KU Course Redesign: Strategic Plan

Executive Summary: Overview

Course redesign has grown in importance over the past few years as student needs have changed, as educators have been asked to provide better evidence of learning, and as rising college costs and declining state revenue have pushed the University to focus on retaining more students and helping all students graduate in a timely manner.

A few key facts help illuminate the need for course redesign:
- Between 2007 and 2012, KU lost more than 20 percent of freshmen after the first year. The University has set a goal of reducing that by 10 percentage points by 2021.
- Only about 40 percent of students at research universities surveyed by the National Survey of Student Engagement reported that their instructors used what the survey defined as effective teaching practices.
- K-12 instruction is rapidly increasing its use of technology and of classes that blend online and in-person components.
- Blended courses use technology to help faculty members spot student problems before face-to-face meetings, allowing them to adapt instruction and make better use of class time. As a result, many instructors have reported improved student learning.

The University has made important progress in redesigning courses over the last two years. Since fall 2012, the Center for Online and Distance Learning has helped redesign more than 50 courses representing 178 class sections. In addition, 17 large courses in 14 departments have been redesigned through the C21 initiative since 2012.

Clearly the University has momentum in this area, but it must do more to reach more departments and more students. Broadening course redesign will require additional resources to support faculty, staff, and departments, and revision of policies that encourage cultural changes in the way the University approaches teaching and learning.

This report contains three sections aimed at articulating the needs of students, faculty, staff, and the University. Part 1 provides a summary of our recommendations. Part 2 provides an overview and justification of course redesign. Part 3 offers a more detailed explanation of our recommendations. Part 4 provides ways of measuring success of course redesign.

This document is still a work in progress, and we will continue to revise it as we get feedback from faculty members, students and administrators. During the rest of this semester, the task force plans speak with faculty and students, as well as departmental leaders such as chairs and curriculum committees. Just as was done with the deans and vice provosts, we need to open up these key lines of
conversation so that we can learn about potential concerns and new ideas in advance of a public release of our work. To do that, we plan to target the following areas:

- Faculty Senate
- Student Senate
- Senates/governance bodies within the professional schools (i.e. Engineering Senate)
- Open meetings
- Chairs and directors meetings within the CLAS

After we hear from these constituencies, we will revise our report and provide a final version at the end of the semester.

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Part 4: Measuring success
Part 1: Key recommendations for action

1. **Identify key courses for redesign and build out from there.**
   
   Early efforts should concentrate on courses taught regularly by faculty members who value course redesign. Some departments have already done this, but others should adopt this approach before moving to these:
   
   - Entry-level courses with high DFW rates.
   - Lower-level undergraduate courses that primarily use lecture.
   - Courses that are critical to students’ success in their majors.
   - Courses that qualify for the KU core.
   - Courses that serve students from a variety of majors.

2. **Require collaboration within departments and within the university, and courage collaboration with outside institutions**
   
   For course redesign to succeed, faculty members and departments must work together. This will require sometimes difficult discussions about the direction, goals and methods of courses and curricula, and a willingness to share course materials. It will also require continual monitoring of methods and results so that courses don’t revert to ineffective formats on the whim of individual faculty members.

   The University must also sustain and expand a community of faculty and students who champion innovative teaching and learning, promote course redesign and share their experiences with colleagues. The C21 program is an important part of this, but we need to expand opportunities for instructors to develop new skills needed for redesigned courses, share examples of meaningful and sustainable assessment, and increase development and use of repositories of shared learning materials.

   Third, the University should build on and expand its relationships with outside organizations like the Bay View Alliance, the APLU initiative and the Public Flagship Network. Individual departments should work with discipline-specific organizations, and the University should reach out to media organizations to tell the story of its work in course redesign.

3. **Alter P&T standards**
   
   Redesigned courses require additional time to prepare and to teach. This is not a one-time investment of time. Rather, it requires sustained effort that will cut into the time faculty members have for other activities. Promotion and tenure policies should reward faculty members who engage in innovative teaching, document student learning, and share their successes and failures. Faculty who agree to
redesign courses should receive time to develop these courses or the assistance of graduate students or post-docs.

4. **Expand C21 and the use of post-docs and undergraduate TAs**

Devote additional funds to continue C21 in 2014-15 and to double the number of post-docs assisting with course redesign. This would help redesign additional courses and encourage more faculty members to undertake course redesign. Additionally, professors who teach large classes need assistance to manage redesigned courses. Undergraduate teaching assistants are a cost-effective means of doing this.

5. **Increase funds for classroom redesign**

Redesigned courses require collaborative spaces. We recommend an immediate infusion of $2 million to redesign two 40-seat classrooms in Wescoe Hall, convert space in Anschutz Library into an experimental collaborative classroom, and to begin work on remaking 330 Strong into a large collaborative space. Additionally, we recommend that the University devote at least $800,000 a year to remake of classrooms.

6. **Make better use of technology for learning**

Technology plays a large role in the lives of today’s students. It also provides efficient means of finding and analyzing information for both students and faculty members. To improve and accelerate use of flipped, hybrid and online classes, we recommend, among other things, a bring-your-own-device model for students and for classrooms; expansion of free or low-cost software availability for faculty and students; creation of an experimental classroom for testing new technology for learning; expansion of the number of classrooms with videoconferencing; and creation of a faculty advisory panel on technology and learning.
Part 2: Overview

Course redesign is an important part of improving student learning, and is a critical component of our strategic plan, *Bold Aspirations*. Course redesign has grown out of faculty interest in increasing student engagement in the classroom, enriching student learning, and improving overall outcomes. It has been supported heavily by initiatives in the Center for Teaching Excellence and the Center for Online and Distance Learning. Through the leadership of Dan Bernstein and others, KU has been at the forefront of national initiatives in course redesign, “flipping” the classroom, creating hybrid class models, and developing course materials intended to improve student learning and allow sharing across institutions. Dozens of KU courses are being taught with hybrid models, or are undergoing significant redesign to improve student learning.

These initiatives above have positioned KU to take a dramatic step toward developing and using modern technologies and pedagogies to improve student learning across the campus. Our target is to make hybrid technologies and modern teaching pedagogies the primary way in which we provide education and instruction for our students. The Course Redesign Task Force was convened to provide the high-level framework, the mission, the vision, and the goals for KU’s move toward use of teaching technologies and modern pedagogies to increase student engagement, student learning, and student academic success.

The specific responsibilities of the Course Redesign Task Force are as follows:

1. Setting goals, targets, and expected outcomes for course redesign.
2. Developing the general principles that KU should follow in identifying courses and departments for course redesign.
3. Promoting measurement of student learning in redesigned courses.
4. Considering how best to collaborate within KU to develop shared learning materials, pedagogical practices, and common platforms.
5. Considering how best to collaborate with other institutions to develop shared learning materials and common platforms, relying at least in part upon the collaborations already formed between KU and other institutions through the Bay View Alliance, the Flagship Partners Network, and the APLU initiative in course redesign.
6. Making recommendations of resources necessary to support faculty and departments in sustainable redesign projects.
7. Making recommendations about the relation between course redesign and classroom space, assignment, and use.
Why and how should courses be redesigned?

Traditional curricula were created at a time when information was scarce and students relied on faculty members as a central source of wisdom. As information has grown abundant through use of technology, students’ needs and expectations have changed. To meet the needs of all those students the University and its curricula much change.

Students arrive at the University with wide differences in knowledge, study skills, language skills, determination, life experience and background. Most have grown up with digital technology, though nearly all need a better understanding of how to use digital technology for learning.

The most compelling reason for course redesign is that research and experience are showing that redesigned classes improve student learning. This has been borne out in studies of flipped and hybrid courses nationally, but also at KU in the work of such faculty members as Susan Williams in engineering and Mark Mort in ecology and evolutionary biology.

A note of caution: Flipped and hybrid courses provide no magic solutions to improving learning and reducing rates of drops, failure and withdrawals. They require a different mindset inside and outside the classroom, along with faculty members who are determined to change their approach to teaching and are willing to experiment and adjust.

The chart on page 8 shows core elements of the changes that are taking place at all levels of education, and the chart on page 9 explains some of the terminology and approaches to learning that are in use today. No single approach fits all students, and most courses use a combination of these elements depending on the type of class, the needs of students and the philosophy of faculty members. Clearly, though, courses must move toward a student-centered model if the university hopes to keep pace with today’s students.

A shift to a more student-centered approach to course design involves many changes in instructional strategies and goals. The intent is to promote a range of higher order-learning outcomes. Redesigned courses also decrease the use of multiple-choice exams and other types of objective evaluation and increase emphasis on these elements:

- Open-ended and integrative assignments and courses.
- Writing assignments, essay-based exams, papers and projects.
- Service learning.
- Portfolios to demonstrate student learning.

This model also increases emphasis on learning outcomes, along with a clear demonstration of how each course leads to the next and contributes to a particular major or to general education goals. (See Part 4 of this report.)
promotes use of capstone courses or experiences that allow students to draw on the cumulative skills gained in previous courses in their majors.
A shifting approach to learning

Traditional curricula were created at a time when information was scarce and students relied on faculty members as a central source of wisdom. As information has grown abundant through use of technology, students’ needs and expectations have changed. If the university is to thrive, curricula and approaches to learning much change, as well. This model shows core elements of the changes taking place at all levels of education. No single approach fits all students, and most courses use a combination of these elements depending on the type of class, the learning styles of students and the philosophy of faculty members. Clearly, though, courses must move toward an active and individualized model if the university hopes to keep pace with today’s students.

More reliance on ...
- Lecture
- One-size-fits-all assignments
- Tests and quizzes

More reliance on ...
- Collaborative work
- Technology for learning
- Assignments that encourage analysis, synthesis and application

Engagement of students

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on lecture: students sit in rows and listen, rarely engaging one another</td>
<td>Emphasis on problem-solving, hands-on work and discussion; students sit in groups and work collaboratively</td>
</tr>
<tr>
<td>Little use of technology, except PowerPoint</td>
<td>Deliberate use of technology, especially students’ own devices, to aid learning</td>
</tr>
<tr>
<td>Out-of-class time spent on homework exercises, rote memorization and studying for exams</td>
<td>Out-of-class time spent on reading, writing, experimentation, practice of skills and application of learning</td>
</tr>
</tbody>
</table>

Curriculum and assessment

<table>
<thead>
<tr>
<th>Individual control of courses, including course content and materials; little communication among instructors</th>
<th>Shared control of courses, with teams of instructors pooling course materials and working toward common goals; regular communication among instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum based on assumed general principles and historically developed prerequisites; little attention paid to how each course fits into the broad curriculum</td>
<td>Curriculum based on overarching goals of the major or department, with awareness of how each course fits into the progression of the major or degree program</td>
</tr>
<tr>
<td>Emphasis on multiple-choice tests and similar forms of evaluation</td>
<td>Emphasis on writing, projects, open-ended assignments, adaptive learning</td>
</tr>
<tr>
<td>Success determined primarily by student evaluations, normative distribution of grades, and DFW rates</td>
<td>Success determined by evidence of mastery of skills, as well as students’ success in future courses, especially capstones</td>
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</tbody>
</table>
Course formats for improving learning

As instructors have experimented with technology to help students learn, courses have taken on many different formats. Some shift routine class materials online but keep the same number of contact hours, using time with students to address problem areas and delve more deeply into material. Others use online components to reduce the amount of time students spend in the classroom. The terms used to describe courses often vary, but these are some of the common approaches used in education today.

<table>
<thead>
<tr>
<th>Media-enhanced</th>
<th>Two variations of courses that mix online and in-person work</th>
<th>Fully online</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is it? A large course that uses clickers and other technology to improve student participation, discussion and engagement.</td>
<td>Flipped and hybrid courses all shift traditional classroom activities online. The terms are often used interchangeably, but each format provides slight variations. We hope to standardize the definitions for use at KU, though the definitions matter less than how the course structures help students learn: Instructors create video lectures and tutorials or link to outside videos for students to watch. Students complete the video assignments as well as readings, journals, blogs, quizzes and online discussions before they attend class.</td>
<td>What is it? A course in which all work is done remotely. Students and instructors have contact only through such means as email, phone, text, discussion boards and live video connections.</td>
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<tr>
<td>What happens in class? Mostly lecture, but with some group work.</td>
<td>Flipped: The name comes from “flipping” the class structure: Work usually done in a classroom is completed online. The number of hours in class is unchanged.</td>
<td>What happens in class? This varies widely. In most cases, the online work mirrors that done in flipped or hybrid courses. In some cases, students and faculty may have discussions through live video or chat sessions (synchronous), though most work is generally done at convenient times for students (asynchronous).</td>
</tr>
<tr>
<td>How does it benefit students? Technology helps break up the tedium of lecture and allows students to be more active.</td>
<td>Hybrid: What is it? A hybrid course is essentially an online course with some in-person class sessions.</td>
<td>How does it help students? Courses are often self-paced and don't require students to be in a specific place at a specific time.</td>
</tr>
<tr>
<td>Web-enhanced</td>
<td>How does it help students? Online components allow students to complete work at a time and at a pace that works for them. Instructors assess work before in-person meetings and use class time to focus on areas of the most need.</td>
<td>How happens in class? Emphasis on group problem solving; individual and group projects; interaction with instructor.</td>
</tr>
<tr>
<td>What is it? A course that uses Blackboard or another online site to provide a syllabus, readings or other material to students.</td>
<td>What happens in class? Emphasis on group problem solving; individual and group projects; interaction with instructor.</td>
<td>How does it help students? Online components allow students to complete work at a time and at a pace that works for them. Instructors assess work before in-person meetings and use class time to focus on areas of the most need.</td>
</tr>
<tr>
<td>What happens in class? Class time is generally unchanged.</td>
<td>How does it help students? Online components allow students to complete work at a time and at a pace that works for them. Instructors assess work before in-person meetings and use class time to focus on areas of the most need.</td>
<td></td>
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Part 3: Expanded list of recommendations

The executive summary of this document provided highlights of our recommendations. This section expands on those recommendations and provides additional details.

1. Identify key courses for redesign and build out from there

Most courses at the University would benefit from changes that put more emphasis on student learning, and individual departments should determine which specific courses should receive priority. Given the University’s need to retain freshmen and to reduce DFW rates in large classes, we recommend the following general approach:

**Primary characteristics** of single courses that should be targeted for redesign:

- Early efforts should concentrate on courses taught regularly by faculty members who value course redesign. Some departments have already done this, but others should adopt this approach before moving to these:
  - Entry-level courses with high DFW rates.
  - Lower-level undergraduate courses that primarily use lecture.
  - Courses that are critical to students’ success in their majors.
  - Courses that qualify for the KU core.
  - Courses that serve students from a variety of majors

**Departments** whose courses are targeted for redesign:

- Should demonstrate that they are working toward clearly articulated goals in skill acquisition and content for their disciplines
- Should have guidelines that articulate how each course fits within a curriculum, builds on previous skills, and provides skills that will allow students to succeed in a discipline
- Should have means to provide regular and consistent feedback on the work of students in upper-level courses and how lower-level courses can better prepare those students
2. Require collaboration within departments and within the university, and promote collaboration with outside institutions

For course redesign to succeed, **faculty members and departments must work together**. This will require sometimes difficult discussions about the direction, goals and methods of courses and curricula, and a willingness to share course materials. It will also require continual monitoring of methods and results so that courses don’t revert to ineffective formats on the whim of individual faculty members.

At the university level, this will require support to sustain and bolster a growing community of faculty who champion course redesign. It will also require continued work with outside institutions to share materials and ideas for sustaining and improving course redesign.

Departmental collaboration
This involves these central elements:

- **Identify shared goals.** A course redesign team should identify shared goals for individual courses and entire curricula. This includes learning outcomes, instructional methods, course material and syllabi.
  - As part of this process, the department should create a clear curriculum map showing how each course contributes to degree completion.

- **Collaboration.** Instructors who teach different sections of multi-section courses must work toward shared goals. Departments should require faculty teamwork in those courses, including the sharing of course materials.

- **Shared materials.** The department should create a repository of course materials that instructors can contribute to and draw on.

- **Evaluation.** Departments must continually monitor and evaluate course redesign to ensure that goals are being met.

- **Leadership of chairs.** Department chairs should promote redesign among faculty members. This should include identification of professional development opportunities to help understand the need for course redesign, and incentives to faculty members to encourage course redesign.

- **Student input.** Departments should explain course redesign to students, making changes and expectations clear and soliciting student feedback to improve the process.
  - Making the syllabus for each course section available to students when they enroll would help with this.

Progression of skills
The content, feel and expectations should be noticeably different between first- and second-level courses, and between second- and third-level courses.
Expectations should rise as students progress through a curriculum. This can be achieved in several ways:

- Increased use of learning analytics and data for curriculum mapping.
- Identification of specific points in the prerequisite course learning that advance or hinder successful completion on subsequent courses.
- Identification of pre-requisite skills and achievement, recognizing that concepts need iterative development across courses.

**Faculty collaboration**
The university must sustain and expand a community of faculty and students who champion innovative teaching and learning, promote course redesign and share their experiences with colleagues. The C21 program is an important part of this (See recommendation No. 4), and we have other mechanisms in place, as the chart below shows. To improve on current efforts, we recommend the following:

- **Professional development.** Expand opportunities for instructors to develop new skills needed for courses. This includes on-campus work such as C21 as well as regional and national workshops and conferences.
- **Sharing of materials.** Create digital repositories where faculty can share and draw on course materials and examples of successful course redesign and meaningful assessment of courses.
- **Involvement of TAs.** Bring teaching assistants into more classes and learning communities around teaching. This will provided needed assistance for faculty members, especially in large classes, and will help teaching assistants gain new skills they can bring to classes they teach on their own.
- **Faculty recruitment.** Recruit faculty members to teach in redesigned classrooms.
- **University resources.** Coordinate and enhance institutional capacity to deliver online and hybrid teaching. This includes expanded availability of technology, redesigned classrooms, and broader use of undergraduate teaching assistants.

![Diagram of resources and coordination]

![Diagram of leadership and coordination]
Collaboration with outside organizations
The University’s involvement with the Bay View Alliance, the APLU initiative, the Public Flagship Network, and other organizations has been invaluable in its work on course redesign. (See below.) We urge expanded involvement in these organizations and with organizations that provide expertise for course redesign in specific disciplines. These organizations offer several benefits:

- **Awareness.** They help raise awareness on the KU campus of activities that other universities are undertaking and ensure that KU is part of the conversation.
- **Identification.** They help determine the national activities in which KU should invest and share in developing.
- **Promotion.** They help promote broader faculty involvement in national activities.

Media awareness
The University’s work with national organizations must include outreach to news media to tell its story about course redesign. Nearly all messages from the KU News Service emphasize faculty research, and, with the exception of awards, the communications office has shown little interest in promoting effective teaching. This must change for several reasons:

- **Attracting undergraduates.** Competition for the best students is fierce, and the University must find ways to set itself apart. Promoting its efforts to change teaching and learning will appeal to most undergraduates far more than promotion of faculty research.
- **Reinforcing faculty.** By promoting course redesign to new media, the University will publicly signal the importance to its mission and can provide reinforcement to faculty who have made course redesign a priority.
- **Attracting faculty.** Increasing the profile of course redesign will help the University attract better teachers by making its efforts part of a national discussion.
- **Attracting donors.** Course redesign provides opportunities to reach out to alumni with stories about improved opportunities for learning. This offers the potential to attract donations for such efforts as C21, teaching professorships and awards, and redesigned classrooms and buildings.
Bay View Alliance. This consortium of eight research universities includes KU, British Columbia, California Davis and Indiana. The alliance, funded by a grant from the Sloane Foundation, has organized applied research on strategies for increasing adoption of evidence-based teaching practices in higher education. Its primary means of doing that has been development of research action clusters around different variables to test their role in propelling high-impact teaching practices. Dan Bernstein has been one of the key members.

Research Advisory Council on Academic Leadership and Added Expertise. This group, led by Dan Bernstein and Andrea Greenhoot at KU, focuses on how academic leaders can stimulate adoption of evidence-based practices by placing “added expertise” (i.e., teaching postdocs or teaching faculty whose primary role is to collaborate with faculty on course redesign) in departments.

Research Advisory Council on Leveraging Support Units to Enhance Fundamental Academic Skills. This group, led by Queens University in Ontario, focuses on how partnerships between academic support units (e.g., teaching centers) and departments can help departments adopt evidence-based teaching practices that promote fundamental academic skills.

APLU initiative. Promotes collaboration between institutions in the Association of Public and Land-Grant Universities and community colleges to redesign high-enrollment introductory or gateway courses and enhance student learning and success in downstream courses. Emphasis is on adaptive and personalized learning.

Personalized Learning Consortium (or Institutional Consortium Initiative). This group consists of more than 50 institutions, including community colleges and four-year and research universities. KU is a sustaining member. The organization attempts to help institutions grapple with the rapid change in learning environments brought on by online tools and the widespread availability of information. It was funded by the Gates Foundation.

Public Flagship Network. This is a consortium of universities convened since 2011 to develop solutions to challenges faced by public research institutions. This network includes about 20 public flagship institutions within the Association of American Universities. Among its projects:

- Collaborative research-based projects, such as development and sharing of courses or course materials and use of innovative educational
technologies. A major goal is to share online courses or online course materials. Most member institutions are interested in providing access to online courses (for a fee) but KU’s interest is in sharing course materials.

- Harnessing “big data” to drive educational decision making. This includes collecting, analyzing and sharing such data across institutions.

- Sharing strategies for communicating to the public about the need for continued investment in higher education and the value of public research universities.
3. **Alter P&T standards**

Redesigned courses require additional time to prepare and to teach. This is not a one-time investment of time. Rather, it requires sustained effort that will cut into the time faculty members have for other activities. The current P&T model was established decades ago when information was scarcer and much less dynamic, when digital technology played no part in teaching and learning, and when demands for assessment reached only as far as a multiple-choice exam.

To help improve undergraduate learning, promotion and tenure policies should reward faculty members who engage in innovative teaching, document student learning, and share their successes and failures. Faculty who agree to redesign courses should receive time to develop these courses or the assistance of graduate students or post-docs.

**Policy changes**

Course Redesign efforts need to be a substantial and visible part of faculty evaluation plans in these areas:

- Promotion and tenure decisions
- Annual merit evaluations
- Post-tenure review
- Progress toward tenure review

To help achieve that, we recommend the following:

- Move beyond student course evaluations in determining excellence of teaching.
- Faculty evaluation of teaching should include evidence of high-quality course design implementation and effectiveness. This will require perspectives beyond the student voice. Higher level of evidence is needed to indicate excellence. Demonstration of excellence of teaching must include ...
- Move beyond student course evaluations in. This should include teaching portfolios, meaningful peer review of teaching practices based on portfolios of course design and effectiveness. This would include teaching portfolios, peers evaluating syllabi for the course.
- Add language about the importance of course redesign to department and university documents that guide faculty evaluation, as well as promotion and tenure.
- Add strong language about the value of course redesign to [Article VI of the Faculty Senate Rules and Regulations](#).
• Revamp the PRO online reporting system so that includes areas on course redesign, and teaching and learning.

**Promote evidence-based instructional design**
Lack of methods for identifying high-quality teaching has been a common roadblock in attempts to change the way teaching is handled in the promotion and tenure process. To address that, we recommend the following steps:

**This into doesn’t fit with the intro.** If care about high-quality teaching, must appear in the personnel record.

• Faculty should consult and collaborate with disciplinary experts within their program to determine the coursework that is critical to predicting student success.

• Faculty within major programs should determine which curricular components maximize efficient and effective use of classroom time with students.

• Departments should use common curricular objectives to establish an evidence-based approach to documenting student learning.

• Departments and administrators should obtain and use data from OIRP to identify potential hurdles to course/program readiness and identify ways to encourage student success in redesigned courses (given redesigned courses will likely require skills they may have yet to develop).
4. **Expand C21 and the use of post-docs and undergraduate TAs**

C21, a learning community built on course redesign, has been enormously successful in bringing together faculty members from many departments and providing guidance and collegial support for redesigning courses. We recommend that the university devote additional funds to continue C21 in 2014-15 and to double the number of post-docs assisting with course redesign. This would help redesign additional courses and encourage more faculty members to undertake course redesign.

The C21 initiative is already paying dividends, as seen in the number and variety of courses that have been redesigned as a result:

### Spring 2012
- ECON 142/143 Principles of Micro Economics Neal Becker
- PHS X 211 General Physics I Phil Baringer
- BIOL 152 Principles of Organismal Biology Mark Mort
- MATH 290 Elementary Linear Algebra Erik Van Vleck
- PSYC 104/105 General Psychology Mike Vitevitch

### Spring 2013
- POLS 110 Christina Bejarano
- CHEM 124/5 David Benson, Brian Laird, Craig Lunte, David Weis
- HWC 205 Rick Botkin
- SOC 104 Brian Donovan
- ANTH 108 Akiko Takeyama
- PHSX – Michael Murray
- MATH 121 (Calculus) Bozenna Pasik Duncan
- HA (Fully Online) Kathryn Gerry
- HIST 388 (Fully Online) Eric Rath
- SOC 332 (Fully Online) Eric Hanley
- COMS 310 (Fully Online) – Tracy Russo
- COMS 201 (Fully Online) Mary Banworth

As additional faculty members redesign courses, we will have a growing pool of resources to draw on to provide new models of learning and to share expertise to colleagues. Given the popularity and success of C21, we propose providing additional funds to continue and expand it over the next three years. This would include the following:

- Scale up additional C-21 type activities.
- Recruit greater participation from humanities, the arts, and professional schools.
- Raise profile of previous and ongoing course redesign work on campus.
• Use previous and ongoing collaborative activities to develop online materials (modules) to guide and support course redesign work.
• Use successfully redesigned courses as models for future work.
• Develop and share public representations of redesigned courses and their effects on student learning.
• Consider future course redesign faculty seminars through both CTE and CLAS.
• Promote sharing of course materials already developed in faculty seminars.
• Promote a “department team” approach to course redesign to facilitate development of shared materials and practices for individual courses.

Expansion of the post-doc program
The current program for using post-docs for course redesign was supported by the College of Liberal Arts and Sciences and the Provost’s Office. The program provides three years of support to the post-docs, who partner with faculty to redesign large gateway courses. CTE, CODL, and the Center for STEM Learning have all organized program-level activities in support of the program.

The first post-docs began work in Fall 2013 in biology, geology, and geography. In Fall 2014, we anticipate one to two more teaching post-docs (one in natural sciences and mathematics and another in another area of CLAS). To build on that work, we propose the following:

Expansion of use of undergraduate TAs
Professors who teach large classes need assistance to manage redesigned courses. Undergraduate teaching assistants are a cost-effective means of doing this. These assistantships provide high-performing students with opportunities to learn in deeper ways by helping their peers, and offer additional money to pay for their education. In many cases, these TAs have successfully completed the course they assist with, and bring a fresh perspective that allows them to share their experiences with students who are new to a subject.

To expand the use of undergraduate TAs, we recommend the following:
• Provide (figure to come) so that departments to hire (figure to come) undergrad TAs for large courses.
• Establish university policies and guidelines that explain the qualifications for, responsibilities of, and boundaries for undergraduate teaching assistants.
• Establish a general ratio of undergraduate TAs to students in a class. We recommend at least one undergraduate TA (10 hours per week) for every 50 students in large classes. Ideally, large classes will have a graduate teaching assistant who oversees the undergraduate TAs.
• Establish training sessions for and means of assessing the effectiveness of undergraduate TAs.
5. **Increase funds for classroom redesign**

Redesigned courses require collaborative spaces. We recommend an immediate infusion of $2 million to redesign two 40-seat classrooms in Wescoe Hall, convert space in Anschutz Library into an experimental collaborative classroom, and to begin work on remaking 330 Strong into a large collaborative space. Additionally, we recommend that the University devote at least $800,000 a year to remake of classrooms.

**Relationship between course redesign and classroom space**

The vast majority of KU classrooms were created for professor-centered, top-down instruction. Their crowded, static design leads to a passive atmosphere in which students sit and wait for instructors to tell them what to do.

Modern classrooms, on the other hand, revolve around the concept of active learning, providing a flexible, student-centered environment that promotes collaboration. Active learning uses techniques that put more responsibility on students to define problems, gather information and provide solutions. Instructors lecture little or not at all, and often use a flipped or hybrid approach that allows them to move deeper into course material. They often use technology inside and outside class to enhance learning.

Several universities around the country have adopted this new style of room design and technology use, and research has shown benefits to this approach. Based on that research, as well as our own observations and experiences, we recommend that the university take a more aggressive approach in creating collaborative classrooms. Specifically, we suggest these steps:

**Create a unified budget for classroom renovation**

Currently, Capital Planning (furniture, lighting, flooring and other room elements) and Information Technology (wiring, projectors, media cabinets, screens and other technology) have separate budgets for renovating classrooms. Under this system, technology expenditures require the approval of the chief information officer, a process that has severely delayed classroom renovation.

To ease these delays, we recommend a unified budget for classroom remakes. This would not only make the renovation process run more smoothly but would make costs more transparent. We also recommend that university staff members who oversee and repair the equipment have spending authority for routine classroom technology replacement and for purchase of standard equipment in renovated classrooms.

**Guarantee at least $800,000 per year to classroom renovation**

The university currently devotes $500,000 per year from tuition enhancement funds to renovating classrooms and $9 million to repairing buildings. Nearly all of that $9 million goes toward infrastructure, including such things as electrical
wiring, boilers, roofing and general repairs. In some years, part of the renovation budget also goes toward infrastructure.

To speed up renovation and to ensure that classrooms are continually upgraded, we recommend that the university designate at least $2 million toward immediate classroom renovation and devote at least $800,000 each year for renovation. In addition, those funds should not be used for general building repairs.

**Adopt central scheduling of university classrooms over three years**

Central scheduling of university-controlled classrooms would give faculty members a better chance of getting the types of classrooms they need. This is a highly contentious issue. Schools and departments have long had first-pass options on certain classrooms and will resist any change to the current system. So will faculty who demand specific classrooms, often as close to their offices as possible. To ease that tension, we suggest doing the following:

- Phase in central scheduling over three years.
- Create a transparent scheduling system that allows departments to see available space based on room size, seating, technology and other characteristics, and to match classes with the appropriate space. *(See Appendix II for examples from other universities.)*
- Test that scheduling software at least a year before it is used live. Run tests showing how central scheduling will not change the location of many current classes.
- Make the case that central scheduling will not affect labs, conference rooms or specialty spaces that departments have created.
- Give priority scheduling to faculty members who have worked on course redevelopment.

**Create prototype classrooms**

Faculty members and department leaders need to see examples of how classrooms could be redesigned. Some of these rooms already exist (334, 335, 337 and 339 Strong; 202 Stauffer-Flint). The School of Engineering will open its new building in Fall 2014 and the School of Business plans to open its new building in Fall 2016. These buildings will provide additional classroom prototypes. Ideally, though, the university will **create at least one redesigned classroom in each campus building** to increase exposure of flexible, collaborative room redesign.
To make course and classroom redesign more visible, we recommend identifying at least three additional rooms that could be renovated in the next 18 months:

- **Large classroom**: 330 Strong. This room already needs to have seats replaced. By applying that money toward a remake, we could create a prototype of a large active-learning classroom. This would involve removing wooden risers that elevate theater-style seating at the back of the room; removing false walls near the two doors; replacing the current seating with tables and chairs that could be easily moved; moving the faculty work station to the center of the room; and replacing a single screen at one end of the room with screens on three of the four walls. In its current configuration, the room seats 178. A remake would reduce its capacity to about 120. *(Projected cost being calculated.)*

- **Medium-size classroom**. Use the second floor of Anschutz to create an experimental collaborative classroom that would seat about 90 students. *(Note: This space in Anschutz is also being considered for a learning studio. Our discussions with Tracy Horstman suggest that the learning studio could fit into other space on campus. The campus has few spaces available for a 90-seat collaborative classroom, though.)*

  *Projected cost: $300,000.*

- **Wescoe classrooms**: Classrooms on the fourth floor of Wescoe Hall could be remade into active learning spaces relatively cheaply and quickly. The biggest expenses would come from collaborative furniture, new media cabinets and repainting and other cosmetic changes to create a more engaging atmosphere. *(See the prototype drawings on pp. 22 and 23.)*

  *Projected cost: $45,000 each*

### Classrooms that have been recently remade

- Strong Hall 334 A and B (24 students), 338 A and B (24, but can be combined to create space for 48), 335, 337, 339

- 202 Stauffer-Flint (30 students)

### Classrooms scheduled for remodeling in 2013-14

- EGARC lab in 4066 Wescoe Hall (planned opening is August 2014)

### Classroom priorities for three to five years

- Summerfield Hall. The School of Business plans to move by Fall 2016, so rooms could potentially be remade by Spring 2017, depending on work needed to heating and cooling systems, and other infrastructure.

- Budig Hall. The lecture halls in Budig are the University’s largest and most
visible. Remaking at least one of them into a large collaborative space could give redesigned courses a real boost.

Typical configuration of current rooms on fourth floor of Wescoe, along with new chair and lectern designs.

How classrooms on the fourth floor of Wescoe Hall could be remade

The rolling tablet armchairs (example below) would allow many room configurations, including the two below in a fourth-floor Wescoe classroom. The movable lectern would give instructors more flexibility and would allow them to face their classes, something they can’t do with current media cabinets.

Cost: $36,000

That includes:

- Rolling tablet armchairs
- New screen
- Rolling media cabinet
- Continuous
Wescooe configuration 2

This approach to remaking a fourth-floor classroom in Wescoe Hall would include arc tables that could be arranged in various collaborative shapes. The cost of the remake also includes a movable lectern with cords tethered to the wall. The cost for this renovation would be the same as the previous example.

Cost: $36,000

Remake would include:
- Arc tables (right)
- 36 chairs
- New screen
- Rolling media cabinet
- Continuous whiteboards on three walls
- New carpet and paint
- 6 new power outlets
- New window shades
Provide incentives to increase number of classes after 2 p.m.
As the consultants’ report makes clear, the university has plenty of classroom space. The problem is that classes are clustered in the middle of the day, generally between 10 a.m. and 2 p.m. If we spend money on remade rooms, we should make sure those rooms are used as much as possible. This would involve a cultural change at KU. As such, it would require time and patience to find the best approaches to reach out to faculty members and students.

Work with other Kansas universities to change Regents space guidelines
Modern classrooms require additional space for collaboration and movement. If these plans are to succeed, the university must work with the Board of Regents to change guidelines for classroom use. Regents’ metrics encourage universities to put more students into classrooms than is prudent. Until those metrics change, KU and other universities will have a difficult time meeting regents’ guidelines.
What do redesigned classrooms look like?
Modern classrooms revolve around the concept of active learning. They promote collaborative, student-driven learning in which an instructor works more as a guide than an authority figure.

The design process for new classroom spaces for the School of Engineering offers many insights for the university as it moves toward modern classroom designs. These new designs and techniques emphasize collaboration, with research showing gains in student learning. Common elements among these new designs include the following:

- **Group-centered, active learning environments.** Students in these environments are challenged to collaborate and communicate to solve large, open-ended problems, the sort of work that once would have been done outside class. By incorporating challenging problems in the classroom, instructors have the opportunity to guide student development and correct misconceptions early in the learning process.

- **Space for movement.** Modern classrooms generally have more room for movement and rearrangement than older classrooms.

- **Flexible furniture.** This includes tables and chairs, individual seats and lapdesks that move together and create a collaborative environment. Lecture seating allows students to swivel and collaborate easily with colleagues beside, in front of and behind them.

- **Whiteboards.** These might be attached to walls, on moving stands or in pieces that can be mounted on wall tracks. They help students share ideas during collaboration.

The Scale-Up Model
A wealth of research on classroom design and improvements in learning and knowledge retention supports the development of new teaching methods and classroom settings. One method, named Scale-Up by Prof. Robert Beichner of North Carolina State, was based on years of comparative studies between traditional classroom and teaching and his Scale-Up model.

The model requires that the static lecture portion of a class be pre-recorded and made available online. Students come to class to work in groups and solve problems that are often open-ended and more complex than a single student would be expected to solve within an hour of class time. The students are
assigned to groups and work around tables (three options are shown right and left). White boards are available to each group. At the beginning of class the professor introduces the topic and the problem, and the students work within their groups, or across groups, to gather information and solve the problem. The professor and teaching assistants navigate the room to help resolve problems and point groups in a productive direction. Three typical setups are shown here.

**Minimum standards for redesigned classrooms**

Because an active-learning classroom can mean many things, we suggest the university adopt minimum standards for redesigned rooms. These are general guidelines intended to improve atmosphere and student learning, and give classroom designers and administrators much leeway for experimentation.

- **Flexible seating** that can be arranged into collaborative groups but that allows for many options to suit different teaching and learning preferences.

- **Simple, intuitive technology** that allows instructors to push content to students and to groups, or to pull content from students or groups and share with the rest of a class.

- **Compact, movable lecterns or media cabinets** that allow instructors to face students rather than walls.

- **Whiteboards** on many walls to allow group work and demonstrations.

- **Larger number of power outlets** (in floors or at tables wherever possible).

- **Bright, visually pleasing rooms** with updated, pleasing finishes,
window coverings, flooring and lighting.

- **Fast, dependable wi-fi** that can accommodate all the students in a room.

- **Tiered lecture halls**, preferably with two rows on each tier so that students can turn around and form groups with students sitting behind or in front of them.

**Wherever possible**

- **Tables and chairs of varying height** to allow students at the edges of rooms to see better.

- **Taller ceilings** to allow presentations above white board and to allow better viewing angles across a room.

- **A solid work bench and hooks in ceilings in large lecture halls** so that instructors in the sciences can attach experiments and material for demonstrations.
6. **Make better use of technology for learning**

We recommend several steps related to technology and instruction to improve and accelerate use of flipped, hybrid and online classes.

**Move toward a bring-your-own-device model**

Computers become obsolete in two to three years, and those in classrooms get relatively little use. Rather than continually spend money on desktop computers in classrooms, it would be more cost-effective to have faculty members take laptops to classrooms when they teach. Similarly, rather than buy desktop computers for labs, we recommend a bring-your-own-device model. This system, known as BYOD, has become increasingly common in K-12 schools and at universities. Moving to this system would require a few changes.

- **For students.** The university should set minimum specifications for hardware and software and offer phone and in-person support for university-specified machines.

- **For classrooms.** The university would no longer provide desktop computers in classrooms. Instead, faculty members would bring their own.

- **For labs.** In many cases, computer labs would be unnecessary, although we suggest experimenting with stations where students could hook up laptops to large monitors. Labs might also offer high-speed wired connections. This approach would allow for experimentation with lab design and create options for collaborative space for student work.

- **Software discounts and remote access.** Disciplines should identify critical software so that the university could negotiate volume discounts or site licenses.

- **Support.** A BYOD approach would require a different approach to computer support. The online help desk already does a good job of troubleshooting problems in many types of computers. This role would grow with a BYOD model. It would also require an in-person help desk where students could take their laptops for assistance. The university would need to determine the boundaries of that support, though.

- **Extended checkout.** Most students own laptops, but for those who can’t afford them we should offer an extended checkout. The libraries already provide laptops for checkout. An extended checkout might mean that students have access to a laptop during a semester, over breaks, or while their own laptop is being repaired.

**Expand use of remote access software**

Information Technology has been testing Citrix as a system for remote access to software, though the types of software available have been limited to titles like
Office that most people already own. The university should negotiate aggressively with software companies to provide access to the types of software that students and faculty need in teaching and research. This includes SPSS, ArcGIS and Adobe products, among others. Indiana University’s IUAnyWare program provides an excellent model for what could be done. It offers students, faculty and staff remote access to more than 50 types of software.

Add videoconferencing capability to additional rooms
Learning and scholarship increasingly require the ability to reach out to people around the world. Similarly, classes that have students at both the Edwards and Lawrence campuses need a reliable live connection between classrooms. The university has only two rooms – 1007 and 1009 Wescoe – with videoconferencing capability. We recommend adding to that number. This is an expensive addition (about $25,000), so the classrooms should be chosen for maximum impact.

Add support staff for videoconferencing
Reliable technology requires good support staff, so additional videoconferencing will require additional support staff to maintain. We also need to make sure that someone trained in videoconferencing is available for evening classes at both campuses.

Stop the build-out of Echo360
This technology was a poor investment. By simply recording lectures, it offers little incentive to faculty members to create shorter, more effective video lessons for students. We suggest that the university invest in other technologies that offer far more potential for creating video presentations that engage students and promote learning. Some recommendations are below.

Create a faculty advisory group to work with Information Technology
IT has done a better job in engaging faculty over the last couple of years, thanks largely to the efforts of Anne Madden Johnson and Ann Ermey, who is no longer at the University. In other cases, a lack of communication has led to poor decision-making in contracts for technology and services. For instance, the university joined iTunes U, but no one seemed to know why or how it would be used. Echo360 was installed in many classrooms even though it produces poor-quality video and promotes poor teaching practices.

A group known as the Teaching and Learning Technology Leadership Team could easily take on this advisory role. It was established in 2012 to advise the executive vice provost on matters related to teaching and technology but has largely become dormant because of confusion over its mission.

Create a place for experimentation with technology
This might be an experimental classroom or simply a sandbox lab. It would provide a place for testing new equipment and software, making recommendations, and keeping up with trends. Such a space is crucial so that
faculty and staff can experiment and test hardware and software that could improve teaching and learning.

**Negotiate site licenses for flipped-class technologies**

The university should negotiate site licenses for software that makes it easy for faculty members and students to create videos and interactive demonstrations on their computers, tablets and smartphones. We recommend the following:

- **Camtasia Studio.** Screen recording software available for both PC and Mac.

- **Explain Everything.** A $3 app that allows screen recording, writing and voice on an iPad. One of the benefits of Explain Everything is that it creates a file that can be uploaded to Kaltura and used on Blackboard. Another excellent but more expensive iPad app is **Vittle** ($9).

- **Free apps.** Several free apps provide similar capabilities but upload videos directly to an outside server and can’t be edited. These include **Educreations, Knowmia** and **ScreenChomp**.

- **Dropbox or Box.** This is the most convenient way to transfer videos and other materials from an iPad to a PC for editing and upload. Their use is widespread among faculty members, despite admonitions from the privacy office, largely because the University offers no options that match the convenience and ease of use of Dropbox or Box. Many schools and universities encourage the use of these technologies. For instance, **Indiana University encourages students to link Box accounts with their university accounts.**

**Create a central site for online technology assistance**

Information Technology and the Center for Online and Distance Learning provide online and in-person assistance for Blackboard and other university-supported technology. In addition, CODL provides online and in-person assistance for faculty members creating online and hybrid courses. Over the last year, IT has revamped its help site for Blackboard and has been working at revamping its online help site for other technology.

To make it easier to find those services, we recommend creating a central portal with an easy-to-remember URL. This centralized site could link out to the variety of services available and would improve the university’s support capabilities. It could also provide recommendations for choosing tools for preparing online videos and interactive presentations, including headphones, microphones, tablets and styluses.
Part 4: How do we determine the success of course redesign?

The success of course redesign will hinge on our ability to document learning within and across disciplines. This should begin with a thorough review of the goals and objectives of major curricula. Two central questions should guide this review:

1. What should graduates know and be able to do, and how can we demonstrate their understanding?
2. Are we succeeding in retention, progress, and timely completion of degrees?

The KU Core has already moved the University in this direction by creating a set of goals that transcend disciplines (e.g., critical thinking; communication; global awareness). Each discipline should follow up on these goals with its own discipline-specific goals, along with ways of determining whether students have met these goals.

We recommend these specific steps at the University level:

- **Create a repository of literature on student motivation and learning.** The results of previous studies should help guide curricular development and course redesign within disciplines. This should include data on student motivation such as the Wabash survey instruments and the National Survey of Student Engagement.
- **Create models for teaching best practices.** Follow the lead of the KU Core and create rubrics, checklists and other guidelines for determining effective teaching. This should include attitude scales and student reported activities.
- **Create a database of courses that embrace new approaches.** This will help University monitor the adoption of new courses, will help students find courses that best match their needs and will help faculty members find examples of successful course redesign. We should start with self-reporting of course redesign, along with interviews of chairs and directors and information from OIRP.
- **Develop and promote ways to demonstrate learning gains** in content and skills, and coordinate with an overall University assessment plan.

We recommend these specific steps in each department across the University:

- Create clear curriculum maps that track the expected development of key skills across courses. These maps can draw on existing models created and tested by other departments.
  - Establish plans for course-by-course demonstration of achieving KU Core learning outcomes. Encourage use of rubrics associated
with KU Core.
  o Develop a workable rotation of courses reporting assessment results.

- Data analysis showing conditional probabilities and correlations among key concepts within the curriculum map
  o Discover when students drop courses.
  o Discover why students drop courses.
- Make these discoveries available to improve the teaching and learning culture.
- Align final exam item statistics with “national” standards from discipline organizations.
- Collect summative assessments within courses.
- Benchmark assessment of KU Core learning outcomes
- Demonstrate success of diverse populations

**Use pro-active advising and monitoring systems in support of success rather than filtering**

We have to track students who are in trouble, particularly early on. We need to increase use of learning analytics to identify and pro-actively minimize hurdles and bottlenecks, and support students in the short term and advise faculty members in the longer term on course development. We also recommend the following:

- Develop a meaningful program advising model for students
- Decrease sink or swim cultures across certain programs (e.g., STEM)
- Increase achievement of disadvantaged learners