October 18, 2018

Sarah Mangelsdorf, Provost
Office of the Provost
University of Wisconsin - Madison

William Karpus, Dean
Graduate School
University of Wisconsin - Madison

Dear Provost Mangelsdorf and Dean Karpus,

At the October 17, 2018 meeting of the College of Engineering Academic Planning Council, the attached Notice of Intent (NOI) for the proposed MS program “Design + Innovation” was recommended for approval. The College of Engineering, serving as the lead college for this interdisciplinary program, accepts the recommendation of moving the NOI forward for approval by the Graduate Faculty Executive Committee and UAPC.

Additional letters of support from the School of Human Ecology, iSchool, School of Business and the School of Education follow.

This interdisciplinary program will provide students an opportunity to work in interdisciplinary teams to solve complex problems that are desirable from a human point of view, while being technologically feasible and economically viable. Students will leave the program with design thinking strategies and tools that elevate their ability to create meaningful solutions and enhance their professional practices in their chosen field.

We are now requesting approval from the Graduate Faculty Executive Committee and UAPC.

Thank you for considering this request.

Sincerely,

James P. Blanchard
Executive Associate Dean
jake.blanchard@wisc.edu
Notice of Intent
Master of Science in Design + Innovation

New Major Program

Degree/Plan: Master of Science in Design + Innovation
Primary Contact: Executive Associate Dean Jake Blanchard, College of Engineering
Academic Home: College of Engineering
Delivery: Accelerated, On-campus, 12-18 months

Executive Summary

The UW-Madison College of Engineering is submitting a Notice of Intent (NOI) to create a new graduate major entitled “Design Plus (+) Innovation. The major will be housed in Dean’s Office of the College of Engineering and is a collaboration between the College of Engineering, School of Human Ecology, Wisconsin School of Business, School of Education, and the Information School in the College of Letters and Science. This interdisciplinary approach is essential to the program’s ability to combine science, creativity and innovation. The program will provide students with design thinking strategies and tools, preparing graduates “to solve problems that rational methods won’t necessarily solve, particularly in a climate of ambiguity and uncertainty.”

Importance of Offering

The Harvard Business Review recently described how employers are actively seeking graduates with design skills. For example, IBM Design is on track to hire 1,000 designers and G.E. Healthcare (a Wisconsin company) and Samsung have made design thinking part of their strategic mission. Nationally, between May 2017 to May 2018, over 26,000 jobs were posted for jobs that required a master’s degree and skills in design thinking, product design, creative design or interaction design. Locally, employment opportunities in interdisciplinary design range from the state’s many product manufacturers, such as S.C. Johnson and Harley-Davidson, to product development companies like Design-Concepts, IDEO, i3 Product Development, Frog and Continuum. Because of these trends and opportunities, many major universities have an interdisciplinary design program, including Stanford, MIT, University of Michigan, University of Illinois, Northwestern, University of Minnesota, Virginia Tech and the University of Washington.

Given the demand for master’s training in design, the University of Wisconsin-Madison will leverage the design and innovation efforts across the campus by bringing together the Design Thinking Initiative in the School of Human Ecology (SoHE), the prototyping and manufacturing expertise in the College of Engineering (CoE), the corporate and entrepreneurial activities in the Wisconsin School of Business (WSB), and the user experience and data analytics capabilities in the Information School (iSchool) to offer a new interdisciplinary Master of Science in Design + Innovation. This program uses design thinking as a non-linear, collaborative process for systemic transformation of services, products and processes. Students will work in interdisciplinary teams to solve complex problems that are desirable from a human point of

---

3 Burning Glass Technologies
view, while being technologically feasible and economically viable. Students will leave the program with
design thinking strategies and tools that elevate their ability to create meaningful solutions and enhance
their professional practices in their chosen field, whether that is engineering, business, human-centered
design, software development, business ownership, and beyond.

The program expects to enroll up to 100 students per year by the fourth year after implementation. A
new course to be used in the program was also piloted in Summer 2018. 21 students enrolled for this first
offering, illustrating initial student demand and available audience at UW-Madison.

Targeted career paths for graduates include:

- **Coders and Engineers**: Designers who can code or engineer possess a powerful set of tools.
  These designers have the skills to conceive new ideas and the ability to launch new apps and
  products quickly into market.
- **Entrepreneurs**: People with a background in design who are interested in pursuing
  entrepreneurial careers.
- **Researchers**: Designers who are able to combine traditional methods with real-time data to
  reveal user behavior.
- **Strategists**: Designers who look at the business model, channel strategy, marketing, supply
  chain, etc. for truly disruptive innovation.
- **Social Innovators**: Designers who strive to create maximum positive impact on the planet by
  collaborating with entrepreneurs and NGOs to bring new innovations to those most in need.

Nationally and in Wisconsin, design-related occupations show up in the top tier of job openings for
design skills, listed as Product Designers, User Experience (UX) Designers, Human Factors Engineers,
Product Managers, Software Developers, and Mechanical Engineers. Within our state, 52% of UX design
jobs in Wisconsin specifically requested design skills, as did 28% of Manufacturing Engineering positions.
Other common positions include Design Strategists and Human Factors Engineers. This range of career
outcomes requires training from multiple sectors, which UW-Madison is uniquely prepared to offer.
This commitment to wide ranging industries also led to the program’s home in the College of
Engineering, rather than an individual department, to reflect the central leadership and research
commitment to advanced manufacturing and design for diverse industries.

**Unique Place within the UW System Graduate Portfolio**

Although there are a number of design-related programs at the undergraduate level in the UW System,
there are few graduate-level design degrees. Those that exist serve students interested in earning a
credential specific to a discipline (architecture, art, engineering) without the broader intersection of
disciplines that this collaborative program will serve.

UW-Milwaukee offers a number of current design specializations (not degrees) starting with a Master’s
(MArch) in Architecture with a concentration in Ecological Design within its accredited Architectural
program. This MArch is focused on the built environment and “provides students with the tools to
design buildings to be carbon neutral as well a resource-conserving and environmentally non-polluting.”
Milwaukee’s Urban Planning graduate program also offers a Master’s in Urban Planning with a

---

4 Adapted from “5 New Design Careers for the 21st Century,” by Tim Brown
5 Burning Glass Technologies
concentration area in Physical Planning and Urban Design. Finally, UW-Milwaukee’s Master of Arts (MA) in Art has a specialization in Design Entrepreneurship and Innovation. This program is not currently accepting applications however.

Another program with an art-based framework is the hybrid 60-credit MFA in Design offered from UW-Stout’s School of Art and Design. Although cross-disciplinary with graphic, industrial, entertainment, media and interior design elements, this Master of Fine Arts program does not include courses from Business and Engineering, and offers a different credential from an M.S.

The University of Wisconsin-Platteville does have an area of emphasis in Engineering Design within its online Master of Science in Engineering degree. This program provides “the fundamental areas of engineering and...skills to increase efficiencies and design optimal solutions in a variety of engineering and industrial settings” and does not provide the same intersection of business and human-centered approaches as the proposed program for students from multiple disciplinary backgrounds.

Within the University of Wisconsin-Madison, the School of Human Ecology also offers an M.S. and MFA in Human Ecology with named options in Design Studies. These programs are both research and thesis-based. M.S. students select an area of specialization in design history, material culture studies, environment design, or textile science. Students in the MFA typically focus on either Textile and Fashion Design or Interior Architecture with a substantial studio work component. As a partner in this degree, SoHE has assisted in developing a new design degree to support students with a wider interest in design. In fact, through this partnership with the College of Engineering, SoHE can meet one of the strategic goals in its SoHE21 Vision to strengthen their graduate programs by expanding depth and breadth of graduate course work. The MS in Design + Innovation also responds to the College of Engineering’s strategic plan to encourage collaborative, multidisciplinary teaching, recruit students from a variety of backgrounds, and create a challenging, modern, relevant and inclusive curriculum.

Curriculum and Learning Outcomes

The program learning outcomes are:

1. Demonstrate creative, independent problem solving skills and entrepreneurial thinking.
2. Apply design tools and strategies on interdisciplinary teams and projects.
3. Communicate effectively both visually and orally.
4. Implement an iterative design thinking process.
5. Demonstrate a hands-on, iterative process that includes making, creating and designing.
6. Gain depth in a field of study that can be applied in a social, global and design context.
7. Apply principles of ethical and professional conduct in a field experience.

The 30-credit Master’s is designed as a 12-18 month accelerated program with a project-based core curriculum that builds foundational knowledge in design thinking from multiple frameworks, elective courses that allow students to build depth in a design-based subject area, and a portfolio of interdisciplinary problem-solving work in a year-long capstone. The majority of courses are currently available with existing capacity, with several new courses under development. The curriculum outline is as follows:

Required Courses (18 Credits):

- Design Thinking for Transformation (SoHE)
Elective Course Options (12 Credits):

- Design in Virtual Reality - User Experience Design
- Human Factors Engineering - Consumer Strategy and Evaluation
- Strategic Management of Innovation - Venture Creation
- Communicating with Key Audiences - Emerging Issues in New Product Development
- Redesign and Prototype Fabrication - Additive Manufacturing
- Creating Breakthrough New Products - Global Artisans
- The Global Consumer - Graphic Design

The MS in Design + Innovation will also take advantage of a number of spaces that encourage collaboration. UW-Madison’s Wendt Commons is currently under renovation to become flexible studio space for pursuing semester long design projects. Students will also have access to the prototyping equipment available within the College of Engineering’s Makerspace and TEAM-Lab, and the Innovation Lab at the School of Human Ecology. These facilities allow students to work collaboratively on challenging problems using human-centered design practices. These and other experiences will provide active and project-based learning for students working on innovative solutions to real world problems.

Faculty and Staff

The core faculty and staff supporting development of this program include:

- Professors James Blanchard, Robert Radwin, Makerspace Directors Lennon Rodgers and Karl Williamson from the College of Engineering
- Professor Mark Nelson and Faculty Associates Lesley Sager and Michelle Kwasny from the School of Human Ecology
- Professors Anne Massey and John Surdyk from the Wisconsin School of Business
- Professor Kristin Eschenfelder, Information School
- Professor John Hitchcock, School of Education, Division of the Arts

Lee DeBaillie, Director of Accelerated Master’s Engineering Programs, will serve as the administrative program director for the College of Engineering. Michelle Kwasny from the School of Human Ecology will serve as Co-Director. An Executive Program Committee with participation from faculty and staff in all participating departments will provide governance over program and academic issues. An advisory committee will also be established with participation from faculty, industry and alumni. Students will be academically advised by faculty and staff members from the interdisciplinary program team. Student services will be provided through the College of Engineering’s Accelerated Master’s Graduate Student Service Coordinators. Students will have access to UW-Madison’s Handshake recruitment and career event management tool, with additional individual career counseling services (launching in Fall 2018) from the Division of Continuing Studies’ Adult Career and Special Student Services for revenue
programs. Additional school/college career advising services may also be available for graduate students in particular areas of interest (i.e. Engineering Career Services).

Funding

This program is expected to be self-funded through tuition revenue within three years of implementation. Enrollment will begin with 25 students and increase with an additional section of 25 students per year until a capacity of 100 students is met four years after launch. The program will also request non-standard market-based tuition based on the competitive space for this discipline.

Table 2. Enrollment and Direct Program Revenue Projections

<table>
<thead>
<tr>
<th></th>
<th>Development</th>
<th>Launch and Grow</th>
<th>Launch and Grow</th>
<th>Launch and Grow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment</td>
<td>0</td>
<td>0</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Credits taught</td>
<td>0</td>
<td>0</td>
<td>750</td>
<td>1500</td>
</tr>
</tbody>
</table>

Funding for program development is supported by the Schools and Colleges participating in program development, along with additional support from the Division of Continuing Studies. Specifically, the College of Engineering has allocated resources from existing program revenue to fund a program director and a student services coordinator. The School of Human Ecology has also hired the co-director to focus on capstone course development, partnerships, recruitment, and future faculty and staff, and is heavily investing in facilities, curriculum and design initiatives. Memorandums of Agreement for participating schools and colleges to share tuition revenue with participating departments and instructors have been signed. Funding from the Division of Continuing Studies includes market research and analysis, including a market demand study, competitive survey and naming study, and plans to build out marketing strategy and execution plans for program launch in Summer 2020. The DCS Recruitment Team will create and implement program-specific recruiting plans, and support development of websites and other communication materials.
September 24, 2018

James Blanchard, PhD
Professor and Executive Associate Dean
College of Engineering
University of Wisconsin-Madison

Dear Dean Blanchard,

As a partner with the College of Engineering in the creation of a new multi-disciplinary Masters of Science degree in Design + Innovation, the School of Human Ecology (SoHE) and the Department of Design Studies (DS) offer our strong support for the Notice of Intent and leadership in our participating disciplines to plan this innovative program.

The SoHE and the DS Department have reviewed the NOI and are pleased with its collaborative direction. SoHE’s vision is to become a leader in Transformative Design, integrating design thinking into our culture and curriculum. We are eager to contribute to a program that is intentionally designed to transform students from a variety of backgrounds into design thinkers, strategists and leaders on the intersection between design desirability, feasibility, and viability. These skills are actively sought by employers of our graduates. The program will also benefit SoHE’s goals toward Transformative Design Thinking Initiative.

I fully support the efforts of my faculty colleagues to participate in the program planning, course development, executive committee leadership and teaching associated with the new Design + Innovation program. I have also signed a Memorandum of Understanding with the College of Engineering for this partnership. We look forward to offering this exciting new program with you in the future.

Sincerely,

Soyeon Shim
Dean
September 27, 2018

James Blanchard, PhD
Professor and Executive Associate Dean
College of Engineering
University of Wisconsin-Madison

Dear Dean Blanchard,

The faculty of the Information School (iSchool) is pleased to support the Notice of Intent (NOI) for a new multi-disciplinary Masters of Science degree in Design + Innovation. The Executive Committee of iSchool has reviewed and approved our role as expressed in the NOI. We are happy to contribute to a program that is intentionally designed to transform students from a variety of backgrounds into design thinkers, strategists and leaders on the intersection between design desirability, feasibility, and viability. We look forward to offering this new program with you in the future.

Sincerely,

Kyung-Sun Kim
Professor and Interim Director
MEMORANDUM

Date: September 28, 2018

To: James Blanchard, Professor and Executive Associate Dean, College of Engineering

From: Barry Gerhart, Interim Albert O. Nicholas Dean, Wisconsin School of Business

Re: Support for intent to create Masters of Science degree in Design + Innovation

As a partner with the College of Engineering in the creation of a new multi-disciplinary Masters of Science degree in Design + Innovation, the Wisconsin School of Business (WSB) offers our continued support for the Notice of Intent (NOI) and leadership in our participating disciplines to plan this innovative program.

The WSB APC has reviewed the NOI and are pleased with its collaborative direction. We are eager to contribute to a program that is intentionally designed to transform students from a variety of backgrounds into design thinkers, strategists and leaders on the intersection between design desirability, feasibility, and viability. These skills are actively sought by employers of our graduates. The program will also benefit our school’s mission.

I fully support the efforts of my faculty colleagues to participate in the program planning, course development, executive committee leadership and teaching associated with the new Design + Innovation program. The WSB has also signed a Memorandum of Understanding with the College of Engineering for this partnership. We look forward to offering this exciting new program with you in the future.

Copies:
Marty Gustafson, Assistant Dean, Educational Innovation Program Development, DCS
Michelle Kwasny, School of Human Ecology
Lee DeBaillie, Director of Accelerated Master’s Engineering Programs, COE
Enno Siemsen, Associate Dean of Masters Programs, WSB
Ella Mae Matsumura, Senior Associate Dean of Academic Programs, WSB
October 10, 2019

James Blanchard, PhD
Professor and Executive Associate Dean
College of Engineering
University of Wisconsin-Madison

Dear Dean Blanchard,

As a partner with the College of Engineering in the creation of a new multi-disciplinary Master of Science degree in Design + Innovation, the School of Education offers our continued support for the Notice of Intent (NOI) and leadership in our participating disciplines to plan this innovative program.

The School of Education has reviewed the NOI and are pleased with its collaborative direction. We are eager to contribute to a program that is intentionally designed to transform students coming from a variety of backgrounds, into design thinkers, strategists and leaders on the intersection between design desirability, feasibility, and viability. The School of Education has courses related to Graphic Design, Digital Design, Collaborative Problem Solving, and Organizational Theory that could be terrific electives for the proposed Design + Innovation program. We look forward to working with you to identify specific courses that would meet the goals of the program.

John Hitchcock, Associate Dean for the Arts, will work with your team to help with the program planning, course development, and will serve as a liaison to the School of Education departments to provide executive committee leadership and teaching associated with the new Design + Innovation program. The School of Education has also signed a memorandum of understanding with the College of Engineering for this partnership. We look forward to offering this exciting new program with you in the future.

Sincerely,

Diana Hess, PhD
Dean
Karen A. Falk Distinguished Chair of Education

School of Education Office of the Dean
377 Education Building University of Wisconsin-Madison 1000 Bascom Mall Madison, WI 53706-1398
608-262-1736 Fax: 608-265-2512