From:	Smith, Randy
To:	Kennedy, Kristina; Tomasko, David
Cc:	Andridge, Rebecca; Reed, Katie; Smith, Randy; Duffy, Lisa; Orr, James; Quinzon-Bonello, Rosario; Prud"homme, Andrea; Croxton, Keely; Howard, Ayanna; Makhija, Anil; Jones, Norman; Gilliam, Melissa
Subject:	Proposal to add a Software Innovation Track to the Integrated Business and Engineering undergraduate program
Date:	Thursday, July 13, 2023 1:13:00 PM
Attachments:	image001.png

David and Kristina:

The proposal from the College of Engineering and the Fisher College of Business to add a Software Innovation Track to the Integrated Business and Engineering undergraduate degree program was approved by the Council on Academic Affairs at its meeting on July 12, 2023. Thank you for attending the meeting to respond to questions/comments.

No additional level of internal approval is necessary. This action will be included in the Council's next Annual Activities Report to the University Senate (July 2023).

The Office of the University Registrar will work you with any implementation issues.

Please keep a copy of this message for your file on the proposal and I will do the same for the file in the Office of Academic Affairs.

If you have any questions please contact the Chair of the Council, Professor Rebecca Andridge.1 or me.

I wish you success with this important new program development.

Randy

THE OHIO STATE UNIVERSITY

W. Randy Smith, Ph.D.
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Memo

To: Randy Smith, Vice Provost for Academic Programs
From: Rosie Quinzon-Bonello, Assistant Dean for Curriculum and
Date: July 6, 2023
Re: Integrated Business and Engineering – *Software Innovation* Track Proposal

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On May 15, 2023, the College of Engineering Committee for Academic Affairs (CCAA) voted unanimously to implement a one-year pilot and subsequent review of the following concentration track in Integrated Business and Engineering Honors Program (IBE):

- *Software Innovation*

Should you have any questions regarding this proposal, please contact Kristina Kennedy (kennedy.443) .

Yours sincerely,

Rosie Quinzon-Bonello

New Concentration Track Proposal
Integrated Business & Engineering – Software Innovation

Proposal
New Track in the Integrated Business & Engineering (IBE) Honors Program entitled Software Innovation
June 5, 2023

1. **Name:** New Track in the IBE: Software Innovation
   Proposed Start Date: AU23
   Unit / College: College of Engineering & Fisher College of Business

2. **Rationale**

Describe the rationale/purpose of the track.

The new proposed Software Innovation track in the Integrated Business & Engineering Honors program (IBE-SI) will prepare Ohio State University students to lead the world's software future. The need is urgent as the growth in software products and services is creating demand for a workforce skilled in software innovation, sales, and marketing. As part of the new Center for Software Innovation (funded by the $110M gift from the Timashev Family Foundation), this new IBE-SI track will serve as the pilot academic arm of the Center. This track will serve as a multi-modal cross-college interdisciplinary program for undergraduate students to gain critical skills in software innovation, product management, sales, and marketing. The program will create cutting-edge learning opportunities, internships, and exposure to industry leaders and entrepreneurs enabling Ohio State to prepare students for careers in this space. This growth in talent will enable the Midwest to become the country's hub for software innovation.

The IBE-SI track will leverage a variety of learning modalities. Students will learn about software innovation product management, sales, and marketing via the interdisciplinary nature of the program, seminars, hands-on learning, lectures, new electives, and internships. Program development will be led by the Fisher College of Business and the College of Engineering in collaboration with the Center for Software Innovation. The course directors will model the curriculum from the successful Integrated Business & Engineering (IBE) honors program (https://engineering.osu.edu/integrated-business-engineering-honors-program). Ongoing assessment will lead to iterative improvement ensuring that the students' skills reflect workforce needs.

Describe how assessment data has served as an impetus for the proposal.

This proposal draws on application and enrollment data from the Integrated Business & Engineering Honors program. The high demand from students applying to this program has resulted in an average admission rate of 10-15% over the past 3 years. Demand is high from

students to gain access to this unique educational offering. This new IBE-SI track will draw from the large IBE talent pool of honors business and honors engineering applicants to attract students for enrollment.

Additionally, with the strong support of the $110M Timashev Family Foundation gift, the program will have access to programmatic funding to offer experiential learning opportunities, scholarships, and hire new faculty in both the Fisher College of Business and the College of Engineering to engage with IBE-SI students and the Center for Software Innovation.

Industry recruitment of IBE graduates remains high with a 3-year historical placement rate of 100% for IBE graduates entering the workforce.

Given this data, there is high confidence in (1) the ability to fill the program at maximum student capacity of 36, (2) funding to provide experiential learning to supplement course work and (3) the career placement for IBE-SI graduates entering the workforce.

Identify any unique characteristics or resources that make it particularly appropriate for Ohio State to offer the proposed new track.

Modeled after one of Ohio State's most innovative programs, The Integrated Business & Engineering (IBE) Honors program, the IBE-SI track will leverage the existing course structure and faculty leads to deliver an excellent educational experience. Started 10 years ago, the IBE program selects a cohort of 36 students each year for admission. Across all four academic years, the program maintains 144 total students. IBE's challenging curriculum prepares the next generation of leaders to communicate across business and technical domains and to identify and solve complex problems across diverse sectors. The IBE program provides an ideal model for IBE-SI because it has critical attributes such as experiential learning, professional networking, and access to industry leaders and entrepreneurs.

The newly developed IBE-SI will create an integrated business and engineering curriculum with an interdisciplinary course sequence focusing on software innovation, product management, sales, and marketing. Classroom learning will be complimented by experiential learning, internships, professional development, networking, and seminars.

Cite the benefits for students, the institution, and the region or state.

Ohio State is one of only a few universities to offer this type of educational programming. Other offerings come from University of California Berkeley, Georgia Tech, University of Illinois, Lehigh, and Purdue. Ohio State has a competitive advantage as one of the longest running cross-college IBE programs. This program raises the visibility of Ohio State among companies looking for talent in this region and/or looking to establish operations in Ohio.

3. Relationship to Other Programs / Benchmarking

Describe current major and minor programs in the department(s) and how they relate to the proposed track.

The nearest comparable offering is for Engineering Majors to pursue a Business Minor or Business Majors to pursue an Engineering Sciences Minor. However, these paths do not offer supplemental extracurricular opportunities, networking, and professional development opportunities, and do not follow a cohort model (small class sizes, etc.) as the IBE and IBE-SI tracks do.

Identify any overlaps with other programs or departments within the university. Append letters of concurrence or objection from related units.

None.

Indicate whether this track within the IBE program was submitted for approval previously. Explain at what stage and why that proposal was not approved or was withdrawn.

This track is the first track proposal for the IBE program and has not been submitted for approval previously.

4. Student Enrollment

Indicate the number of students you anticipate will take this track.

We have every confidence that the track will fill a complete honors cohort of ***36 students per year*** based on demand for the existing program and the overwhelming interest in computer science and software related majors. We have secured acceptances from 36 additional IBE incoming first-year students that will be transferred into the SI track upon approval; ideally at the start of Autumn 2023.

Rising first-year students who are admitted to OSU and admitted to Honors are invited to apply to the IBE program. With the pilot IBE-SI track launching in Autumn 2023, in this year's application, students were able to indicate a preference for the standard IBE program or the new IBE-SI track. Applicants are required to respond to several prompts covering the following: (1) leadership experience, (2) significant mentor impact on their lives, (3) what they want to gain from IBE (or IBE-SI) and (4) what they will bring to the IBE or IBE-SI cohort. Application materials are reviewed and scored. Top applicants are offered admission and a waitlist is maintained.

Looking ahead, admission to both IBE tracks will occur in the same process as before. No attempt is made to steer or shape the program towards majors – any engineering or business major has equal opportunity to apply. The goal is to fill each track with equal numbers of engineering and business students to main a 50%-50% ratio.

5. Curricular Requirements

As with the IBE program, IBE-SI students will pursue the honors program alongside traditional business and engineering majors offered by each college. The IBE-SI students will pursue a core honors course sequence as shown in Figure 1 and described below. All core courses in Figure 1 and Section 1 are taken together as a cohort. No changes to the learning outcomes in these courses are proposed but the topics used to attain the outcomes will be tailored to each track; for example, company-sponsored projects for the new IBE-SI Capstone will be sourced from software companies primarily. The capstone courses for IBE-SI will be developed as honors versions of CSE capstone design (proposed as CSE 5916H and CSE 5917H) instead of ENGR 5901-02 for the regular IBE track.

Figure 1. Core IBE Curriculum Structure.

(1) Six IBE core courses: ENGR 1281H (First-Year Engineering Practicum), ENGR 1282H (IBE Cornerstone), BUSMHR 2400H (Competitive Strategy Seminar), BUSMHR 3400H (Innovation Management Seminar), ENGR-CSE 5916H/5917H (Two-Semester Honors Computer Science & Engineering Senior Capstone) with credit hours as noted:
   a. ENGR 1281.01H First-Year Engineering Honors; 5 credit hours
   b. ENGR 1282.03H IBE Cornerstone; 3 credit hours

c. BUSMHR 2400H; 1 credit hour
d. BUSMHR 3400H; 1 credit hour
e. CSE 5916H IBE-SI Capstone; 3 credit hours
f. CSE 5917H IBE-SI Capstone; 3 credit hours

For engineering students, the first year and capstone courses overlap with curricular requirements in their major. There is no overlap for business students in this section.

The key curricular changes are within the *minor course offerings* as noted in Sections 2-4. All courses are 3-credit hour courses unless otherwise noted. (For reference, BUSML is Business Marketing & Logistics, BUSOBA is Business Operations & Business Analytics, BUSFIN is Business Finance, ENGR CSE is Engineering Computer Science Engineering.)

(1) IBE-SI Business Majors will earn a Computer Science Engineering Minor

a. Six required courses: BUSML The Economics & Marketing of Software, BUSOBA Introduction to Software Product Management & Innovation, BUSFIN Emerging Software: FinTech, AI, ML, ENGR CSE Programing (Data Structures), ENGR CSE Algorithms, and ENGR CSE Systems 1.5 (4 credit hours).

(2) IBE-SI Engineering Majors (non-CSE) will have a *choice* of earning either a Business Minor or Computer Science Engineering Minor

a. GEN ED: Principles of Microeconomics
b. Six required courses for ***Computer Science Engineering Minor***: BUSML The Economics & Marketing of Software, BUSOBA Introduction to Software Product Management & Innovation, BUSFIN Emerging Software: FinTech, AI, ML, ENGR CSE Programing (Data Structures), ENGR CSE Algorithms, and ENGR CSE Systems 1.5 (4 credit hours).
c. Six of the following for ***Business Minor***:
    i. All (3) of the following: BUSML The Economics & Marketing of Software, BUSOBA Introduction to Software Product Management & Innovation, BUSFIN Emerging Software: FinTech, AI, ML,
    ii. Select (3) of the (4) following: **AMIS 2000** Foundations of Accounting, **BUSFIN 3220** Business Finance, **BUSMHR 3200** Organizational Behavior & HR, **BUSOBA 3230** Intro to Operations Management

(3) IBE-SI Computer Science Engineering Majors will earn a Business Minor

a. Six of the following for ***Business Minor***:
    i. All (3) of the following: BUSML The Economics & Marketing of Software, BUSOBA Introduction to Software Product Management & Innovation, BUSFIN Emerging Software: FinTech, AI, ML,
    ii. Select (3) of the (4) following: **AMIS 2000** Foundations of Accounting, **BUSFIN 3220** Business Finance, **BUSMHR 3200** Organizational Behavior & HR, **BUSOBA 3230** Intro to Operations Management

To further visualize the minor offerings, see Table 1 (new courses to be developed noted in *red* text; no course numbers have been assigned yet).

	IBE-SI Track
BUS Majors earn ENGR CSE Minor	BUSML: The Economics & Marketing of Software BUSOBA: Introduction to Software Product Management & Innovation BUSFIN: Emerging Software: FinTech, AI, ML ENGR CSE 2122: Programming (Data Structures) ENGR CSE 2321: Algorithms CSE 3430: Systems 1.5 (4 cr hrs)
ENGR CSE Majors earn BUS Minor	GEN ED: Principles of Microeconomics (double count) BUSML: The Economics & Marketing of Software BUSOBA: Introduction to Software Product Management & Innovation BUSFIN: Emerging Software: FinTech, AI, ML Choose (3) of the following: **AMIS 2000** Foundations of Accounting **BUSFIN 3220** Business Finance **BUSMHR 3200** Organizational Behavior & HR **BUSOBA 3230** Intro to Operations MGMT
ENGR Majors (non-CSE) earn either a BUS Minor or CSE Minor	**BUS Minor:** GEN ED: Principles of Microeconomics (double count) BUSML: The Economics & Marketing of Software BUSOBA: Introduction to Software Product Management & Innovation BUSFIN: Emerging Software: FinTech, AI, ML Choose (3) of the following: (Add Course #s) **AMIS 2000** Foundations of Accounting **BUSFIN 3220** Business Finance **BUSMHR 3200** Organizational Behavior & HR **BUSOBA 3230** Intro to Operations MGMT **CSE Minor:** BUSML: The Economics & Marketing of Software BUSOBA: Introduction to Software Product Management & Innovation BUSFIN: Emerging Software: FinTech, AI, ML ENGR CSE 2122: Programming (Data Structures) ENGR CSE 2321: Algorithms CSE 3430: Systems 1.5 (4 cr hrs)

Table 1: IBE Course Requirements to complete the designated minor.

Upon completion of these requirements along with those of their BS degree program, students graduate with "Honors in Integrated Business and Engineering" on their diploma as well as either a minor in Business or a minor in Computer Science Engineering.

6. Honors Requirements

The new IBE-SI track will meet the updated Honors Program Standards in the following ways:

(1) Offer the standard ***First-Year Survey with Honors Modules*** in addition to a student-led-student-run IBE First-Year Development Program (FDP) offered each Autumn semester. The intent of the FPD is to introduce the extent and opportunities of IBE to incoming first-year students. This program is outside of class and voluntary but supplements the traditional Survey course as it offers a near-peer mentor experience for students.

(2) ***18 credit hours of Honors quality courses are required.*** Many of these credits are obtained via the "IBE-SI Core Courses" including ENGR 1281H (5 cr), ENGR 1282H (3 cr), BUS 2400H (1 cr), BUS 3400H (1 cr), ENGR 5916H (3 cr), ENGR 5917H (cr) for a total of 16 honors credits. Only one additional honors course will be required for students to meet the 18-credit hour standard.

(3) Experiential learning via the new IBE Treks (company-sponsored visits to explore career paths and / or sponsored team case study competitions) along with internships and co-ops will be offered for students to opt-in to support their ***ePortfolio requirement***.

(4) ***Honors Reflection*** will be achieved via the mandatory 5916H / 5917H 2-semester IBE CSE Honors Capstone sequence. In this course, students work in teams on company sponsored real-world projects to solve problems, discovery opportunity and create value. The course leverages previous coursework, IBE Trek experiences, along with internships and co-ops and personal experiences.