

Cover Sheet: Request 11288

Engineering Innovation Minor

Info

Process	Minor New/Close Ugrad
Status	Pending
Submitter	Sander,Erik J esander@eng.ufl.edu
Created	11/10/2016 2:02:06 PM
Updated	2/20/2017 8:39:47 AM
Description of request	<p>The Engineering Innovation Minor is offered to undergraduate students from all Herbert Wertheim College of Engineering majors. The Engineering Innovation Minor develops in undergraduate engineering students a deep and comprehensive skill set that can be applied in innovation-driven enterprises as well as in "intrapreneurial" initiatives within larger organizations.</p> <p>The Engineering Innovation Minor's core themes involve creativity, the study of engineering-focused innovations, technological entrepreneurship, leadership of teams focused on technology and engineering, engineering project management, and professional development for engineers via an engineering innovation-related internship.</p> <p>The Engineering Innovation Minor is differentiated by its targeted focus on delivering engineering-oriented learning outcomes specific to engineering undergraduate students. Curriculum content and course instruction is characterized by how engineering-based innovations are conceived, how engineering-based products and services are commercialized, and how technological entrepreneurship and innovation practices are applied in the engineering profession.</p>

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	ENG - Engineering - General 011940001	van Oostrom, Hans		11/18/2016
Added Engineering Minor Letter of Support by CEI - August 2016.pdf					11/10/2016
College	Approved	ENG - College of Engineering	Caple, Elizabeth		2/15/2017
Replaced Eng Innovation Minor Description.doc					12/10/2016
Added Eng Innovation Minor Description-12-10-16.doc					12/10/2016
AP for Undergraduate Affairs Notified	Notified	PV - Associate Provost for Undergraduate Affairs			2/15/2017
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/15/2017
No document changes					
Office of the Registrar					
No document changes					

Step	Status	Group	User	Comment	Updated
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Minor|New for request 11288

Info

Request: Engineering Innovation Minor

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The Engineering Innovation Minor's core themes involve creativity, the study of engineering-focused innovations, technological entrepreneurship, leadership of teams focused on technology and engineering, engineering project management, and professional development for engineers via an engineering innovation-related internship.

The Engineering Innovation Minor is differentiated by its targeted focus on delivering engineering-oriented learning outcomes specific to engineering undergraduate students. Curriculum content and course instruction is characterized by how engineering-based innovations are conceived, how engineering-based products and services are commercialized, and how technological entrepreneurship and innovation practices are applied in the engineering profession.

Submitter: van Oostrom,Hans oostrom@ufl.edu

Created: 12/10/2016 4:22:27 PM

Form version: 2

Responses

Existing Degree Program NameNo Existing Major as Relevant to All Engineering Disciplines

CIP Code14.2701

Proposed Minor NameEngineering Innovation

Proposed Transcript Title (Maximum 50 characters)Engineering Innovation Minor
CodeEI

Credits15

Number of Students 50

Effective Term Earliest Available

Effective Year Earliest Available

Percentage of Credits Available Fully Online50-99%

Percentage of Credits Available Off-Campus50% or more

Rationale and Place in Curriculum To achieve maximum success, future generations of leaders in all engineering professions require a strong engineering foundation rooted in technical competency with increasing emphasis on broader technology innovation skill sets such as leadership, ethics, innovation, entrepreneurship and project management in an engineering centric context. Furthermore, the foundation for achieving professional engineering excellence consists of strong analytical competence, practical ingenuity, creative problem-solving, proactive leadership, and mental agility and dexterity.

Professional excellence is a key component of the Engineering Innovation Minor. It is achieved by learning and developing key attributes of the next generation engineering leader and innovator, applying effective communication skills, and gaining a comprehensive understanding of business and managerial concepts. In addition, professional excellence in all engineering disciplines relies on the application of engineering practitioners' skills when leading teams in order to make informed, ethical decisions when addressing strategic, tactical, and crisis-related situations.

The Engineering Innovation Minor is differentiated by its targeted focus on delivering engineering-oriented learning outcomes specific to engineering undergraduate students. Curriculum content and course instruction is characterized by how engineering-based innovations are conceived, how engineering-based products and services are commercialized, and how technological entrepreneurship and innovation practices are applied in the engineering profession. As such, this Minor does not overlap with other offerings, specifically those of the Warrington College of Business Administration Entrepreneurship and Innovation Center or UF Innovation Academy.

Impacts on Other Programs There is no impact on other programs or departments.

All engineering undergraduates are required to take Professional Communication for Engineers-ENC 3246.

The other existing courses (Engineering Innovation-EGN 4643, Engineering Entrepreneurship-EGN 4641, Engineering Leadership-EGS 4038, Fundamentals of Engineering Project Management-EIN 4905, the department specific internship courses listed) are all offered as electives for engineering majors.

The two new courses offered (Fundamentals of the New Engineer-EGS 2XXX, Engineering Internship-EGN 4949) will be offered as electives for the majors.

As such, the courses offered as part of this minor do not create a need for more required or elective courses outside of existing engineering programs.

UF Course Catalog: Engineering Innovation Minor

Graduates with the Engineering Innovation minor across all engineering disciplines are better prepared to enter the market place as innovators and leaders in myriad technology-centric industries. The minor provides the academic background for graduates to think more creatively, innovatively, and entrepreneurially. Graduates are more rounded with innovation skill sets that enhance career advancement opportunities - for employers or in their own entrepreneurial pursuits.

About the Engineering Innovation Minor

- **College:** Herbert Wertheim College of Engineering
- **Credits:** 15, completed with a minimum 2.8 combined GPA

The curriculum enhances the engineering discipline with courses in engineering attributes, communications, innovation, entrepreneurship, creativity, leadership, and project management – completed with an internship/co-op experience. There is a core requirement of 15 credit hours. The Engineering Innovation Minor is offered to undergraduate students from all Herbert Wertheim College of Engineering majors, but the student can only complete one UF Innovation minor. A student must not have been awarded the Engineering Innovation Certificate, because a student cannot earn both the minor and the certificate. The UF Engineering Innovation Institute oversees the Engineering Innovation Minor.

The Engineering Innovation Minor develops in undergraduate engineering students a deep and comprehensive skill set that can be applied in innovation-driven enterprises as well as in “intrapreneurial” initiatives within larger organizations. The Engineering Innovation Minor’s core themes involve creativity, the study of engineering-focused innovations, technological entrepreneurship, leadership of teams focused on technology and engineering, engineering project management, and professional development for engineers via an engineering innovation-related internship.

This 15 credit hour minor complements the technical training in the student’s major discipline by providing the tools and knowledge required for engineering innovators.

Required Courses	Credits
ENC 3246 Professional Communication for Engineers	3
EGN 4643 Engineering Innovation	3
Two of the following (each course is 3 credit hours): EGS 2XXX Fundamentals of the New Engineer, <i>or</i> EGN 4641 Engineering Entrepreneurship, <i>or</i> EIN 4905 Divergent Thinking, <i>or</i> EGS 4038 Engineering Leadership, <i>or</i> EIN 4905 Fundamentals of Engineering Project Management	6
EGN 4949 Engineering Internship/Co-op, <i>or one of the following internship / co-op offerings specific to departments:</i> CGN4949, CIS4940, CIS4949, EAS4949, ECH4948, ECH4949, EEL4948, EEL4949, EGN5949, EMA4949, EML4945, EML4949, ENU4949, ENV4949, ESI4949	3

External Consultation Results (departments with potential overlap or interest in proposed course, if any)

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

Department	Name and Title
_____	_____
Phone Number	E-mail
_____	_____
Comments	

TO: University Curriculum Committee

FROM: Jeff City, Ed.D.

DATE: February 16, 2017

RE: Proposed Engineering Innovation Minor

After reviewing the materials for the proposed Engineering Innovation minor, listed below are several concerns regarding this credential.

1. Additional Innovation minor(s) would overlap in curriculum and offer a duplication of services of an already proven curriculum.
 - a. The description of the engineering innovation minor encompasses all of the tenants we already employ in the Innovation Minor. For example, the engineering innovation minor description reads, “The curriculum enhances the engineering discipline with courses in engineering attributes, communications, innovation, entrepreneurship, creativity, leadership and project management –completed with an internship/co-op experience”. Versus the IA minor description that reads, “This minor provides undergraduates in the Innovation Academy an overview of the major functional elements of innovation – creativity, entrepreneurship, ethics, and leadership – and an opportunity to apply them in a multidisciplinary project” hardly any distinction is made and almost all of the core concepts are duplicated.
 - b. Three course representing (9 hours) of the proposed Engineering Innovation Minor are already offered in the current Innovation Minor (EGN4641, EGS4038 & EIN4905)
2. Major specific Innovation minors would lose the multidisciplinary value that is inherent in innovation.
 - a. A multidisciplinary approach brings more credibility to innovation studies. Further, not only are some of the most innovative students not found in one discipline, but creating opportunities to enhance the number of diverse backgrounds and problem-solving styles tends to enhance the innovative classroom and any co-curricular programs.
 - b. Innovation is about accessing existing capabilities across silos and disciplines, combining them in new and different ways. Allowing discipline specific Innovation minors would promote competition vs. collaboration environment especially in enrollment and delivery of services.

3. If the engineering innovation minor were approved, it would set a precedent for other colleges to offer an Innovation minor within their college.
 - a. This would create an environment where students would be cannibalized into their major specific innovation minors where it would continue to diminish the diversity and the student's completion rate of the IA Innovation Minor.
 - b. Incoming students applications would decline because of investigation and advertisement of additional innovation minors by colleges would ensue.

4. Several other concerns arise with the notion of the engineering and other discipline specific Innovation minors being offered.
 - a. The focus of each program from a pure innovation point of view is lost
 - b. The redundancies that occur across the campus due to separate centers functioning in similar roles
 - c. The dispersion of resources for innovation that could be otherwise be unified for greater impact
 - d. Lack of coordination of the university among donors interested in innovation
 - e. The use of faculty only in one specific area rather than a shared concept of knowledge and research
 - f. Potential confusion among students as to what constitutes innovation.

5. The current IA student morale would suffer given other students can now obtain a minor in Innovation without being connected to the Innovation Academy.
 - a. Additional Innovation minor(s) offered removes the exclusivity of the Innovation Academy minor. Often a huge selling point of the program.

However, currently the Innovation Academy does not have the capacity with current resources (faculty and staff) to offer the innovation minor to the Engineering students who would desire to obtain this credential. Additionally, the College of Engineering has agreed that no Innovation Academy student would be accepted to pursue this minor and the Engineering Innovation Institute and the Innovation Academy leadership will jointly review the Engineering Innovation minor after three years to investigate any challenges that may have arisen and address them in a collaborative effort. With this in mind, I will support this minor with strong reservations.

Regards,



Jeff City, Ed.D.
Innovation Academy, Director



Warrington College of Business
Center for Entrepreneurship and Innovation

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August 10, 2016

To whom it may concern:

I am writing regarding the University of Florida Herbert Wertheim College of Engineering's plans to introduce an undergraduate Engineering Innovation Minor for UF engineering students. We have always viewed the Herbert Wertheim College of Engineering as a partner and collaborator on many entrepreneurship and innovation initiatives. Given the proposed undergraduate minor is not in direct conflict with the UF Entrepreneurship and Innovation Center (EIC) offerings, we support the Herbert Wertheim College of Engineering's proposal to introduce an Engineering Innovation minor.

If you have any further questions please feel free to contact me by phone at (352) 273-0330 or at the following e-mail address: jamie.kraft@warrington.ufl.edu.

Sincerely,

A handwritten signature in black ink that reads 'Jamie Kraft'.

Director