design, deliverables, and tangible outcomes of the courses, the foremost priority is to teach not what to do or even what to think, but how to think. This program is therefore committed to teaching the disciplines of entrepreneurial thinking that produce not just entrepreneurial inspirations but an entrepreneurial frame of mind.

The program will prepare graduates so that they can apply newly gained insights and acquired competencies to real-world innovation management challenges across five major stages of the innovation value chain from strategy development and idea generation to commercial concept and product development and successful market establishment, as well as sustainable growth in various contexts.

B. How big is the program expected to be (please provide enrollment projections for 5 years)? From what other programs serving current students, or from what new populations of potential students, onsite or offsite, are you expecting to draw?

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>Estimated Enrollment</td>
<td>25</td>
<td>90</td>
<td>155</td>
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</table>

II. Curriculum

A. Provide a full catalog description of the proposed program, including educational objectives and any areas of concentration.

The online *Master of Professional Studies in Technology Entrepreneurship* aims to first equip students with a conceptual understanding of the principles and action steps of effective new venture creation and launch. While “doing” is achieved through the design, deliverables, and tangible outcomes of the courses, the foremost priority is to teach not what to do or even what to think, but how to think. This program is therefore committed to teaching the disciplines of entrepreneurial thinking that produce not just entrepreneurial inspirations but an entrepreneurial frame of mind.

The program will prepare graduates so that they can apply newly gained insights and acquired competencies to real-world innovation management challenges across five major stages of the innovation value chain from strategy development and idea generation to commercial concept and product development and successful market establishment, as well as sustainable growth in various contexts.
The curriculum is designed to advance students through the continuum of new venture creation, to include iterating ideas, testing business models, and launching high-potential ventures. The course are not stovepiped by subject matter, nor based on case studies or simulations. Instead, the curriculum aims to deliver a startup incubator experience grounded in sound theory and rigorous analysis associated with high quality graduate education.

The 30-credit, 10 course curriculum is completed on a 15-month schedule. Students enroll in two 3-credit courses per 12-week term. Students will be encouraged to complete the curriculum in sequence as a cohort without delaying or accelerating their course plan. The initial 10 courses are listed here. Future courses will be develop and integrated to provide alternative learning opportunities for students, to include industry specialization.

B. List the courses (number, title, semester credit hours) that would constitute the requirements and other components of the proposed program. Provide a catalog description for any courses that will be newly developed or substantially modified for the program.

As of October 2013, 4 of the 10 courses have been approved by VPAC (ENES 600, 663, 665, and 668). The remaining 6 VPAC applications have been submitted, with approval expected in December (ENES 662, 664, 666, 667, 669, and 670). All are 3 credit, permanent, online courses. All are courses created, managed, and taught by Mtech.

The courses in the program are as follows and are each 3 credits:

1. ENES660 Fundamentals of Technology Startup Ventures
2. ENES662 Innovative Ideas and Concept Development
3. ENES663 Strategies for Managing Innovation
4. ENES664 Business Modeling and Customer Validation
5. ENES665 Innovative Thinking
6. ENES666 Creative Design, Prototyping, and Testing
7. ENES667 Market Development and Commercialization
8. ENES668 Corporate Technology Entrepreneurship
9. ENES669 Legal Aspects of Entrepreneurship
10. ENES670 Financial Management and New Venture Financing

The program/course outline is as follows:

<table>
<thead>
<tr>
<th>Quarter/Term</th>
<th>First Year</th>
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</thead>
<tbody>
<tr>
<td>Term I</td>
<td>ENES662 Innovative Ideas and Concept Development</td>
</tr>
<tr>
<td></td>
<td>ENES663 Strategies for Managing Innovation</td>
</tr>
<tr>
<td>Term II</td>
<td>ENES664 Business Modeling and Customer Validation</td>
</tr>
<tr>
<td></td>
<td>ENES665 Innovative Thinking</td>
</tr>
<tr>
<td>Term III</td>
<td>ENES666 Creative Design, Prototyping, and Testing</td>
</tr>
<tr>
<td></td>
<td>ENES667 Market Development and Commercialization</td>
</tr>
<tr>
<td>Term IV</td>
<td>ENES669 Legal Aspects of Entrepreneurship</td>
</tr>
</tbody>
</table>

Proposal for new instructional program (online), Master of Professional Studies in Technology Entrepreneurship, OES-administered, p. 4
The following courses have been submitted and are pending approval by VPAC:

**ENES662 Innovative Ideas and Concept Development**
Focuses on the content, methods, and models for new venture opportunity assessment and analysis. Learn how to identify and analyze entrepreneurial opportunities for technology-based ventures by first understanding their personal self and decision-making factors. Examine how to evaluate the opportunities and challenges within industries and markets of interest.

**ENES664 Business Modeling and Customer Validation**
Focuses on how to create and deliver value for customers and how to sustainably extract value for the venture. Develop business models that encompass the product or service, customers, and the economic engine that will deliver on venture objectives.

**ENES666 Creative Design, Prototyping, and Testing**
Enables students to transition from creative, innovative, design thinking methods to prototyping and concept testing their products and services. Emphasis is placed on an integrated and interdisciplinary approach to engineering design, concurrent engineering, design for manufacturing, industrial design, and the business of new product development.

**ENES667 Market Development and Commercialization**
Provides an orientation to key marketing concepts critical to marketing technology-based products and services. Identify market opportunities, understand customer preferences, evaluate market acceptance, and devise the appropriate going to market strategies.

**ENES669 Legal Aspects of Entrepreneurship**
Highlights the critical legal and business issues entrepreneurs face as they build and launch a new venture. Explore real world scenarios, and address legal and business issues from ideation to all of the important junctures along the path to success. Significant attention is placed on new venture formation, intellectual property management, and financing arrangements.

**ENES670 Financial Management and New Venture Financing**:
Provides the essential tools and know-how to build a strong financial foundation for a new technology venture. Examines accounting principles as well as methods for keeping firm financial control of your enterprise. Insights are shared on navigating financial barriers as well as how to raise the right amount of capital at the right time from the right source.

C. Describe any selective admissions policy of special criteria for students selecting this field of study.

Applicants must meet the following minimum admission criteria as established by the Graduate School:
- Applicants must have earned a four-year baccalaureate degree from a regionally accredited U.S. institution, or an equivalent degree from a non-U.S. institution.
- Applicants must have earned a 3.0 GPA (on a 4.0 scale) in all prior undergraduate and graduate coursework.
- Applicants must provide an official copy of a transcript for all of their post-secondary work.
International students must fulfill all requirements relating to international academic credentials, evidence of English proficiency, financial certification, and visa documentation. These requirements are found at the Graduate School’s Web site: http://www.gradschool.umd.edu/prospective_students/international_admissions.html.

III. STUDENT LEARNING OUTCOMES AND ASSESSMENT
The purpose of this assessment plan is to set clear guidelines, identify articulated outcomes, and ensure avenues for continuous improvement for each Master of Professional Studies program managed by the Program Oversight Committee and housed in the Graduate School. It is our mission to provide programs that meet UMD’s institutional goals and objectives for educational activities.

Learning Outcomes:
The program will enable graduates to generate and launch technology-based ventures through a five-step process:

• Think beyond current paradigms in order to discover innovation needs and to envision impact through strategic idea and concept development (Term 1).
• Leverage ideas to create sustainable business models aligned with customer needs and wants in competitive marketplaces (Term 2).
• Manage commercialization challenges and market launch efficiently and effectively (Term 3).
• Navigate the legal aspects of product development and company launch and build sound financial and accounting strategies and practices (Term 4).
• Know how to accelerate growth and create sustainable value through appropriate business development, risk management, financing, and value extraction strategies (Term 5).

Assessment Methods:
• Mastery of content: Classroom performance, course exams and papers, and capstone writing project.
• Professional communication (written and oral): Classroom performance, course exams and papers, and capstone writing project.
• Development of values and ethics: Classroom performance, course exams and papers, and satisfactory completion of assignments.
• Critical and creative thinking: Classroom performance, course exams and papers, and capstone writing project.

IV. FACULTY AND ORGANIZATION
A. Who will provide academic direction and oversight for the program?

Graduate School Representative
Charles Caramello, Dean of the Graduate School

Graduate Director
Dr. James V. Green
Director of Entrepreneurship Education, the Hinman CEOs Program, and the Minor in Technology Entrepreneurship
Senior Lecturer and Associate Director for the Maryland Technology Enterprise Institute (Mtech)
A. James Clark School of Engineering

Office of Extended Studies Administrative Support and Oversight
Terrie Hruzd, Director of Programs

Proposal for new instructional program (online), Master of Professional Studies in Technology Entrepreneurship, OES-administered, p. 6
B. If the program is not to be housed and administered within a single academic unit, provide details of its administrative structure.

The Master of Professional Studies in Technology Entrepreneurship will be housed in the Graduate School, which will be responsible for its oversight. The Program Oversight Committee, or designates, will administer the program. A faculty member from the college will serve as the Graduate Director and will provide academic leadership. The Office of Extended Studies will provide coordination.

**Administrative Coordination**
The Office of Extended Studies will provide program development support (including budget development and projections), program management that includes scheduling, marketing research, planning and management, financial management (including faculty contracting and faculty pay processing), and student services management (including support for admissions, registration, payment, financial aid, and other campus services).

**V. OFF-CAMPUS PROGRAMS (if necessary)**

A. If at Shady Grove—indicate how students will access student services.

Not applicable

B. If on-line—describe the concerns in “Principles and Guidelines for Online Programs” are to be addressed.

1. **Program Initiation and Choice:** The proposal should initiate with an academic unit, and must have the approval of the appropriate Dean (or Deans). It must develop naturally from the institution’s strengths and be consistent with its strategic goals. The proposal should have a clear and well-thought-out financial plan, providing net revenue to the institution over time, and should include a thorough analysis of the potential market.

Higher education’s attention to entrepreneurship and innovation is at an all-time as universities race to enter or expand in these areas. The traditional emphasis of this type of training on MBA students is beginning to expand to undergraduates as well as non-MBA graduate students. Based on Entrepreneur Magazine’s ranking of the top 25 undergraduate colleges for entrepreneurship, over 20,000 undergraduate students are enrolling each year in entrepreneurship courses from the top 25 colleges.

In parallel the undergraduate’s engagement with entrepreneurship, non-credit training in entrepreneurship is rapidly expanding with dramatic growth in MOOCs. The University of Maryland’s “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship” enrolled 215,000 students in 2013. Along with MOOCs offered by Coursera, Udacity, NovoEd, and Udemy, enrollments in these free, non-credit short courses in entrepreneurship may eclipse 500,000 students annually in 2014.

With 2,882 course evaluations submitted to date in the current Mtech Coursera course, responses to “The University of Maryland is developing a new Online Master’s Degree in Technology Entrepreneurship. This could be completed online from anywhere in the world. What is your level of interest in this online degree that may cost $15,000?” yielded 282 students (10%) "strongly interested" and 1040 students (37%) "moderately interested".

The intersection of (1) 20,000+ top undergraduates being exposed to entrepreneurship in higher education at a significantly greater rate with (2) 500,000+ aspiring and active novice entrepreneurs enrolling in entrepreneurship MOOCs presents a compelling opportunity to provide a practical, accessible, affordable, and robust master’s degree in entrepreneurship.
The online Master of Professional Studies in Technology Entrepreneurship, while not the first to market, is the first that brings a startup incubator approach to high education in an online format at an affordable cost. Existing offering are often expensive at $30,000+ and inaccessible, with very few online options. Of the online options, none bring the brand and the track record of the University of Maryland and Mtech to serve a global audience.

This University of Maryland degree also benefits from an internal audience generated by the 1,500+ undergraduate each year that enroll in entrepreneurship and innovation courses throughout campus. Over 200 enroll in Mtech’s Minor in Technology Entrepreneurship, and may be interested in furthering their skills and venture activities with the Master’s.

With rich market opportunities (1) among graduating seniors from UMD with entrepreneurial interests, (2) throughout U.S. campuses teaching entrepreneurship, and (3) via MOOC entrepreneurship audiences interested in a robust, degree-based experience, the online Master of Professional Studies in Technology Entrepreneurship is positioned to launch the next generation of technology entrepreneurs.

**MARKETING STRATEGY**

Target audiences for the Master’s are:

- Graduating seniors of UMD interesting in developing or expanding their technology ventures
- Graduating seniors of USM schools interested in starting companies in or beyond the State of Maryland
- Graduating seniors of the Top 100 entrepreneurial colleges in the U.S.
- Graduating seniors of international universities with relationships with Mtech
- Alumni of Mtech’s MOOC on entrepreneurship and innovation
- Alumni of the University of Maryland

As an online offering, online marketing will be central to recruitment for the Master’s. The online marketing campaign will focus on the target audiences. Extensive use of social media marketing, search-based marketing, and related online advertising will be part of the campaign.

Print marketing will be integrated in the campaign for brand awareness with universities, with attention to engineering schools as well as business schools. Organizations targeted include the Global Consortium of Entrepreneurship Centers, Epicenter, USASBE, NCIIA, and ASEE.

**COMPETITIVE ANALYSIS**

Existing programs that focus on a master’s in entrepreneurship or innovation are highlighted here. MBA programs with an entrepreneurship specialization are excluded as the audience, curriculum, purpose, and costs significantly differ from a degree focused on entrepreneurship for new venture creation. The credits required range from 30 to 42, with an average of 34. While 100% online offerings from well-ranked universities are rare in the master’s in entrepreneurship or innovation area, online MBAs are rapidly emerging from leading business schools in the U.S. Annual enrollments are typically 30 students, although few schools share their enrollment data. Tuition and fees range from $16,375 to $59,250, with an average of $37,461. Degrees are typically completed in 12 to 18 months.

**FINANCIAL ESTIMATES**
The financial strategy for the master’s program is to scale to hundreds of students enrolling per term by offering a high-value, low-cost experience. With the aim of providing an affordable program for aspiring and active entrepreneurs, tuition will be set the minimum allowed by the University of $573 credit.

Cohort 1 begins in Fall 2014 with 25 students enrolling in 2 courses in parallel. Cohort 2 starts in Fall 2015, and enrollments rise to 40 students. Starting in Spring 2016, cohorts enroll each Fall and Spring. By Fall 2016, enrollments increase and maintain at 75 student per entering cohorts. Pending demand, new cohorts will be added each quarter. Students complete the degree in five consecutive quarters.

Early financial forecasts are based on a small entering class that is in line with enrollments of new graduate programs of the University. Based on the popularity of entrepreneurship, accessibility as an online program, and affordability versus competitive programs, enrollments are expected to rise to a steady-state of at least 75 students per cohort by Fall 2016.

2. Program Development, Control, and Implementation by Faculty: Although professional help may be used in adapting it to the online medium, the academic content of the curriculum must be developed by institutional faculty. The instructional strategy proposed must be appropriate for this content. UMCP faculty must have overall control of the program, and should provide the bulk of the instruction. Appropriate resources, including technical support personnel, must be made available for course development and also for faculty support during the offering of these courses. The business plan for the proposal must spell out the arrangements whereby this will be accomplished.

Mtech will lead the Master’s program in collaboration with the Office of Extended Studies (OES). Pearson Embanet, 2U, and comparable firms that help colleges deliver for-credit online courses often charge 50% of tuition revenue. Leveraging Mtech’s and OES’ experiences and capabilities in online education, OES charge 10% of tuition revenue, with the remaining 90% allocated to Mtech.

- OES will provide administrative services in program development support, program compliance with University policies and procedures, marketing management, and financial management to include faculty and staff contracting and payment processing. OES will also provide student services management to include support for admissions, registration, payment, financial aid, and other campus services. While many critical functions are performed by OES, a central initial focus is enrollment advising.
  - Enrollment Advising: Provides a first line of contact with potential students, providing prompt contact, answering questions, determining if a prospective student meets admissions criteria, and assisting them through the application, financial aid and registration process. Involves almost instant engagement with prospective students as well as effective and timely tracking throughout the recruitment process.
- Mtech, in collaboration with OES, will lead marketing, instructional design, faculty selection, and student retention.
  - Marketing: Includes creation and management of website and marketing materials to match the brand standards and specific needs of the program. Involves determining and specifically addressing the target audience for the master’s. Utilizes direct response marketing, search engine optimization, database marketing, email, social media, paid search, pay-per-click, conferences, online educational directories and traditional advertising. Managing of campaigns to identify the approaches that best meet enrollment goals, resulting in an even, steady flow of predictable and high-quality enrollments.
Instructional design: Creates online classrooms that can harness technology and provide more interactivity and engagement than a traditional classroom. Students are encouraged and often required to remain active and participate. A properly designed online curriculum engages the senses, providing expanded opportunities for students to fully immerse themselves in course material. This includes video presentations, direct access to online resources and current events, interviews with industry experts, interactive learning tools and competitions, discussion boards, email, grading information, and the lecture material.

Faculty selection: Involves identification of candidate faculty from Mtech as well as subject matter experts to affiliate with the University as adjuncts.

Student retention. Student retention is one of the most important metrics we have to judge our success. Beyond simply being a measuring stick, retention rates are a primary focus of national education policy reform, accreditation boards and program rankings. Retention begins with targeted marketing materials and effective recruiting efforts. Once enrolled, will experience well-designed courses and learning materials. This engagement leads to greater student satisfaction, increased retention, lower loan default rates and ultimately higher graduation rates. Course-to-course retention is routinely above 95% for Embanet, and graduation rates are routinely above 85% at the graduate level for Embanet. All students will receive personalized attention for retention purposes throughout the duration of their degree program, with attention to ensuring students are registered and have their login information prior to class commencement, building personal relationships with each learner, ensuring textbooks are delivered and received by each student, identifying and assisting at-risk learners, and obtaining course and program evaluations and feedback from students.

Technology

Mtech will leverage its experience in designing and delivering online courses since 2009 to create a dynamic, online learning experience for students, faculty, and staff. This includes translating lessons learned from the online courses of the Minor in Technology Entrepreneurship as well as experiences from Mtech’s Coursera MOOC in “Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship”.

Mtech will produce all of the courses in-house. Mtech’s current model is to create asynchronous online video lectures, with Camtasia, Vimeo, and Canvas as the technical tools. Adobe Connect and conference call tools will be used for synchronous communications among faculty, staff, advisors, and students.

3. Access to Academic Resources and Student Services: The proposal must indicate how students will have access to needed resources, such as library materials, other information sources, laboratory facilities, and others as appropriate. The arrangements in place for interaction with instructors, for advising, and for help with technical problems must be described. It must be shown how student services such as admissions, enrollment, financial aid, bursar services, career advisement, bookstore, and similar services available to on-campus students will be provided.

As officially admitted students to the University of Maryland, students in this program will have access to all University resources that are accessible in the online environment. Students in online programs are assessed an online student services mandatory fee which supports access to these University resources. Extended Studies provides the management of all student services.

4. Intellectual Property Rights: The proposal must clearly delineate ownership and usage rights for materials that may be developed for courses in the program.
Intellectual property rights for this online degree, for both the program and online courses, will be addressed in a separate contract executed by the University of Maryland and the developer. Please see Article VIII On-Line Studies and Technology-Mediated (Enhanced) Courses in the UNIVERSITY OF MARYLAND POLICY ON INTELLECTUAL PROPERTY (Policy IV-3.20(A) (Approved by the President on March 13, 2003 and by the Chancellor on July 18, 2005) On-line at http://www.president.umd.edu/policies/iv320a.html.

5. Full Disclosure, Standards, and Evaluation: All published materials describing the program must carefully lay out the instructional methods to be used, the skills and background required for success, and the arrangements in place for access to instructors, to technical help, to academic resources, and to student services. There should be a means available whereby potential students can evaluate their readiness for the special demands of the program. Academic admission standards must be clearly described, and must be consistent with those for the on-campus program. Outcome expectations must also be consistent. The proposal must set out a continuing process of evaluation that will determine if these requirements are being met.

The Oversight Committee will ensure that all printed and digital materials provide exhaustive information about the program. The Web site, administered through the Office of Extended Studies, will provide complete and transparent policies and procedures regarding admission requirements (in full compliance of the Graduate School), including registration, financials, technical assistance, digital access to university resources, academic and university policies, and all issues relating to the successful completion of the program. Potential students will be given the opportunity to complete a self-assessment ensuring that they possess the skill sets and mental models for online learning as well as the technical resources for program accessibility. Mtec provides both incoming and admitted students with all advising assistance.

VI. OTHER ISSUES
A. Describe any cooperative arrangements with other institutions or organizations that will be important for the success of this program.

None

B. Will the program require or seek accreditation? Is it intended to provide certification or licensure for its graduates? Are there academic or administrative constraints as a consequence?

No

VII. COMMITMENT TO DIVERSITY

The University of Maryland is an equal opportunity institution with respect to both education and employment. The University does not discriminate on the basis of race, color, national origin, sex, age, or handicap in admission or access to, or treatment or employment in, its programs and activities as required by federal (Title VI, Title IX, Section 504) and state laws and regulations.

Through its actions and statements of policy the University of Maryland has demonstrated a commitment to diversity by creating programs of study which explore the experiences, perspectives, and contributions of a wide variety of cultures, groups, and individuals; and as sought to create a campus environment which encourages tolerance and respect for individuals regardless of differences in age, race, ethnicity, sex, religion, disability, sexual orientation, class, political affiliation, and national origin.

VIII. REQUIRED PHYSICAL RESOURCES

Proposal for new instructional program (online), Master of Professional Studies in Technology Entrepreneurship, OES-administered, p. 11
A. Additional library and other information resources required to support the proposed program. You must include a formal evaluation by Library staff.

See attached.

B. Additional facilities, facility modifications, and equipment that will be required. This is to include faculty and staff office space, laboratories, special classrooms, computers, etc.

None.

C. Impact, if any, on the use of existing facilities and equipment. Examples are laboratories, computer labs, specially equipped classrooms, and access to computer servers.

This program does not require additional resources.

**IX. RESOURCES NEEDS AND SOURCES**

A. List new courses to be taught and needed additional sections of existing courses. Describe the anticipated advising and administrative loads. Indicate the personnel resources (faculty, staff, and teaching assistants) that will be needed to cover all these responsibilities.

The following courses have been submitted and are pending approval by VPAC:

**ENES662 Innovative Ideas and Concept Development**
Focuses on the content, methods, and models for new venture opportunity assessment and analysis. Learn how to identify and analyze entrepreneurial opportunities for technology-based ventures by first understanding their personal self and decision-making factors. Examine how to evaluate the opportunities and challenges within industries and markets of interest.

**ENES664 Business Modeling and Customer Validation**
Focuses on how to create and deliver value for customers and how to sustainably extract value for the venture. Develop business models that encompass the product or service, customers, and the economic engine that will deliver on venture objectives.

**ENES666 Creative Design, Prototyping, and Testing**
Enables students to transition from creative, innovative, design thinking methods to prototyping and concept testing their products and services. Emphasis is placed on an integrated and interdisciplinary approach to engineering design, concurrent engineering, design for manufacturing, industrial design, and the business of new product development.

**ENES667 Market Development and Commercialization**
Provides an orientation to key marketing concepts critical to marketing technology-based products and services. Identify market opportunities, understand customer preferences, evaluate market acceptance, and devise the appropriate going to market strategies.

**ENES669 Legal Aspects of Entrepreneurship**
Highlights the critical legal and business issues entrepreneurs face as they build and launch a new venture. Explore real world scenarios, and address legal and business issues from ideation to all of the important junctures along the path to success. Significant attention is placed on new venture formation, intellectual property management, and financing arrangements.
ENES670 Financial Management and New Venture Financing:
Provides the essential tools and know-how to build a strong financial foundation for a new technology venture. Examines accounting principles as well as methods for keeping firm financial control of your enterprise. Insights are shared on navigating financial barriers as well as how to raise the right amount of capital at the right time from the right source.

Mtec will appoint a Director to ensure that this self-support program has no impact on advising and administrative resources for the unit’s traditional programs. Tuition revenue will be used to support all salaries and benefits. It is proposed that tuition be charged at a rate based on the current in-state graduate student per credit rate. Enrolled students will be charged the online student services fee which supports campus-wide technology services, online library services, and student registration services. In addition, all students will pay the one-time graduate application fee.

B. List new faculty, staff, and teaching assistants needed for the responsibilities in A, and indicate the source of the resources for hiring them.

All faculty must be full or adjunct members of the Graduate Faculty and approved by the Dean of the Graduate School to teach. Faculty selection and appointments are made by Mtec and will include permanent and adjunct faculty. Instructors in this self-support program may not teach on-load. University of Maryland faculty who teach in the program will be compensated using overloads. Mtec will appoint a Director to ensure that this self-support program has no impact on advising and administrative resources for the unit’s traditional programs. Tuition revenue will be used to support all salaries and benefits.

C. Some of these teaching, advising, and administrative duties may be covered by existing faculty and staff. Describe your expectations for this, and indicate how the current duties of these individuals will be covered, and the source of any needed resources.

Approval of all faculty overloads for teaching and advising will be in accordance with University of Maryland policy and procedures. The Oversight Committee is responsible for the overall administrative management of the program.

D. Identify the source to pay for the required physical resources identified in Section VIII. above.

Tuition revenue will be used to cover the program expenses (see separate budget page).

E. List any other required resources and the anticipated source for them.

See above.

F. Complete the additional proposal and financial tables as required by MHEC.

See attached pdf.
## Master of Professional Studies in Technology Entrepreneurship

### Estimated Program Revenue & Support

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<tbody>
<tr>
<td><strong>I. Total Tuition Revenue</strong></td>
<td>$360,990</td>
<td>$777,031</td>
<td>$1,532,267</td>
<td>$2,549,135</td>
<td>$3,290,892</td>
</tr>
<tr>
<td>Fall Admission Cohort</td>
<td>$360,990</td>
<td>$473,799</td>
<td>$736,284</td>
<td>$1,420,830</td>
<td>$1,645,446</td>
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<tr>
<td>Spring Admission Cohort</td>
<td>$303,232</td>
<td>$795,983</td>
<td>$1,128,306</td>
<td>$1,645,446</td>
<td></td>
</tr>
<tr>
<td><strong>A. Total Students (annually)</strong></td>
<td>25</td>
<td>90</td>
<td>145</td>
<td>230</td>
<td>300</td>
</tr>
<tr>
<td>Fall Admission Cohort</td>
<td>25</td>
<td>50</td>
<td>65</td>
<td>115</td>
<td>150</td>
</tr>
<tr>
<td>Spring Admission Cohort</td>
<td>40</td>
<td>80</td>
<td>115</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td><strong>B1. Total Credits (annually): Fall Admission Cohort</strong></td>
<td>24</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td><strong>B2. Total Credits (annually): Spring Admission Cohort</strong></td>
<td>40</td>
<td>80</td>
<td>115</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td><strong>C. Per credit rate; Assumes 5% increase</strong></td>
<td>$602</td>
<td>$632</td>
<td>$663</td>
<td>$696</td>
<td>$731</td>
</tr>
<tr>
<td><strong>II. Student Fee: Campus Mandatory Fee</strong></td>
<td>$9,270</td>
<td>$34,373</td>
<td>$57,040</td>
<td>$93,192</td>
<td>$125,202</td>
</tr>
<tr>
<td><strong>III. Student Fee: Graduate School Application Fee</strong></td>
<td>$1,875</td>
<td>$4,875</td>
<td>$8,625</td>
<td>$11,250</td>
<td>$11,250</td>
</tr>
<tr>
<td><strong>Total Estimated Program Revenue &amp; Support</strong></td>
<td>$372,135</td>
<td>$816,279</td>
<td>$1,597,933</td>
<td>$2,653,578</td>
<td>$3,427,344</td>
</tr>
</tbody>
</table>

### Estimated Expenses

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Total Instructional and Administration</strong></td>
<td>$330,120</td>
<td>$378,508</td>
<td>$393,646</td>
<td>$409,442</td>
<td>$425,926</td>
</tr>
<tr>
<td><strong>A. Instructional Totals</strong></td>
<td>$155,520</td>
<td>$204,120</td>
<td>$214,326</td>
<td>$225,042</td>
<td>$236,294</td>
</tr>
<tr>
<td>a. Instructor per course salary (5% annual increase)</td>
<td>$15,000</td>
<td>$15,750</td>
<td>$16,538</td>
<td>$17,364</td>
<td>$18,233</td>
</tr>
<tr>
<td>(1). # of courses per year</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>(2). # of instructors per course</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(3). # of support instructors per course</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>B. Academic Administration Totals</strong></td>
<td>$174,600</td>
<td>$174,388</td>
<td>$179,320</td>
<td>$184,399</td>
<td>$189,631</td>
</tr>
<tr>
<td>1. Mtech Administrator (3% annual increase)</td>
<td>$120,000</td>
<td>$123,600</td>
<td>$127,308</td>
<td>$131,127</td>
<td>$135,061</td>
</tr>
<tr>
<td>a. Administrator Fringe Benefits (33%)</td>
<td>$39,600</td>
<td>$40,788</td>
<td>$42,012</td>
<td>$43,272</td>
<td>$44,570</td>
</tr>
<tr>
<td><strong>II. Marketing</strong></td>
<td>$30,000</td>
<td>$82,703</td>
<td>$158,227</td>
<td>$259,914</td>
<td>$334,089</td>
</tr>
<tr>
<td>Marketing collateral design and update</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Marketing (10% of revenues after 2014)</td>
<td>$25,000</td>
<td>$77,703</td>
<td>$153,227</td>
<td>$254,914</td>
<td>$329,089</td>
</tr>
<tr>
<td><strong>SUBTOTAL: DIRECT PROGRAM EXPENSES</strong></td>
<td>$360,120</td>
<td>$461,211</td>
<td>$551,872</td>
<td>$669,355</td>
<td>$760,015</td>
</tr>
<tr>
<td><strong>III. Student Fees</strong></td>
<td>$11,145</td>
<td>$39,248</td>
<td>$65,665</td>
<td>$104,442</td>
<td>$136,452</td>
</tr>
<tr>
<td>A. Online Mandatory Fee</td>
<td>$9,270</td>
<td>$34,373</td>
<td>$57,040</td>
<td>$93,192</td>
<td>$125,202</td>
</tr>
<tr>
<td>B. Graduate School Application Fee</td>
<td>$1,875</td>
<td>$4,875</td>
<td>$8,625</td>
<td>$11,250</td>
<td>$11,250</td>
</tr>
<tr>
<td><strong>IV. OES Administrative Fee</strong></td>
<td>$36,099</td>
<td>$77,703</td>
<td>$153,227</td>
<td>$254,914</td>
<td>$329,089</td>
</tr>
<tr>
<td><strong>V. Graduate School Administrative Fee</strong></td>
<td>$6,000</td>
<td>$21,600</td>
<td>$34,800</td>
<td>$55,200</td>
<td>$72,000</td>
</tr>
<tr>
<td><strong>Total Estimated Expenses</strong></td>
<td>$413,364</td>
<td>$599,762</td>
<td>$805,564</td>
<td>$1,083,911</td>
<td>$1,297,556</td>
</tr>
<tr>
<td><strong>Total Estimated Program Revenue &amp; Support</strong></td>
<td>$372,135</td>
<td>$816,279</td>
<td>$1,597,933</td>
<td>$2,653,578</td>
<td>$3,427,344</td>
</tr>
<tr>
<td><strong>Net</strong></td>
<td>-$41,229</td>
<td>$216,517</td>
<td>$792,368</td>
<td>$1,569,667</td>
<td>$2,129,788</td>
</tr>
</tbody>
</table>
DATE: November 22, 2013

TO: Hilary Sazama
Assistant Director, Office of Extended Studies

CC: Daniel Mack
Interim Director, Collection Management & Special Collections, Libraries

Gerri Foudy
Manager, Collections and Scholarly Communication, Libraries

FROM: Robin Dasler
Engineering/Research Data Librarian

RE: Library Resources to Support Master of Professional Studies in Technology Entrepreneurship

The University of Maryland (UM) Libraries currently support the graduate students in a number of distance programs. With this new proposal, the University of Maryland Libraries collections can adequately support the instruction and research needs of the newly proposed Master of Professional Studies in Technology Entrepreneurship.

As an online program, the Master of Professional Studies in Technology Entrepreneurship has special concerns. Ease of access and flexible availability of library materials is paramount, and as a University of Maryland program, students will expect this flexibility to be coupled with high academic quality and integrity. The current purchasing practices and available collections at the UM Libraries will ensure that these two goals can be met, both now and for the life of the program.

Technology Entrepreneurship

The Engineering and Physical Sciences Library (EPSL) supports the undergraduate and graduate students in the A. James Clark School of Engineering, and McKeldin Library supports the undergraduate and graduate students of the Robert H. Smith School of Business. EPSL houses the major collection of monographs and serials relevant to engineering and technology, while McKeldin houses the majority of the Libraries’ business and entrepreneurship resources. A significant part of the collection is electronically accessible, both on and off campus, and therefore not location dependent.

Monographs

The Libraries’ current collection of books related to technology entrepreneurship is sufficient to meet the needs of the program. The ongoing acquisition of scholarly books is expected to be adequately covered through existing acquisition practices and budgeting. As the University of Maryland already has a robust tradition of emphasizing entrepreneurship and innovation, current collection development practices in the Libraries already support these topics.

At this time, approximately 20-25% of the total monograph collection in the areas of entrepreneurship, venture financing, industrial/engineering design, technology transfer/commercialization, prototyping, and technological forecasting is available in ebook format, accessible both on and off campus. This percentage increases to approximately 35-40% for titles published after 2000 in the more directly technology-focused areas of industrial/engineering design, technology transfer/commercialization, prototyping, and technological forecasting. Due to the UM Libraries’ purchasing preference for electronic
materials, especially prevalent across the STEM fields, this percentage is expected to continue to increase significantly in the coming years.

**Electronic Resources: Journals and Databases**

The Libraries’ current list of subscriptions includes both core and related journals that support research and teaching in technology entrepreneurship.

A search was performed in *Journal Citation Reports 2012* (JCR), a database that uses citation data to rank and determine the impact factor of journals in an academic field. To support the proposed courses, at the present time the Libraries provide access to the top ten ranked journals from the JCR category of Engineering, Industrial (a combination of journals from manufacturing, industrial economics, design engineering, and related fields), and eight of the top ten ranked journals from the JCR category of Law (despite UM College Park’s lack of a law school). While other aspects of innovation and entrepreneurship do not fall as neatly into a JCR-specified category, the UM Libraries provide access to numerous highly ranked journals from cross-sections of the JCR categories of Communication, Business, Finance, and Planning and Development, as well as the majority of top ten ranked journals from all other engineering disciplines.

Relevant top-ranked titles include:

- Design Studies
- Entrepreneurship Theory and Practice
- Entrepreneurship and Regional Development
- International Entrepreneurship and Management Journal
- International Journal of Production Economics
- Journal of Business Venturing
- Journal of Marketing
- Journal of Product Innovation Management
- New Media & Society
- Research in Engineering Design
- Technological Forecasting and Social Change
- Technovation

In addition to journal subscriptions, the UM Libraries subscribe to the following significant databases, that will support the degree by providing access to the previously mentioned journals as well as other relevant resources.

- **Engineering and Technology**: IEEE Xplore Digital Library, ACM Digital Library, Elsevier’s ScienceDirect, Web of Science, ProQuest Engineering Collection
- **Company & Industry Information**: Hoover’s, IBIS World, Gartner
- **Consumer & Market Research**: Mintel, Mediamark Research
- **Business Planning**: Enterprise Surveys, Gale Business Plans Handbook
- **General Business & Law**: Business Source Complete, LexisNexis

At this time, the UM Libraries’ purchasing preference is for electronic materials (i.e. those that can be accessed online), a trend that will serve to place face-to-face and online students on the same educational footing. This is especially relevant to the online Masters of Professional Studies programs, where online flexibility is presented with no reduction in educational quality. The UM Libraries purchasing and access priorities are in line with this goal.
**Interlibrary Loan & Article Express**

When resources are not part of our holdings within the sixteen University System of Maryland and Affiliated Institutions (USMAI) libraries, the Interlibrary Loan unit can obtain materials from other libraries at no charge to the student or faculty. Most recent journal articles can be provided through electronic delivery, allowing students in online programs to make the most flexible use of their time.

Additionally, through the auspices of the Interlibrary Loan unit, graduate students and faculty can make use of Article Express, an electronic document delivery service for in-house materials. Article Express allows graduate students and faculty to place requests for book chapters and journal and/or conference papers that are available in print in the Libraries, and have them scanned and delivered electronically within three business days. This service is also free of charge.

These enhanced access services will support the instruction and research needs of the technology entrepreneurship faculty and students.

**Consortial Agreements**

With the admission of the University of Maryland into the Committee for Institutional Cooperation (CIC), the academic arm of the Big Ten, our faculty and students will be able to take advantage of a number of new materials access options in the coming years. The Libraries will be joining the CIC UBorrow\(^1\) program, which will allow rapid access to the collections of other CIC member libraries.

**Conclusions**

At the present time, UM Libraries holdings are adequate to support the proposed set of courses, and current purchasing preferences and trends are especially beneficial for an online program. While it is anticipated that this will continue, the Libraries collections are vulnerable to budget and market fluctuations. Journal collections and other continuing resources remain particularly vulnerable. The level of future support is thus dependent upon ongoing funding and other circumstances affecting continuing subscriptions.

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\(^1\) [http://www.cic.net/projects/library/reciprocal-borrowing/uborrow](http://www.cic.net/projects/library/reciprocal-borrowing/uborrow)