

# Request for New Degree Program

**Undergraduate**

Institution:

**Iowa State University**

Departments Involved:

**Department of Art & Design, Department of Mechanical Engineering, College of Business**

CIP Discipline Specialty Title:

**Industrial Design**

CIP Discipline Specialty Number:

**50.0404**

Level

**Bachelor** *Bachelor of Industrial Design*

Title of New Program

**Industrial Design**

Degree Abbreviation

**BID**

Approximate Date to Establish Degree

**August 2010**

Contact Person

**Roger Baer** 294-6724 rebaer@iastate.edu

## Please provide the following information

### 1 Describe the proposed new degree program, including the following

#### 1.a. Brief description of the program, a statement of objectives, including the student learning outcomes and how the learning outcomes will be assessed.

Industrial design is the creation and development of concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both user and manufacturer. The industrial designer's unique contribution places emphasis on those aspects of the product or system that relate most directly to human characteristics, needs and interests. This contribution requires specialized understanding of visual, tactile, safety and convenience criteria, with concern for the user. Industrial design links knowledge about technology and the visual arts with knowledge about people. — **Industrial Designers Society of America**

The Bachelor of Industrial Design degree will equip students with the design skills and problem-solving methods necessary to create useful, sustainable, socially and culturally relevant products and interactions.

#### Learning outcomes will include:

Students will have an understanding of how products work; how products can be made to work better for people; what makes a product useful, usable and desirable; how products are manufactured; and how ideas can be presented using state-of-the-art tools.

Students will have in-depth knowledge of social and cultural issues affecting interactions and product user needs and decisions.

Students will, as the result, have the ability to develop new products and interactions for both specific and broadly based societal needs.

Students will have the knowledge necessary to bring these products and interactions to reality through interdisciplinary collaboration within Iowa State University, and through collaboration with select industry and educational partnerships, both within Iowa and worldwide.

Students will have an understanding of the history of industrial design, as well as its relation to human factors and user interfaces.

Students will have a functional knowledge of basic business and professional practice.

Students will have working knowledge of computer-aided drafting (CAD), computer-aided industrial design (CAID), and appropriate two-dimensional and three-dimensional graphic software.

Students will have the ability to investigate and synthesize the needs of marketing, sales, engineering, manufacturing, servicing, ecological and biorenewable responsibility, and to reconcile these needs with those of the user in terms of satisfaction, value, aesthetics and safety.

Students will be able to define problems, variables and requirements; conceptualize and evaluate alternatives; and test and refine solutions through studio-based individual and team learning projects and experiences.

Students will have the ability to communicate concepts and requirements to other designers and colleagues who work with them, to clients and employers, and to prospective clients and employers, by drawing upon verbal and written forms, two-dimensional and three-dimensional media, and levels of detailing ranging from sketch or abstract to fully detailed and specific.

**Learning outcomes would be assessed by:**

Studio-based and lecture-based metrics for interaction and product design creation and development, as codified by the National Association of Schools of Art and Design, the accreditation body of standing in industrial design education.

**1.b. The relationship of the proposed new program to the institutional mission and how the program fits into the institution's, college's, and department/program's strategic plan.**

This proposed undergraduate degree in industrial design, together with the proposed graduate degree in industrial design, will integrate science, technology, social psychology, and design. As such it is congruent with the university's mission to provide a venue for collaboration both within our academic community by fostering cross-disciplinary cooperation, as well as outside the university through collaboration with various corporate entities in the state of Iowa and the world beyond its borders.

Within the College of Design in general, and the Department of Art and Design in particular, one of our current goals is to increase our presence outside the university by cooperation with the business community in order to create partnerships that would facilitate additional research possibilities for our students and faculty. Industrial design in particular is a major that can foster those connections with relative ease. Preliminary discussions have already yielded a number of very positive indications of this potential, and the corresponding revenue streams certainly would be welcome in the current economic environment.

This interaction with industry professionals, both within the state of Iowa and beyond, could also be effected by strategic collaboration with the various Iowa State University outreach entities already in place, which include CIRAS, the Pappajohn Center for Entrepreneurship, IDRO, and ISU Extension.

**1.c. The relationship of the proposed new program to other existing programs at the institution; describe how the proposed program will enhance other programs at the university.**

Within the College of Design itself, the proposed curriculum offers opportunities for collaboration with architecture, graphic design, interior design, landscape architecture, and integrated studio arts in ways that are not presently offered except through individual study. The opportunities for in-depth, hands-on learning and specialization in any of these fields are quite rich. There are numerous ways that these connections would be significant. The major has strong links with human computer interaction, cognitive science, and in particular with graphic design and its many existing courses in web design for e-commerce, time-based multimedia, and motion graphics, to name but a few. Additionally, many areas of mutual interest between interior design and industrial design are clearly evident.

The new major also presents the potential to bring together a number of resources available within the university (such as the new Biorenewables Laboratory for the Bioeconomy Institute, as well as engineering, psychology, marketing and business) with the discipline of the design process in a way that will prove beneficial to all the participants. The unique nature of industrial design, which is by definition a synthesis of many disparate individual areas of study, has immense implications for facilitating this interconnectivity.

Through the proposed curriculum, with its available minors in engineering and business, students will by definition be engaged outside the walls of the College of Design, but the major also presents the chance for faculty as well to collaborate in research with these and other disciplines, in ways that have not been heretofore possible. The fact that these connections could be fostered with no fiscal drain on either entity is also appealing.

**1.d. The relationship of the proposed new program to other existing programs at other colleges and universities in Iowa; including how the proposed program is different or has a different emphasis than the existing programs.**

Industrial design is not currently offered at any institution of higher education anywhere in Iowa. Students choosing to pursue this increasingly important field must leave the state in order to do so. The closest available programs are at the University of Illinois at Urbana-Champaign, the University of Illinois at Chicago Circle Campus, the University of Wisconsin-Stout, Southern Illinois University, or the University of Kansas. There is no program in industrial design in Minnesota, Missouri, North Dakota, South Dakota, Nebraska, or Arkansas, and only one each in Colorado and Texas.

**1.e. Special features or conditions that make the institution a desirable, unique, or appropriate place to initiate such a degree program.**

The College of Design is one of only six design schools in the entire United States with the disciplines of architecture, community and regional planning, landscape architecture, interior design, graphic design, and art all under the same roof, and all readily available for interdisciplinary study. From the college's inception, the only major not present in this impressive array of mutually beneficial disciplines is industrial design. Its addition to the roster would increase the college's opportunities for research, outreach, professional practice, teaching, and, of course, learning.

In its absence, various degree programs have tried to fill the void, with some success. Notably, graphic design has developed interaction design programming at the graduate level, and integrated studio arts and interior design have both pursued courses in the design and fabrication of furniture. Architecture likewise has encouraged students to create products for household use. All of these areas would greatly benefit from the addition of a full-fledged curriculum in industrial design.

**1.f. Does the proposing institution have the personnel, facilities, and equipment adequate to establish and maintain a high quality program.**

The College of Design has most, but not all, of the personnel, facilities and equipment needed to start an industrial design program. We imagine a program that is small, initially, with a first cohort of 20 students building to not more than 60 undergraduates and not more than 20 graduate students.

**Faculty:** The College of Design has several faculty who have worked in product development and many who are engaged in interaction design. In addition, the College of Engineering has faculty with similar interests, and several faculty in engineering and design have status as faculty in HCI. The College of Design will need to hire one new tenured faculty member as the director of this program to initiate and lead the degree programs and engage in industrial design research.

**Facilities:** The teaching labs needed to house this program would be three (3) studios for undergraduates. We should be able to house these studios in the existing square footage, if we are able to maintain the Armory for the use of the College of Design. The college has a new configuration proposed for the existing model shop and expanded digitally driven machines.

**Equipment:** We will require an infusion of more rapid-prototyping equipment and computer-driven equipment. An initial expenditure of approximately \$500,000 is estimated for the necessary equipment. The college is currently rewriting the position of support for prototyping, and this hire will be made with current funds.

**1.g. How does student demand for the proposed program justify its development?**

The college routinely receives inquiries from prospective students about industrial design. A number of our current students and alumni have completed partial/pseudo-industrial design educations within the existing degree programs because it was their only option. During last summer's new student orientation program, we mentioned that we were hoping that these new undergraduate students would have the opportunity to matriculate into an industrial design degree program, and the response was overwhelming. We are confident that student demand justifies the development of the program.

**2 Describe the state and/or national workforce need and/or demand for graduates of the proposed program currently and in the near future (provide documentation about the sources of data used to estimate need and demand.)**

The U.S. Bureau of Labor Statistics states that the demand for industrial designers outweighs the current supply and is expected to increase due to companies continuing to emphasize the quality and safety of their products. Two of the fastest-growing industries for this career path are transportation and medicine. Many employers prefer to hire candidates with experience specifically in industrial design, so at least a bachelor's degree is becoming prerequisite to a career in industrial design.<sup>2</sup>

Increased demand for industrial designers will stem from four factors. One, people will continue to want safe, good-quality products. Two, consumers will demand new products that are easy and comfortable to use. Three, companies will continue to develop high-technology products in medicine, transportation and other fields. Four, global competition among businesses will continue to grow. All these factors will spur the demand for industrial designers. In addition, many job openings will result from the need to replace designers who leave the field.<sup>3</sup>

Many in business and industry have come to realize the critically important contributions of design to business success and industrial innovation. Since 2006, "Business Week" magazine has published an annual issue that focuses on the contributions of the processes and products of industrial design to successful and innovative business. "Fast Company," another business magazine, publishes an annual issue on design, and has a regular monthly design feature. Consumers and the leaders of commerce understand that the issues of economic, social and environmental sustainability are issues of design.

**3 List all other public and private institutions of higher education in Iowa currently operating programs similar to the proposed new degree program. (For comparison purposes, use a broad definitional framework, e.g., such identification should not be limited to programs with the same title, the same degree designation, having the**

**No similar programs exist.** See the attached list of programs in the U.S., and refer to 1.d. above.

- 4. Estimate the number of majors and non-majors students that are projected to be enrolled in the program during the first seven years of the program.**

**d. Undergraduate**

Undergraduate	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Majors	20	40	60	60	60	60	60
Non-Majors							

**f. What are the anticipated sources of these students?**

Current prospective students of the College of Design are one source of students, including students who do not currently matriculate into one of our existing degree programs. Regional students, from Minnesota, Missouri, the Dakotas and Nebraska, all states without industrial design programs, are likely sources. Texas and Colorado are states that each have one industrial design program.

The Department of Architecture at Iowa State University enrolls half of its undergraduate students from outside the state of Iowa.

- 5. If there are plans to offer the program away from the campus, briefly describe these plans, including potential sites and possible methods of delivery instruction.**

There are no plans to offer this program away from campus.

- 6. Has the proposed program been reviewed and approved by the appropriate campus committees and authorities? List them: Listed as the program is reviewed**

Art and Design Department Curriculum Committee

A&D Faculty

Academic Affairs Council, College of Design

COD Faculty

Faculty Senate Curriculum Committee

- 7. List date the program proposal was submitted to the Iowa Coordinating Council for Post High School Education (ICCPHSE) and the results of listserv review**

(THIS WILL BE FILLED IN BY THE PROVOST OFFICE)

**8. Will the proposed program apply for accreditation? When?**

NASAD, National Association of Schools of Art & Design, is the accrediting agency for this program and all programs in the art and design area. NASAD accredits the institution; the Department of Art & Design has a visit scheduled for the Fall of 2011 and the proposed program can be reviewed for "plan approval" because we will not have three years of graduates at that time.

**9. Will articulation agreements be developed for the proposed program? With whom?**

None are planned at this time.

**10. Describe the faculty, facilities, and equipment that will be required for the proposed program.**

See attached document "Positioning the Program."

**11. From where will the financial resources for the proposed program come (List all that apply, e.g., department reallocation, college reallocation, grants, new to the university)?**

<i>Need</i>	<i>Sources</i>	<i>Totals</i>
<b>Program Director Position</b>	<b>College Reallocation</b>	<b>80,000</b>
<b>Lab Technician</b>	<b>College Reallocation</b>	<b>45,000</b>
<b>Assistant Professor</b>	<b>Tuition</b>	<b>60,000</b> Year 3
<b>Lab Equipment</b>	<b>University</b>	<b>500,000</b> 200,000 Year 1 200,000 Year 2 100,000 Year 3

*A financial commitment has been made by the Vice Provost for Research and the Provost's Office to assist in the creation of the "Flex-Lab" for use of this program and others in the College of Design.*

**12. Estimate the total costs/total new costs (incremental increases each year in expenditures) that will be necessary for the next seven years as a result of the new program:**

	Faculty	Equipment	Total Costs	Tuition Revenue
Year 1	-80,000	-200,000	-280,000	+ 96, 320
Year 2		-200,000	-200,000	+ 205,037
Year 3	-60,000	-100,000	-100,000	+137,281
Year 4				+137,281
Year 5				+137,281
Year 6				+137,281
Year 7				+137,281*

\* This figure indicates the amount of tuition revenue after costs, including salary costs for both hires. These figures combine graduate and undergraduate enrollment because the programs will operate in tandem.



**Supplemental materials** (to be used at Iowa State University in the review of the proposal):

**13. Program requirements, including:**

**a.** prerequisites for prospective students:

**They must complete the College of Design Core Design Program, as is required of all students in the college, and meet ISU admission standards for high school graduates.**

**b.** language requirements;

**No language requirements are proposed other than proficiency in English.**

**c.** courses and seminars presently available for credit toward the program;

**DsnS 102, DsnS 131, DsnS 183, DsnS 115, ArtIS 227, ArtH 280, ArtH 281, ArtGR 387, ArtGR 388**, all upper level art history courses and history of design courses. **ES 260** (Thoughts to Things), **ES 265** (Survey of Impacts), **ES 270** (How Things Work), **ACCT 285, BUSAD 250, MKT 340, MGMT 370**

**d.** proposed new courses or modifications of existing courses;

**IN Des 290** (Materials and Visualization Technology core), **IN Des 291** (Materials and Visualization Technology core)  
**IN Des 292** (Industrial Design Studio 1), **IN Des 293** (Industrial Design Studio 2)  
**DsnS 280\*** (Design Thinking), **DsnS 281\*** (Design Methods) , **IN Des 388** (Hist of Ind Des),  
**IN Des 390** (Global Problems), **IN Des 391** (Design and Culture), **IN Des 392** (Industrial Design Studio 3),  
**IN Des 393\*** (Interdisciplinary Studio), **IN Des 480** (Internship), **IN Des 492** (Study Abroad),  
**IN Des 493\*** (Interdisciplinary Capstone Course)

\* Courses that may be co-taught or shared with the College of Engineering

**e.** thesis and non-thesis options in master's degree programs;

**NA**

**f.** implications for related areas within the university;

**This degree has the potential to link research in several areas within the College of Design, College of Engineering, and College of Business. Additionally, it has the potential to draw students from a wide geographic area who would not otherwise be interested in Iowa State University. The nature of design practice in the 21st century is collaborative, and this degree has the potential to become the most collaborative degree at Iowa State University.**

**g.** admissions standards for graduate programs

**NA**

**14. Attach to the program proposal memos from the department chair(s), the college dean(s), and other appropriate persons, agreeing to the allocation of new resources and/or the reallocation of resources as described in the Regents questions**

**15. Attach to the program proposal, letters of support, recommendations, and statements when appropriate:**

a. from programs at the other Regents universities

b. from programs and departments at ISU which are associated with the proposed program or have an interest in the proposed program.

**Notes:**

<sup>1</sup>The CIP specialty name and number is found at: <http://nces.ed.gov/pubs2002/dip2000/>

<sup>2</sup> Industrial Design Schools and Career Outlook, June 1, 2009, [http://college-degrees-programs.suite101.com/article.cfm/industrial\\_design\\_schools\\_and\\_career\\_outlook](http://college-degrees-programs.suite101.com/article.cfm/industrial_design_schools_and_career_outlook)

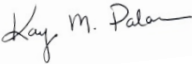
<sup>3</sup> Industrial Designers, Larry H. Hoffer, Industrial Designers Society of America

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

College of Business  
Robert H. Cox Dean's Suite  
2200 Gerdin Business Building  
Ames, Iowa 50011-1350  
515-294-2422  
FAX 515-294-6060  
[www.business.iastate.edu](http://www.business.iastate.edu)

Date: March 16, 2010

To: Dr. Luis Rico-Gutierrez  
Dean, College of Design

From:   
Dr. Kay Palan  
Associate Dean for Undergraduate Programs  
College of Business

Re: Proposed Bachelor of Industrial Design

The College of Business Curriculum Committee voted to support the proposed Bachelor of Industrial Design degree program at its meeting on March 5, 2010. Additionally, the College of Business administration supports the program.

The College of Business Curriculum Committee, while offering general support, has two requests. First, the committee would like to have a more specific curriculum description of the Industrial Design program with some projections of how the program is expected to impact enrollments in business courses. Further, the curriculum committee requests that Mgmt 310 and Mgmt 377 be included in the program instead of the other proposed management courses.


We look forward to discussing these issues with your faculty and administration.

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

College of Engineering  
Office of the Dean  
104 Marston Hall  
Ames, Iowa 50011-2151  
515 294-5933  
FAX 515 294-9273

Date: March 23, 2010

To: Luis Rico-Gutierrez  
Dean, College of Design

From: Diane Rover   
Associate Dean for Academic and Student Affairs  
College of Engineering

Re: Proposed Bachelor of Industrial Design degree

The College of Engineering endorses the proposed Bachelor of Industrial Design degree program. It was favorably reviewed by the Engineering College Curriculum Committee, and the chair of the committee has indicated their support. Thus the program has the support of both faculty and administration in the College of Engineering.

We appreciate the collaborative approach taken in the development of this undergraduate degree program. It is an exciting initiative among the colleges that offers new opportunities for students. We look forward working with the College of Design on the implementation of the program.

**From:** Thompson, James R [VDPAM]  
**Sent:** Tuesday, April 06, 2010 8:18 AM  
**To:** Hendrich, Suzanne [FSHNNH]  
**Subject:** letters of support for BID

Suzanne,

Attached are letters of support from the Business College and Engineering College regarding the proposed Bachelor of Design degree.

Number 2 below is from the yet unapproved FSCC minutes from March 25. This may help answer questions concerning the last part of the response from Business. There was some confusion in the original request because a couple of courses were listed as examples and not intended to be required.

## 2. Business College approval of Bachelor of Industrial Design

Mark Chidister presented a memo from Associate Dean of Business Kay Palan that indicates the College of Business Curriculum Committee's support of the proposed Bachelor of Industrial Design. Chidister also presented a curriculum sheet for the proposed degree and indicated that business courses included were illustrative; students enrolled in the BID program would be strongly encouraged to also take minors in Business and/or Engineering Studies. Any business or engineering courses taken would be consistent with requirements outlined in those minors. A motion to approve the Bachelor of Industrial Design program was seconded and passed.

Thanks,  
Jim