COLLEGE OF ENGINEERING
COURSE AND CURRICULUM CHANGES

To be considered at the College of Engineering
Course and Curriculum Meeting

October 9, 2014

Garmin Room (2064 RA)

9:30

Undergraduate/Graduate

EXPEDITED

Contact Person:  James Goddard
532-3569
e-mail:  goddard@ksu.edu
Units that may be directly impacted by these changes:

Please provide the sponsors of a proposal change with any information regarding fiscal or programmatic impact on your department, program or students
Expedited COURSE PROPOSALS
Courses Numbered 000-599

Computing and Information Sciences


Requisites:
Prerequisite: ECE 241. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses. Prerequisite or concurrent enrollment: CIS 308.

When Offered: Fall

To: CIS 450 - Computer Architecture and Operations (3). Introduction to modern computer architectures: register transfer abstraction, addressing modes, basic operations (data transfer, arithmetic/logic, and control operations). Basic Operating System concepts and operations. Understanding relationships of higher-level language constructs to corresponding assembly instruction sequences generated by compilers. Introduction to interrupts and low-level I/O operations.

Requisites:
Prerequisite: ECE 241. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses. Prerequisite or concurrent enrollment: CIS 308.

When Offered: Spring

Rationale: In order to more efficiently utilize faculty resources, we are changing when CIS 450 is offered from both Fall and Spring semesters to only Spring semesters.

Effective: Spring 2015

Impact: None
Expedited COURSE PROPOSALS
Courses Numbered 599-999

Industrial and Manufacturing Systems Engineering

From:

IMSE 866 - Applied Stochastic Processes and Theoretcal Simulation

Credits: (3)

Survey of stochastic processes and simulation. Topics covered include: discrete and continuous Markov chains, random walks, queuing theory, renewal theory, random number generation, random variates and simulation modeling and analysis. Three hours lecture a week.

Requisites:
Pr: Statistics 510

When Offered:
Summer, even years

To:

IMSE 866 - Applied Stochastic Processes

Credits: (3)

Survey of stochastic processes. Topics covered include: discrete and continuous Markov chains, random walks, queuing theory, renewal theory. Three hours lecture a week.

Requisites:
Pr: Statistics 510

When Offered:
Summer, even years

Effective: Fall 2015

IMSE 866-Applied Stochastic Processes and Theoretical Simulation is changing the name to IMSE 866-Applied Stochastic Processes. The description is also changing, see below.
Rationale: Too much material was packed into this class. So the department is teaching the graduate simulation class in odd summers. Thus, the simulation part is being removed from the class.

Impact: No impact outside of Industrial and Manufacturing Systems Engineering

Expedited Curriculum Changes

Computer Science – Software Engineering Option

Effective: Spring 2015

Rationale: In order to more efficiently utilize faculty resources, we are changing when CIS 450 is offered from both Fall and Spring semesters to only Spring semesters. As a result, we need to change its recommended semester within the Software Engineering option from Fall of the Junior year to Spring of the Junior year. To make room for this course in this semester in a way that balances the course load, we are moving CIS 562 from Fall of the Senior year to Fall of the Junior year and shifting three hours of unrestricted electives from Spring of the Junior year to Fall of the Senior year.

Impact: None
<table>
<thead>
<tr>
<th>Semester</th>
<th>Year</th>
<th>Credits</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>Sophomore</td>
<td>15</td>
<td>Humanities/social science elective (second of five) Credits: (3)</td>
</tr>
<tr>
<td>Spring</td>
<td>Sophomore</td>
<td>16</td>
<td>Humanities/social science elective (third of five) Credits: (3)</td>
</tr>
<tr>
<td>Fall</td>
<td>Junior</td>
<td>16</td>
<td>Humanities/social science elective (fourth of five) Credits: (3)</td>
</tr>
<tr>
<td>Spring</td>
<td>Junior</td>
<td>15</td>
<td>Humanities/social science elective (fifth of five) Credits: (3)</td>
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</table>

### Sophomore year

#### Fall semester (15 credit hours)
- Humanities/social science elective (second of five) Credits: (3)
- CIS 300 - Data and Program Structures Credits: (3)
- CIS 301 - Logical Foundations of Programming Credits: (3)
- ECON 110 - Principles of Macroeconomics Credits: (3)
- ENGL 200 - Expository Writing II Credits: (3)

#### Spring semester (16 credit hours)
- Humanities/social science elective (third of five) Credits: (3)
- Natural science elective (second of four) Credits: (3)
- CIS 308 - C/C++ Language Laboratory Credits: (1)
- CIS 501 - Software Architecture and Design Credits: (3)
- MATH 510 - Discrete Mathematics Credits: (3)

### Junior year

#### Fall semester (16 credit hours)
- Humanities/social science elective (fourth of five) Credits: (3)
- Natural science elective (third of four) Credits: (3)
- Unrestricted elective Credits: (3)
- CIS 415 - Ethics and Computing Technology Credits: (1)
- CIS 450 - Computer Architecture and Operations Credits: (3)
- ENGL 516 - Written Communication for the Sciences Credits: (3)

#### Spring semester (15 credit hours)
- Humanities/social science elective (fifth of five) Credits: (3)
- Unrestricted elective Credits: (3)
- CIS 450 - Computer Architecture and Operations Credits: (3)
### Senior year

#### Fall semester (15-16 credit hours)
- CIS 625 - Concurrent Software Systems Credits: (3)
- STAT 510 - Introductory Probability and Statistics I Credits: (3)

#### Spring semester (16 credit hours)
- Technical elective (second of two) Credits: (3)
- Natural science elective with laboratory (fourth of four) Credits: (4)

### Notes
A grade of C or better is required for all graded courses listed by specific course number above.
All students new to the CIS department must complete CIS 115.
Natural science courses must have departmental approval.
Humanities/social science electives must be taken from the list of courses approved by the College of Engineering.
*Communications Elective Credits: (3) must be chosen from:
  - COMM 322 - Interpersonal Communication Credits: (3)
  - COMM 326 - Small Group Discussion Methods Credits: (3)
  - MANGT 420 - Management Concepts Credits: (3)
Industrial and Manufacturing Systems Engineering

Effective: Spring 2015

Change in Curriculum: Change from 9 hours of MSOR electives and 12 hours of general electives to 6 hours of MSOR electives and 15 hours of general electives.

Rationale: The department is lacking faculty to offer enough courses for distance students to complete this degree. We do not believe that the change will have a major impact upon the quality of our graduates.

Impact: No impact outside of Industrial and Manufacturing Systems Engineering
FROM: (Current list of courses for the curriculum, curriculum description, and admission criteria.)

<table>
<thead>
<tr>
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<tr>
<td>Additional Operations Research Courses</td>
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<td>Electives</td>
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<td>Thesis</td>
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<td>IE Seminar</td>
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<td><strong>Total Graduate Credits</strong></td>
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One core course must be taken in each of the three areas:

**Continuous Optimization**
- IMSE 881 - Linear Programming
- IMSE 982 - Nonlinear Programming

**Discrete Optimization**
- IMSE 882 - Network Flows and Graph Theory
- IMSE 884 - Integer Programming and Combinatorial Optimization

**Stochastic Processes**
- IMSE 842 - Reliability Theory
- IMSE 866 Applied Stochastic Processes and Theoretical Simulation
- IMSE 971 - Industrial Queuing Processes

Additional Operations Research courses include the following courses and any core courses:
- IMSE 643 - Industrial Simulation
- IMSE 780 - Methods of Operations Research
- IMSE 830 - Applied Fuzzy Set Theory
- IMSE 751 - Applied Decision Theory
- IMSE 865 - Simulation of Industrial Management Systems
- IMSE 990 - Adv Topics in Operations Research
- IMSE 976 - Scheduling Theory
- IMSE 983 - Dynamic Programming
- IMSE 990 - Adv Topics in Operations Research
- IMSE 991 - Multiple Criteria Decision Making

Actual degree requirements will be summarized on an approved plan of study. Some general guidelines include:
- At least 60 percent of classes must be above 700 level

TO: (Proposed list of courses for the curriculum, curriculum description, and admission criteria.)

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Actual degree requirements will be summarized on an approved plan of study. Some general guidelines include:
- No more than 6 hours can be taken from outside the department without prior permission
- Courses in IMSE the department must be above the 600 level
- Courses outside the department must be above the 500 level
- No more than 6 hours can be taken at the 500 level.
- No course can count as both a core course and an additional operations research course

**Students on-campus are required to enroll in the graduate seminar each semester.**

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