COLLEGE OF ENGINEERING
COURSE AND CURRICULUM CHANGES

Approved at the College of Engineering
Course and Curriculum Meeting

March 12, 2015
Edwards Conference Room
9:00
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

**Biological & Agricultural Engineering**


Credit: 3
Pre-requisite: Prerequisite or concurrent enrollment: BAE 350
Rationale: BAE 450 will be taught in the spring semester rather than the fall semester to better fit the new curriculum options.
Impact: No impact to other departments.
Effective Date: Fall 2015

From: BAE 550. Advanced Machinery Drive Components. II. (3). Basic hydrostatic and hybrid drive system concepts and design. Application of these technologies to agriculture construction and other off road equipment applications.

To: BAE 550. Advanced Machinery Drive Components. I. (3). Basic hydrostatic and hybrid drive system concepts and design. Application of these technologies to agriculture construction and other off road equipment applications.

Credit: 3
Pre-requisite: BAE 450
Rationale: BAE 450 will be taught in the fall semester rather than the spring semester to better fit the new curriculum options.
Impact: No impact to other departments.
Effective Date: Fall 2015
Computing and Information Sciences

From: CIS 125 - Web Page Development (3). The Internet, web browsers, and web-page-development technology: web-page design and implementation with Hypertext Markup Language (HTML), and CSS. Integration of program script into web pages. Introduction to graphics design, animation, and server utilization.

Note: Three hours recitation a week.

Requisites:
Prerequisite: CIS 115. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

When offered: Spring

To: CIS 125 - Web Page Development (3). The Internet, web browsers, and web-page-development technology: web-page design and implementation with Hypertext Markup Language (HTML), and CSS. Integration of program script into web pages. Introduction to graphics design, animation, and server utilization.

Note: Three hours recitation a week.

Requisites:
Prerequisite or concurrent: CIS 115.

When offered: Spring

Rationale: Under the current prerequisite structure, IS students who enter the University in a Spring semester must first take CIS 115, then wait until the following Spring semester to take CIS 125. This change will allow these students to take CIS 125 in their first semester.

Effective: Fall 2015

Impact: None

Change: CIS 525 - Telecommunications and Data Communication Systems (3). Basic concepts including OSI 7 layer model, data transmission methods, medium access, link control, connections management; network applications including electronic mail, file transfer, distributed computing, window systems; network management including OSI and Internet management frameworks.
Requisites:
Prerequisite: CIS 300. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

To: CIS 525 - Telecommunications and Data Communication Systems (3). Basic concepts including OSI 7 layer model, data transmission methods, medium access, link control, connections management; network applications including electronic mail, file transfer, distributed computing, window systems; network management including OSI and Internet management frameworks.

Requisites:
Prerequisite: CIS 300 and either CIS 209 or CIS 308. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Rationale: This course includes programming assignments using the C language. CIS 308 will better prepare students for these projects.

Effective: Fall 2015
Impact: None

Expedited COURSE PROPOSALS
Courses Numbered 600-999

Computing and Information Sciences

Change: CIS 740 - Software Engineering (3). Software life cycle, requirements, specifications, design, validation, measures, and maintenance.

Requisites:
Prerequisite: CIS 540. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

To: CIS 740 - Software Engineering (3). Software life cycle, requirements, specifications, design, validation, measures, and maintenance.

Requisites:
Prerequisite: CIS 641 or CIS 642. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Rationale: Effective Fall 2013, we renumbered CIS 540 to CIS 642; however, the number was not changed in this prerequisite. CIS 641 is essentially the same as CIS 642, but designed
for students who do not plan to take the full two-semester course comprised of CIS 642 and CIS 643; hence, it provides preparation equivalent to CIS 642.

**Effective:** Fall 2015

**Impact:** None

**Change:** CIS 744 - Advanced Software Analysis and Design (3). Advanced concepts and practicum in object-oriented analysis, modeling, design, implementation, testing, and use of CASE tools; relationships among structural, static, and dynamic models; relationship among conceptual, system, and implementation models.

**Note:** Not available for credit to students with credit in CIS 544.

**Requisites:**
Prerequisite: CIS 540. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

**To:** CIS 744 - Advanced Software Analysis and Design (3). Advanced concepts and practicum in object-oriented analysis, modeling, design, implementation, testing, and use of CASE tools; relationships among structural, static, and dynamic models; relationship among conceptual, system, and implementation models.

**Note:** Not available for credit to students with credit in CIS 544.

**Requisites:**
Prerequisite: CIS 641 or CIS 642. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

**Rationale:** Effective Fall 2013, we renumbered CIS 540 to CIS 642; however, the number was not changed in this prerequisite. CIS 641 is essentially the same as CIS 642, but designed for students who do not plan to take the full two-semester course comprised of CIS 642 and CIS 643; hence, it provides preparation equivalent to CIS 642.

**Effective:** Fall 2015

**Impact:** None

**Change:** CIS 746 - Software Measurement (3). Measurement theory; development, validation and use of software measures; software measures in the life cycle, including cost estimation, design measures, software complexity and software reliability.

**Requisites:**
Prerequisite: CIS 540. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.
To: CIS 746 - Software Measurement (3). Measurement theory; development, validation and use of software measures; software measures in the life cycle, including cost estimation, design measures, software complexity and software reliability.

Requisites:
Prerequisite: CIS 641 or CIS 642. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Rationale: Effective Fall 2013, we renumbered CIS 540 to CIS 642; however, the number was not changed in this prerequisite. CIS 641 is essentially the same as CIS 642, but designed for students who do not plan to take the full two-semester course comprised of CIS 642 and CIS 643; hence, it provides preparation equivalent to CIS 642.

Effective: Fall 2015

Impact: None

Expedited COURSE PROPOSALS
Courses Numbered 600-999

Department of Industrial and Manufacturing Systems Engineering

Change From:

IMSE 643 – Industrial Simulation
Credits: (3)
Basic concepts of computer simulation modeling of manufacturing, production, service and other stochastic systems. Use of a commercial simulation software environment to build, analyze, verify and validate models. Use of models as a system design tool through statistical and optimization techniques.
Note
Three hours recitation per week.
Requisites
Prerequisite or concurrent: STAT 511, IMSE 660.
When Offered: Fall, Spring
UGE course: No
K-State 8: None
**Change To:**

**IMSE 643 – Industrial Simulation**

Credits: (3)

Basic concepts of computer simulation modeling of manufacturing, production, service and other stochastic systems. Use of a commercial simulation software environment to build, analyze, verify and validate models. Use of models as a system design tool through statistical and optimization techniques.

**Note**

Three hours recitation per week.

**Requisites**

Prerequisite: IMSE computer programming elective (from approved Departmental list).

Prerequisite or concurrent: STAT 511, IMSE 660.

When Offered: Fall, Spring

UGE course: No

K–State 8: None

EFFICIENT DATE: Fall 2015

**Rationale:**

To allow students have sufficient basic programming background before taking this class.

IMPACT: NONE

---

**Change From:**

**IMSE 685 – Principles of Manufacturing Information Systems**

Credits: (3)

Introduction to the theory and concepts of information for manufacturing. Design of manufacturing systems such as MRP, SFRS, CAD/CAM, etc. Concerns of integration and man–machine interface in manufacturing systems.

**Note**

Three hours lecture a week.

**Requisites**

Prerequisite or concurrent: IMSE 633.

When Offered: Spring

UGE course: No

K–State 8: None
**Change To:**

**IMSE 685 – Principles of Manufacturing Information Systems**

Credits: (3)

Introduction to the theory and concepts of information for manufacturing. Design of manufacturing systems such as MRP, SFRS, CAD/CAM, etc. Concerns of integration and man–machine interface in manufacturing systems.

**Note**

Three hours lecture a week.

**Requisites**

Prerequisite: IMSE computer programming elective (from approved Departmental list).

Prerequisite or concurrent: IMSE 633.

When Offered: Spring

UGE course: No

K–State 8: None

EFFECTIVE DATE: Fall 2015

**Rationale:**

To allow students have sufficient basic programming background before taking this class.

IMPACT: None

---

**Expedited Curriculum Change**

**Computing and Information Sciences**

**Rationale:** We are replacing CIS 544 Advanced Software Design and Development with CIS 640 Software Testing Techniques in the B.S. in CS, SE Option. CIS 544 is closely related to CIS 501 Software Architecture and Design, which is already required for all CS undergraduate degrees. We feel that replacing CIS 544 with CIS 640 would add an important area to the Software Engineering Option.

**Effective:** Fall 2015

**Impact:** None
<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
<th>Courses and Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall semester (15-16 credit hours)</strong></td>
<td></td>
<td><strong>Humanities/social science elective (first of five)</strong> CAPS&lt;br&gt;CIS 115 - Introduction to Computing Science Credits: (3)&lt;br&gt;COMM 105 - Public Speaking IA Credits: (2) or&lt;br&gt;COMM 106 - Public Speaking I Credits: (3)&lt;br&gt;ENGL 100 - Expository Writing I Credits: (3)&lt;br&gt;MATH 220 - Analytic Geometry and Calculus I Credits: (4)</td>
</tr>
<tr>
<td><strong>Spring semester (15 credit hours)</strong></td>
<td></td>
<td><strong>Natural science elective with laboratory (first of four)</strong> CAPS&lt;br&gt;CIS 200 - Programming Fundamentals Credits: (4)&lt;br&gt;ECE 241 - Introduction to Computer Engineering Credits: (3)&lt;br&gt;MATH 221 - Analytic Geometry and Calculus II Credits: (4)</td>
</tr>
<tr>
<td><strong>Sophomore year</strong></td>
<td></td>
<td><strong>Fall semester (15 credit hours)</strong> CAPS&lt;br&gt;Humanities/social science elective (second of five)&lt;br&gt;CIS 300 - Data and Program Structures Credits: (3)&lt;br&gt;CIS 301 - Logical Foundations of Programming Credits: (3)&lt;br&gt;ECON 110 - Principles of Macroeconomics Credits: (3)&lt;br&gt;ENGL 200 - Expository Writing II Credits: (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Spring semester (16 credit hours)</strong> CAPS&lt;br&gt;Humanities/social science elective (third of five)&lt;br&gt;Natural science elective (second of four) Credits: (3)&lt;br&gt;CIS 308 - C/C++ Language Laboratory Credits: (1)&lt;br&gt;CIS 501 - Software Architecture and Design Credits: (3)&lt;br&gt;MATH 510 - Discrete Mathematics Credits: (3)</td>
</tr>
<tr>
<td><strong>Junior year</strong></td>
<td></td>
<td><strong>Fall semester (16 credit hours)</strong> CAPS&lt;br&gt;Humanities/social science elective (fourth of five)&lt;br&gt;Natural science elective (third of four) Credits: (3)&lt;br&gt;Unrestricted elective Credits: (3)&lt;br&gt;CIS 415 - Ethics and Computing Technology Credits: (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Spring semester (16 credit hours)</strong> CAPS&lt;br&gt;Humanities/social science elective (fourth of five)&lt;br&gt;Natural science elective (third of four) Credits: (3)&lt;br&gt;Unrestricted elective Credits: (3)&lt;br&gt;CIS 415 - Ethics and Computing Technology Credits: (1)</td>
</tr>
<tr>
<td>Course</td>
<td>Credits</td>
<td>Semester</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------</td>
<td>----------------</td>
</tr>
<tr>
<td>CIS 562 - Enterprise Information Systems</td>
<td>(3)</td>
<td>Spring semester</td>
</tr>
<tr>
<td>ENGL 516 - Written Communication for the</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring semester (15 credit hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities/social science elective (fifth</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>of five)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 625 - Concurrent Software Systems</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Credits: (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical elective (first of two) Credits:</td>
<td>(3)</td>
<td>Fall semester</td>
</tr>
<tr>
<td>Restricted electives: (6-7)</td>
<td></td>
<td>(15-16 credit</td>
</tr>
<tr>
<td>CIS 642 - Software Engineering Project I</td>
<td>(3)</td>
<td>hours)</td>
</tr>
<tr>
<td>Credits: (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 551 - Applied Matrix Theory Credits:</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Spring semester (16 credit hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical elective (second of two) Credits:</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Natural science elective with laboratory</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>(fourth of four) Credits: (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restricted elective credits: (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 643 - Software Engineering Project II</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Credits: (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrestricted elective credits: (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIS 644 – Advanced Software Design and</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Development Credits: (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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)
THTRE 261 - Fundamentals of Acting Credits: (3)
THTRE 265 - Fundamentals of Improvisation I, II Credits: (3)
Total hours required for graduation (124 credit hours)

NOTE: K-State 8 General Education Requirements

IMPORTANT NOTES: Students who first enroll in Summer 2011 or later must meet the requirements of the K-State 8 General Education Program.

Students who began their programs of study in earlier terms under the University General Education (UGE) program may complete their degrees with UGE requirements or may choose to move to the K-State 8. Students should check with their academic advisors to determine which choice would be better. To switch, students must consult with their academic advisors.

Students who are readmitted in Summer 2011 and later will be designated as meeting the K-State 8 by the Office of Admissions. Deans’ offices can make an exception for the readmitted student who has completed UGE or who would prefer to complete UGE requirements.

For additional information about the University General Education program, check the requirements specified by the College of Engineering.

Total hours required for graduation (124 credit hours)

NOTE: K-State 8 General Education Requirements

IMPORTANT NOTES: Students who first enroll in Summer 2011 or later must meet the requirements of the K-State 8 General Education Program.

Students who began their programs of study in earlier terms under the University General Education (UGE) program may complete their degrees with UGE requirements or may choose to move to the K-State 8. Students should check with their academic advisors to determine which choice would be better. To switch, students must consult with their academic advisors.

Students who are readmitted in Summer 2011 and later will be designated as meeting the K-State 8 by the Office of Admissions. Deans’ offices can make an exception for the readmitted student who has completed UGE or who would prefer to complete UGE requirements.

For additional information about the University General Education program, check the requirements specified by the College of Engineering.