

Education and Student Affairs Committee
Board of Regents, State of Iowa

Subject: Proposal for a New Master of Science Degree in Enterprise Computing at Iowa State University

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Recommended Action:

Refer Iowa State University's proposal to establish a master of science degree in Enterprise Computing to the Board Office and the Interinstitutional Committee on Educational Coordination (ICEC) for review and recommendation.

Executive Summary:

Iowa State University is requesting approval of a new master of science degree in Enterprise Computing. The program would report to the Graduate College.

Background:

Proposed program characteristics	The objective of this proposed program is to prepare professionals who can successfully develop and implement integrated, network-based information technology solutions for modern enterprises. The program is intended to prepare students for the design, analysis, and implementation of scalable enterprise systems and for enterprise-wide automation in line with the demands of modern commerce.
Program leads to terminal degree	The program would lead to a terminal degree in the field.
Suited for both distance and traditional instructional formats	The university reports that the nature of the courses and the structure of the program make the program well-suited for distance education as well as traditional instructional environments.
New program would prepare students for high-demand professions	The university reports that program graduates would be employable in positions such as enterprise system architect, programmer/analyst e-commerce, lead engineer, data mining engineer, data integration engineer, supply chain specialist, e-Procurement content specialist, or information architect. The university reports there is a strong demand in industry for such professionals.

Link to Strategic Plan:

The adoption of new programs assists the Board in advancing the following elements of its 2004-2009 Strategic Plan:

- Priority 1.0 Ensure high-quality educational opportunities for students.
- Objective 1.3 Provide educational experiences that enhance the knowledge, abilities, opportunities, and personal incomes of individual lowans through educational attainment.

Regent Program Review Questions

The University's responses to the Regent New Program Review Questions are attached.

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Regents Program Review Questions (Majors)

Master of Science Degree, Major in Enterprise Computing

1. Need

- a. How will this proposed program further the educational and curriculum needs of the students in this discipline?

This program will provide students with a new field of advanced study in enterprise computing. Students are currently ill prepared for careers in developing enterprise-wide applications under current curricula available to the students. At the same time, industry has a major need for graduates with these capabilities.

- b. How does it further the educational and curriculum needs of other units in the college or university?

Course work offered through this program provides students from other graduate programs with outside electives in new subject areas. It is expected that students from Industrial Engineering, Management Information Systems, Computer Engineering, and Computer Science would be most likely to benefit from the program.

2. Duplication and Collaboration

- a. What programs in this field of study are available in other colleges and universities in Iowa? (Identification of other programs available in this field at other institutions should be made within a broad definitional framework. For example, such identification should not be limited to programs bearing the same title, the same degree designation, having the same curriculum emphasis, or purporting to meet exactly the same needs as the proposed program.)

There are no similar programs at other colleges and universities in Iowa. The most closely related study areas are Management Information Systems, Computer Science, and Computer Engineering at Iowa State University and Computer Science at the University of Iowa.

- b. With what representatives of these programs has there been consultation in developing this proposal? Provide a summary of the responses of each institution consulted. (The complete text of responses should be included.)

The Industrial and Manufacturing Systems Engineering, Management Information Systems, and Computer Engineering at Iowa State University support the establishment of this program.

- c. In what ways is this proposed program similar to those mentioned in 2a? In what ways is it different or does it have a different emphasis? (In describing program similarities and differences, consider such factors as curriculum, prospective student groups to be served, and career or other types of goals to be emphasized.)

This program emphasizes the engineering and systems aspects of large-scale enterprise-wide systems. Information technology is a major element of this program due to its pervasive use in modern enterprises. In addition, the program provides

students with engineering principles, methods, and problem solving techniques for enterprise processes.

- d. How does the proposed program supplement the current programs available? (In some instances, this question should go beyond how the program will supplement others within the state. If the justification for the program involves special regional or national needs, a description of existing programs within the region or the nation and the relation of the proposed program to these should be provided.)

Our program can provide a systems perspective for the related programs as well as showing the relationship of information technology to other enterprise processes.

- e. Has the possibility of some kind of interinstitutional program or other cooperative effort been explored? What are the results of this study? (Consider not only the possibility of a formally established interinstitutional program, but also how special resources at other institutions might be used on a cooperative basis in implementing the proposed program solely at this institution.)

No cooperative effort has been explored.

- f. Please list the Iowa institutions in which articulation agreements are being developed for the proposed program. (NOTE: This applies only to community college degree programs that may transfer students to this program.)

There are no agreements.

- g. Please provide the Classification of Instructional Program (CIP) code for the proposed program. (The code may be obtained from the statistics area of the Office of the Registrar (4-4150) or look at the following web site:
http://www.ncsu.edu/provost/academic_affairs/cc/cip_proj/cip_manu.htm)

11.0401 Information Sciences and Systems

3. Please estimate the enrollment in this program for the next five years as follows:

- a. Undergraduate

Majors	_____	_____	_____	_____	_____
Non-Majors	_____	_____	_____	_____	_____

- b. Graduate

Majors	<u>10</u>	<u>20</u>	<u>30</u>	<u>30</u>	<u>30</u>
Non-Majors	<u>3</u>	<u>3</u>	<u>5</u>	<u>5</u>	<u>5</u>

1. On what basis were these estimates made?

Based on current enrollment in our enterprise computing courses we would conservatively expect 10-15 students entering this program initially on an annual basis.

2. What are the anticipated sources of these students?

Additional Resource Needs

Either question one or question two requires a "yes" answer. In addition to a "yes" response to one of the first two questions, question three and question four should be answered. If applicable, question five should be answered.

1. Will the program require new resources? Yes No
 If "yes," what is the plan to obtain new resources?
2. Will the program require reallocated resources? Yes No
 If "yes," what is the university's reallocation plan to fund this program?

By using a standing graduate committee described earlier, the workload of serving on graduate committees will be less than individual committees.

As shown in the table below on course capacity, there is sufficient capacity to accommodate the additional students. Courses required by this program are currently being offered by the participating departments. Given the expected number of students in the program, a major reallocation will not be necessary. The Department of Industrial and Manufacturing Systems Engineering will reallocate some of the administrative duties of their support staff to support the program, thus the estimate of salary and fringe benefits for a Graduate Secretary are shown below. The additional 30-40 students could be accommodated with the current system.

3. At what level of enrollment will additional resources be required for the program?
 Additional resources would be required if enrollment exceeds 50 students.
4. Estimate the total costs that may be necessary as a result of the new program for the next three years.

	First Year	Second Year	Third Year
a. Faculty	0	0	0
b. Graduate Assistants	0	0	0
c. General Expense	0	0	0
d. Equipment	0	0	0
e. Library Resources	0	0	0
f. New Space Needs (estimated amt. & cost of new and/or remodeled space)	0	0	0
g. Computer use	0	0	0
h. Other resources (Secretary –sal + FB)	7,700	8,100	8,500
TOTAL(S)	0	0	0

The utilization of course capacity is shown in the following table for the past year.

Course	Average No. of Students	Average Class Limit	% Utilization
IE 581	8.5	25.0	34.0
IE 582	13.0	30.0	43.3
IE 583	18.0	25.0	72.0
IE 588	8.0	25.0	32.0
MIS 533	18.5	40.0	46.3
MIS 535	18.0	30.0	60.0
MIS 534	20.0	30.0	66.7
MIS 538	11.5	35.0	32.9
POM 522	9.0	27.5	32.7
MIS 537	17.0	25.0	68.0
MIS 531	18.5	40.0	46.3
CPR E 530	13.5	677.3	2.0
CPR E 485	24.7	25.2	98.1
CPR E 531	23.6	523.0	4.5

Note that the large capacity courses offer a large number of distance education slots so the utilization is artificially low. It can be seen that there should be sufficient capacity in these courses. For the few courses having higher utilization, they can be offered via distance education or the capacity can be slightly increased to accommodate the students in the new program.

Given the current utilization of offered courses, there is sufficient capacity to support the program without additional resources. In addition to the Computer Engineering courses offered as distance education, we will offer the Industrial Engineering (IE) courses through distance education as well. The financial income from distance education through these offerings will help supplement current resources.

5. For programs planning to use external grants, what would be the effect of the grant termination?

N/A

(For example, persons currently enrolled in other programs within the institution; persons currently attending other institutions, in state or out of state; persons not currently enrolled in institutions of higher education.)

Persons currently enrolled in other programs within the institution; persons currently attending other institutions, in-state or out-of-state; persons not currently enrolled in institutions of higher education.

4. Please provide any available data or information on employment opportunities available to graduates of this program in Iowa and nationally. (Such information is available from U.S. government labor sources as well as many professional associations.)

It is projected that the need for systems analysts (a typical information technology career) will increase 92% by year 2005 (Source: *America's New Deficit: The Shortage of Information Technology Workers*, Department of Commerce).

5. Are there accreditation standards for this program?

1. What is the accreditation organization?

N/A

2. What accreditation timetable is anticipated?

N/A

6. Does the proposed program meet minimal national standards for the program, e.g., Council of Graduate Schools or other such bodies?

This program meets the minimum standards of the Council of Graduate Schools.

7. Please report any reactions of the Iowa Coordinating Council for Post-High School Education. List date that the program information was submitted to the Council.

Submitted to ICCPHSE on June 11, 2004; no concerns were raised.

8. How does this program relate to the college's/university's strategic plan?

This program is consistent with the College of Engineering and College of Business strategic plans and the university's strategic plan to support programs in information technology. The goal of this program is to increase graduate enrollment with a focus on U.S. students. This program will produce professionals that can help Iowa industries with their information technology needs.