

AC 2010-413: DESIGNING AND LAUNCHING THE ENTREPRENEURSHIP AND INNOVATION LIVING-LEARNING PROGRAM FOR FRESHMEN AND SOPHOMORES

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Designing and Launching the Entrepreneurship and Innovation Living-Learning Program for Freshmen and Sophomores

Abstract

Based on the surge in demand for undergraduate programs in entrepreneurship and innovation at the University of Maryland and throughout the country, the Entrepreneurship and Innovation Program is launching in fall 2010 for freshmen and sophomores. By filling a critical gap in the University's entrepreneurship and innovation offerings at the freshmen and sophomore level, the new living-learning program can improve student recruitment, enhance student enrichment, and contribute to the overall quality and rankings of the University of Maryland.

For the living component of the program, all students will reside in an exclusive program residence hall for both years. This residential experience has proved invaluable to community building of young entrepreneurs in Hinman CEOs and related programs. The program offices will be central to the residences to encourage frequent mentoring and interactions with these students. A rich set of community-building activities will be developed and managed for program students. Through live companies, courses, seminars, workshops, competitions, and volunteerism, students will be part of a special experiential learning model. While providing entrepreneurship and innovation education and helping teams to start and operate ventures are important, a continuum of hands-on mentoring will be provided to help students not yet engaged in founding and managing start-ups to develop their entrepreneurial skills. The valuable residential experience is complemented with the central offices of program staff. In this way, students can easily visit staff offices to discuss their latest new venture idea or to tackle a tough legal, financial or ethical question.

This Honors academic program combines small classes taught by exceptional faculty with the wide range of additional education opportunities offered by a large research institution. The academic component of the program includes four courses totaling 9 credits, with all students enrolling in one course per semester for each of their four semesters in the program. This provides continuity between the students and the program throughout the two-year experience. Each course will be originally developed for an Honors audience in collaboration with the faculty advisory council. The dedicated program director and department faculty and staff are expected to play active roles in instruction, along with talented adjunct faculty.

At Mtech, an A. James Clark School of Engineering institute for technology entrepreneurship and innovation, we believe that a firm grasp of the entrepreneurial process and mindset benefits every person engaged in developing new ideas. Our core goal of the Entrepreneurship and Innovation Program is to infuse freshmen and sophomore students with that knowledge and its accompanying skills. Armed with an entrepreneurial mindset, Entrepreneurship and Innovation Program students and alumni can drive economic growth by launching successful ventures and/or joining innovative companies to bring life-changing products and services to market.

Background

The University of Maryland is a recognized leader in entrepreneurship and innovation education through its award-winning Hinman CEOs living-learning program for upperclassmen, as well as the dynamic entrepreneurship courses and offerings of Mtech, an A. James Clark School of Engineering institute. At Mtech, we believe that a firm grasp of the entrepreneurial process and mindset benefits every person engaged in developing technology. Our goal is to infuse technology-creating students, faculty members and professionals with that knowledge and its accompanying skills. Armed with an entrepreneurial mindset, technology creators drive economic growth by launching successful ventures and bringing life-changing products and services to market. An overview of Mtech’s entrepreneurship and innovation education offerings is presented in table 1, along with the fit of the Entrepreneurship and Innovation Program (EIP).

Table 1. Mtech’s entrepreneurship and innovation education offerings

High School Juniors & Seniors	<ul style="list-style-type: none"> • Young Scholars Summer Program <ul style="list-style-type: none"> – ENES140: Discovering New Ventures – ENES141: Tech. Marketing & Product Development • Young Scholars Spring Program <ul style="list-style-type: none"> – Spring course offering to students of Whitman and Walter Johnson high schools in Bethesda 	<u>General Activities</u> <ul style="list-style-type: none"> • Technology Startup Boot Camp • \$75K Business Plan Competition • Entrepreneur Office Hours
Freshmen	<ul style="list-style-type: none"> • Freshmen Connection Program <ul style="list-style-type: none"> – ENES210: Entrepreneurial Opportunity Analysis 	
Freshmen & Sophomores	<ul style="list-style-type: none"> • Existing gap to be filled by the new Entrepreneurship and Innovation Program (EIP). 	
Juniors & Seniors	<ul style="list-style-type: none"> • Hinman CEOs Program • Hillman Entrepreneurs Program • 400-level courses in entrepreneurship and innovation 	
Graduate Students	<ul style="list-style-type: none"> • Grad. Certificate in Engineering in Tech. Ventures & Innovation • 600/700-level courses in entrepreneurship and innovation 	
Professionals	<ul style="list-style-type: none"> • Certificate in Innovation Management Program 	

At the foundation of Mtech’s undergraduate entrepreneurship and innovation activities is the Hinman CEOs Program, started in 1999. The Program serves 90 juniors and seniors annually in a two-year residential model inclusive of four 3-credit courses, on-site coaching and mentoring, and experiential learning opportunities. The mission is to foster an entrepreneurial spirit, create a sense of community and cooperation, and develop ethical leaders. As the nation’s first living-learning entrepreneurship program, the Hinman CEOs model for undergraduate entrepreneurship and innovation education has been replicated at 18 universities (Green, 2009).

While the Hinman CEOs Program serves juniors and seniors, there are no Honors-level, living-learning opportunities for University of Maryland freshmen and sophomores interested in entrepreneurship and innovation. Students desiring this experience either wait two years at the University of Maryland, or enroll in other universities with well-developed underclassman opportunities to discover and experience entrepreneurship and innovation.

We anticipate the availability of a freshmen-sophomore living-learning experience in entrepreneurship and innovation to drive the volume and quality of freshmen applicants. A 2005 poll from Junior Achievement found that 68.6% of the teenagers interviewed wanted to become entrepreneurs. The success of Mtech's existing high school and freshmen offerings supports that students from all majors share a common interest in one day owning their own businesses and/or being recognized as an innovative leader within their organizations.

Student Demand

The demand for a freshmen-sophomore living-learning experience in entrepreneurship and innovation is well evidenced at the University of Maryland. With 69 freshmen applicants for the Hinman CEOs Program in 2008 and an additional 115 freshmen registered for Mtech's Freshmen Connection entrepreneurship course, this collective 184 freshmen population already exceeds the anticipated 75 seats within EIP each year. We believe this level of interest is consistent with the Honors category of students, and is likely higher based on the parallels between high-achieving students and the desire for entrepreneurial, innovative career paths. Student demand is evident based on:

- *69 freshmen applicants for the Hinman CEOs program.* In 2008, 69 freshmen applied for the Hinman CEOs Program. This is the clearest level of demand for freshmen desiring to enroll in a living-learning entrepreneurship and innovation program at the University of Maryland. With an acceptance rate of 30% for 2009, the Hinman CEOs program is focused on rising juniors as its incoming cohort each year. Only the most exceptional rising sophomores are accepted, typically at a rate of only 1 or 2 students per cohort of 45 each year. Despite these long odds for acceptance, and no dedicated marketing efforts by the Hinman CEOs Program towards freshmen students, many freshmen continue to apply for Hinman CEOs admittance each year.
- *115 freshmen registered for Mtech's Freshmen Connection entrepreneurship course, "ENES 210: Entrepreneurial Opportunity Analysis".* Demand for this course has risen rapidly each year, with 115 students registered so far for the Fall 2009 term.
- *77 high school students enrolled in the Young Scholars Program for summer 2009.* Mtech's summer high school entrepreneurship course, "ENES 140: Discovering New Ventures", hosted 58 students in 2009. In the first offering of Mtech's "ENES 141: Technology Marketing & Product Development" course in 2009, 19 students enrolled. These collective 77 students represent the highest level of student enrollment across all 20 topics offered in the Young Scholars Program in 2009. While not all of these students will attend the University of Maryland as undergraduates in the future, placing first in a field of 21 topic areas represents the unprecedented level of interest by high school students in an entrepreneurship and innovation experience (Green, 2007).

Opportunity

Based on the surge in demand for undergraduate programs and courses in entrepreneurship and innovation, Mtech will introduce the EIP to serve freshmen and sophomores. This living-

learning, Honors-based program is a natural extension of Hinman CEOs and fills a gap in the current entrepreneurship and innovation offerings.

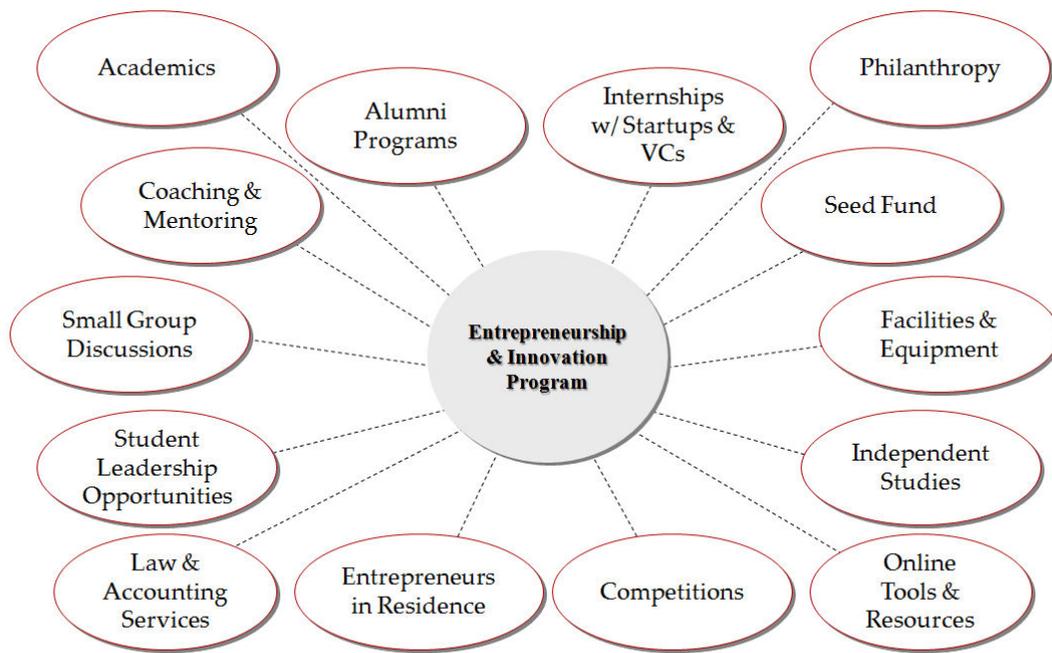
A question may be, “Why not increase the size of the Hinman CEOs Program to accommodate 150 freshmen and sophomores each year, instead of creating a new program?”. Firstly, the Hinman CEOs benefactor, Brian Hinman, has stated his interest in keeping the Hinman CEOs program at less than 100 students in order to facilitate a strong sense of community and interaction. Secondly, the needs and interests of underclassmen differ from those of upperclassmen. Thirdly, while the Hinman CEOs program fosters business plan development and new venture creation, this new underclassmen program will focus on entrepreneurial opportunity discovery, creativity and innovation, and related foundational skills. It is important to develop curriculum that is attuned to the psychological and sociological needs of these younger students. Lastly, Hinman CEOs occupancy of 88 beds already stretches the limits of available campus housing for upperclassmen. For these reasons, a new entrepreneurship and innovation program specifically created for the freshmen and sophomore audience makes sense.

With the support of the University, this new program will attract the increasing number of students interested in extending their major studies to include dynamic entrepreneurial and innovation-themed programming and coursework in a residential community.

The EIP Experience

Students selected for EIP will receive encouragement and resources for pursuing entrepreneurial, innovative ideas and careers. The living-learning nature of the program provides a wonderful opportunity to engage students through a host of methods proven within Hinman CEOs.

Graph 1. The EIP Experience



While a host of resources will be provided to EIP students leveraging existing Mtech programs and relationships, highlights of the new program include:

- **Living Community** – For the living component of the program, all students will reside in an exclusive program residence hall floor (or two) for both years. This residential experience has proved invaluable to community building of young entrepreneurs in Hinman CEOs. The program offices will be central to the residences to encourage frequent mentoring and interactions with these students. A rich set of community building activities will be developed and managed for program students.
- **Experiential Learning** – Through live companies, courses, seminars, workshops, competitions, and volunteerism, EIP students will be part of a special experiential learning model. While providing entrepreneurship and innovation education and helping teams to start and operate ventures are important, a continuum of hands-on mentoring will be provided to help students not yet engaged in founding and managing start-ups to develop their entrepreneurial skills (Kolb & Kolb, 2005). Over the course of the student’s career in the program, all students develop an innovative idea and write a product plan. Students may also compete in the University’s \$75K Business Plan Competition, attend the Technology Start-up Boot Camp each fall, and volunteer through program-managed activities.
- **Challenging Academics** – The academic component includes four courses totaling 9 credits, with student enrolling in one course per semester for each of their four semesters in the program. This provides continuity between the students and the program throughout the two-year experience. Each course will be originally developed for an Honors audience in collaboration with the EIP faculty advisory council led by Dr. David F. Barbe, Executive Director of Mtech and Professor of Electric and Computer Engineering. The capstone course is a social entrepreneurship practicum (Boni, Weingart, & Evenson, 2009). The EIP course sequence is outlined in table 2.

Table 2. Course sequence

<i>Course</i>	<i>Focus</i>
1 st Semester: Foundations of Entrepreneurship & Innovation (1 cr.)	Building the entrepreneurial mindset and introducing basic entrepreneurship principles and terminology
2 nd Semester: Contemporary Issues in Entrepreneurship & Innovation (3 cr.)	Inspiring innovation and creativity through interactive lectures, workshops, and case studies in contemporary issues to include energy, life sciences, healthcare, etc.
3 rd Semester: International Entrepreneurship & Innovation (3 cr.)	Introducing the opportunities and challenges of entrepreneurship and innovation from an international perspective through lectures and speakers
4 th Semester: Capstone - Social Entrepreneurship Practicum (2 cr.)	Enhancing strategic capabilities and leadership skills through the development of an innovative for-profit product or service concept with social benefits. Top ventures compete for the \$50,000 Impact Seed Fund.

- On-demand Coaching and Mentoring – The valuable residential experience is complemented with the central offices of EIP staff. In this way, students can easily visit staff offices to discuss their latest new venture idea or to tackle a tough legal, financial or ethical question. The Director and entrepreneurs-in-residence will be seasoned entrepreneurs pairing practical experience with top-tier educations to coach teams and individually mentor students.
- Impact Seed Fund – A \$50,000 seed fund now available for students of the Hinman CEOs Program and Hillman Entrepreneurs Program will be extended to include students in the EIP. These funds are exclusively dedicated to new ventures making a positive social impact; typically in education, healthcare, environment, and related areas. Funds are provided as grants to students, with no payback or equity requirement. Funds are to be used for R&D or working capital for student ventures. Approximately \$50,000 in total awards are made per year, with future donations planned for replenishing the fund.
- Entrepreneurial Internships – Internships play an important role in the entrepreneurship and innovation experience. Students can learn hands-on with area start-ups, in the offices of venture capitalists, and in faculty laboratories. Applying their experience in these environments amplifies their learning, in turn, bringing energy and expertise back to their fellow EIP students. On a competitive application basis, select students in the EIP will be placed in these entrepreneurial internships each summer.
- Freshmen/Sophomore Emphasis – In contrast to many entrepreneurship programs that are aimed at graduate students or upperclassmen, the EIP is exclusively designed for freshmen and sophomores. When entrepreneurship and innovation are introduced early, the knowledge gained significantly impacts direction towards more entrepreneurial and innovative careers. This knowledge combines with the community to create a dynamic hub for entrepreneurial skills building and innovative venturing.

Program Size

Understanding the importance of developing a sense of community among program students, and using the Hinman CEOs successful track record as a model, the number of students enrolled in the EIP is up to 75 per year. As a two-year program, the steady state number of students will be up to 150 students. Students interested in continuing on the entrepreneurship track may apply for the Hinman CEOs Program for the junior and senior years. Required staff size includes a full-time program director with substantial entrepreneurial experiences, an administrative assistant, and lecturers for select courses.

Leadership Team

The management team will consist of a new full-time Director for the EIP and a full-time administrative assistant. The Director will have entrepreneurial experience and a track-record of mentoring youth. Key responsibilities will include marketing the program, student selection, business coaching and personal mentoring, teaching select courses, and staying connected with alumni of the program. The administrative assistant will support these activities as well as play a pivotal role in community building, student interface, and program assistance.

A faculty advisory council will provide academic oversight and expertise, particularly in the design, development, and management of the courses for the EIP. The faculty advisory committee will consist of tenured and tenure-track faculty led by Dr. David F. Barbe. Faculty members from business, life sciences, and engineering will be encouraged to join the faculty advisory committee for EIP.

The team will be supported with the entrepreneurship and innovation education expertise and resources of Mtech. The management and support team includes:

- Dr. James V. Green, Director of Entrepreneurship Education for Mtech and Director of the Hinman CEOs Program. Dr. Green will bring the knowledge base, processes, and relationships of Mtech and the Hinman CEOs Program to successfully launch and grow the EIP. His experience in managing the Hinman CEOs Program, providing coaching and mentoring for students, and instructing entrepreneurship courses are perfectly aligned with the skills needed to start the EIP with 10 years of lessons learned from Hinman CEOs.
- Eric Schurr Director of Marketing for Mtech, will provide marketing and communications services to the EIP to include website management, PR, marketing, and promotions.
- Dan Carafelli, Chief Business and Financial Officer for Mtech, will manage the finance, accounting, and HR activities for the EIP.

University Strategic Plan Alignment

GOAL 1: THE UNIVERSITY WILL IMPLEMENT A NUMBER OF INITIATIVES TO IMPROVE THE QUALITY OF UNDERGRADUATE EDUCATION. OUR PROGRAMS WILL BE COMPREHENSIVE AND CHALLENGING, WILL MATCH OR EXCEED STUDENTS' LEARNING GOALS, AND WILL SERVE THEM WELL AS A FOUNDATION FOR THE WORKPLACE OR ADVANCED STUDY AND FOR A MORE FULFILLING LIFE.

The EIP contributes to Goal 1 by serving diverse students across all academic disciplines who share a passion for becoming entrepreneurs. This will be accomplished within the incubator-style residence hall where highly motivated undergraduate students live and work together. Student teams may develop product plans and create and launch innovate products and services during and beyond their tenure in the program. They also cultivate lifelong friendships with fellow students, faculty, and staff that engage them with the University community.

GOAL 2: THE UNIVERSITY WILL ATTRACT A LARGER POOL OF APPLICATIONS FROM ACADEMICALLY TALENTED STUDENTS, ENROLL MORE STUDENTS FROM UNDERREPRESENTED GROUPS, ENROLL AN INCREASINGLY STRONGER GROUP OF FRESHMAN AND TRANSFER STUDENTS, AND BECOME THE SCHOOL OF CHOICE FOR MORE OF THE HIGHEST ACHIEVING STUDENTS GRADUATING FROM MARYLAND HIGH SCHOOLS.

While Hinman CEOs is a junior and senior undergraduate program that does not actively recruit students from high school, applicants often cite Hinman CEOs as a key motivator for the

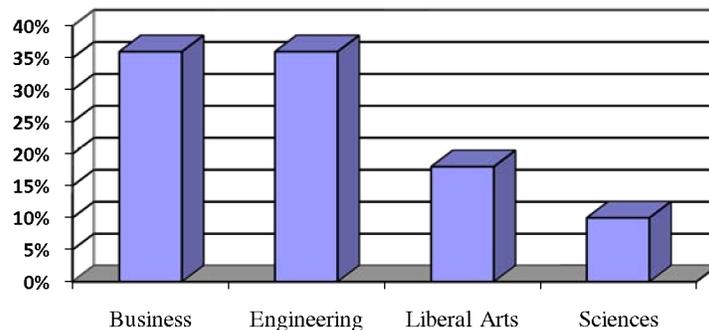
enrollment in the University of Maryland. We are confident that the EIP will contribute to a well-developed undergraduate opportunity for students to discover and experience entrepreneurship and innovation.

Through the EIP’s collaboration with the Young Scholars Program, we can extend our reach into high school students through Mtech’s annual summer courses, “ENES 140: Discovering New Ventures: Foundations in Entrepreneurship” and “ENES 141: Technology Marketing & Product Development”. Along with the Spring Young Scholars Program offerings at Whitman and Walter Johnson high schools in Bethesda, we can actively recruit from the over 100 high school students annually that are already enrolling in Mtech taught courses in entrepreneurship and innovation.

From a diversity perspective, we anticipate the EIP to represent the well balanced nature of Hinman CEOs students with a gender composition of approximately 60% male and 40% female, with 50% of all students representing ethnically diverse backgrounds.

As illustrated in graph 2, diversity in majors is also a hallmark of the Hinman CEOs Program that we expect to see in EIP, with approximately 1/3 business, 1/3 engineering, and 1/3 liberal arts and sciences majors.

Graph 2. Hinman CEOs student majors



GOAL 3: THE UNIVERSITY WILL SET HIGH EXPECTATIONS FOR STUDENT SUCCESS AND WILL ACT TO ENSURE THAT UNDERGRADUATE STUDENTS MEET THEIR EDUCATIONAL GOALS IN TIMELY FASHION.

As an Honors program, EIP will represent the most accomplished collection of students on campus. Mtech is experienced in mentoring this caliber of students as represented by Hinman CEOs. With an average GPA of 3.6 and a long list of accolades including Banneker/Key full scholarships, President’s scholarships, Dean’s scholarships, Gemstone members, Honors students, Scholars students, etc., Hinman CEOs deliver excellence in and out of the classroom. While a number of students elect to launch new ventures prior to, or upon, graduation, Hinman CEOs are also thriving in corporations, typically in entrepreneurial roles including product management, new venture financing, and intellectual property law. Goldman Sachs, Google, and Microsoft are well served with Hinman CEOs alumni. Students are also pursuing graduate work at prestigious universities including Harvard, Yale, Princeton, MIT, and Stanford. With EIP students, we are excited to mentor them towards these high levels of achievement.

GOAL 4: PRIMARILY THROUGH THE LEADERSHIP OF THE STUDENT AFFAIRS DIVISION THE UNIVERSITY WILL CREATE A NOURISHING CLIMATE THAT PROMOTES THE PERSONAL GROWTH OF STUDENTS AND ENCOURAGES THEM TO PARTICIPATE IN THE WEALTH OF SHARED SOCIAL, ATHLETIC, CULTURAL, AND TRADITIONAL ACTIVITIES THAT PROMOTE A SENSE OF COMMUNITY AMONG THE STUDENT BODY.

EIP will provide an enriching community for its students as they participate in a myriad of events and activities during their time in the program. Each fall will begin with an orientation event that may include a ropes course and dynamic team building activities. Cookouts, socials, and the annual Technology Start-Up Boot Camp will be hallmarks of the fall. Spring will bring seasonal social activities including flag football games, team bowling, and the annual University of Maryland \$75K Business Plan Competition. With friends and teammates living together, cross disciplinary teams develop naturally as students’ skill sets mix and match to develop the next great idea. Lectures and weekly speaker series provide wonderful networking opportunities. Students gain confidence in their abilities to take the leap to launch innovations and they benefit from each others’ successes and challenges.

Performance Measurement

A performance measurement system will be developed and implemented for the EIP, its students, and its alumni. Beyond the normal course evaluations, a program level evaluation will be conducted to measure the performance of students in the program, the performance of staff and faculty involved with the program, and the performance of alumni of the program. The methodology will involve a longitudinal analysis where students are surveyed at program entry, at the completion of the first year (as a midpoint measure), and upon graduation from EIP (in addition to alumni surveys). Mtech is experienced in the development and management of such surveys based on the Hinman CEOs program’s similar method (Green & Johnson, 2008).

Resource Requirements

The required resources to support the launch and operations of EIP include one-time, startup costs and recurring annual costs. The net annual cost to the Provost of the program is \$175,000 for FY2011 once the program is launched, and Mtech’s and Engineering’s financial contributions are deducted from the \$235,000 total annual cost. Allocation among the items may vary within the fixed total costs as indicated in table 3.

Table 3. EIP budget

<i>Item</i>	<i>Total Cost</i>	<i>Department Contribution</i>	<i>School Contribution</i>	<i>Provost Contribution</i>
Director	\$100,000	-	-	\$100,000
Admin. Asst.	\$35,000	-	-	\$35,000
Faculty	\$40,000	\$10,000	-	\$30,000
Workshop & activities	\$10,000	-	-	\$10,000
IT, marketing, finance, HR, & mgt. support	\$50,000	\$25,000	\$25,000	-
TOTAL	\$235,000	\$35,000	\$25,000	\$175,000

- Annual costs
 - Director: \$100,000
 - With a director profile similar to that of the Hinman CEOs Program and Hillman Entrepreneurs Program, this salary is in line with current salaries.
 - Administrative assistant: \$35,000
 - The Hinman CEOs administrative assistant supporting 90 juniors and seniors each year is a full-time requirement. To support a larger program of 150 students, with the younger status of these students expected to require more attention and support, a full-time administrative assistant is critical to the day-to-day operations of the program.
 - Faculty: \$40,000
 - The EIP Director will instruct select courses part of their normal compensation. This course instruction cost is for additional instructional support.
 - Workshop & activities: \$10,000
 - Based on 150 students per year in the program, a \$66 annual budget per student is the minimum to support teambuilding and community activities. As a measure of comparison, the Hinman CEOs Program spends approximately \$250 annually per student in these areas.
 - IT, marketing, finance, HR, & management support: \$50,000
 - As a non-academic unit, Mtech will not receive any of the tuition contributions from EIP students. This line item is the only source of contributions to Mtech to assist in supporting these initiatives. The total labor costs to Mtech to support IT, marketing, finance, HR, and management support is anticipated to be \$50,000 annually.
- Nonrecurring start-up costs
 - Offices for Director and Administrative Assistant, in the residence hall
 - Conference room in residence hall for student and staff use

The total cost of EIP is \$235,000 for FY2011 once the program is launched. At \$1,567 per student annually, this is approximately 56% of the per student cost of the Hinman CEOs Program. The lower cost of operations is attributable to serving a larger group of students with 150 per year versus 90 for Hinman CEOs, while keeping the level of full-time staff to only one director and one administrative assistant.

Next Steps

Mtech is committed to undergraduate entrepreneurship education as part of its venture creation and education mission, is experienced in developing similar programs including Hinman CEOs and Hillman Entrepreneurs, and has introduced a host of successful, innovative undergraduate entrepreneurship courses, competitions, and activities. The new EIP living-learning entrepreneurship experience for freshmen and sophomores will improve student recruitment, enhance student enrichment, and contribute to the overall quality and rankings of the University of Maryland.

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