

Course Redesign FAQ

General Questions

What does "course redesign" mean?

Course Redesign (CR) means reconceiving and rebuilding the delivery of a large-enrollment course to increase student learning outcomes while containing or reducing instructional costs, primarily by incorporating instructional technology.

What qualifies as "large?"

The National Center for Academic Transformation (NCAT) methodology refers to the top 25 courses in enrollment as the best candidates for course redesign. These are often courses that have large sections (e.g., traditional lecture format) or several small sections.

NCSU also defines "large" as courses that are among the top 5 percent in enrollment in a college and critical path courses that serve as foundational studies needed for students to successfully transition into more advanced study.

Why redesign?

Course redesign allows institutions to:

- Accommodate more students without adding resources
- Reverse the traditional notion of what happens inside and outside the classroom
- Free up faculty members to offer other courses and programs of study that are in demand
- Increase student retention and meet goals for student achievement
- Decrease time to graduation by adding additional seats in bottleneck courses
- Improve consistency and quality across multiple sections
- Use state and student tuition dollars more efficiently

What are assumptions that get in the way?

- Improving quality means increasing costs
- Adding information technology increases cost
- Using information technology might threaten quality

About the Redesign Process

Who does the work of redesigning?

We recommended assembling a team of faculty, instructional designers, instructional technologists, assessment specialists, administrators, and librarians to work on a redesign project.

How long does it take to complete a typical CR Project?

Most Course Redesign projects are developed over 2 year periods, going from proposal and then to assessment and lastly final report. Previous NCSU course redesign projects have taken 2-3 years to complete. Many courses undergo multiple iterations and are improved upon every semester.

Does this process include implementation or is it just course design?

Implementation of the redesign is essential to the redesign process, as is assessment of the project's implementation.

What kinds of support is available for this process?

As part of DELTA's strategic plan, the *DELTA Course Redesign Grants* program provides financial and staff

resources (instructional design, instructional technology and instructional development support) for faculty who are redesigning the delivery of large-enrollment courses at the undergraduate-level. More information about DELTA CR Grant RFP can be found at <http://delta.ncsu.edu/teach/funding/lcrgrants/>.

The NCAT website (<http://thencat.org>) hosts useful “road map” documents, course planning documents, readiness checklists, and cost analysis tools.

Who decides which NCSU courses get redesigned?

DELTA works closely with Registrar’s Office to identify high enrollment, undergraduate-level, gateway courses that could benefit from the CR initiative. Our decisions are based on, but not limited to, the analysis of grade distributions, drop/fail/withdrawal (DFW) rates and course repeats; need to cope with increasing enrollments, and potential for improving educational efficiency and cost savings.

What are essential criteria for readiness?

- There needs to be a high level of commitment and buy-in from multiple faculty and administrators.
- Decisions about curriculum must be made collectively in the department or program.
- Faculty must be willing to incorporate existing curricular materials in order to focus on redesign rather than materials creation—avoid the “not invented here” syndrome.
- A model for assessing and evaluating outcomes needs to be developed.
- Student learning outcomes must be assessed. A baseline level of academic technology infrastructure needs to be in place.
- Technology and faculty development support needs to be provided.

How are specific course needs determined?

DFW rates, instructional weaknesses, course drift, and seating capacities are indicators for determining whether or not a course is a good candidate for redesign.

How is success measured?

Success is measured by assessing student learning outcomes, increase in course enrollments, and determining whether or not learning and costs were maintained or reduced.

About Redesigned Courses

Are these face-to-face or online courses?

The courses chosen for redesign are usually large section, face-to-face, lecture oriented or multiple section courses. They are redesigned into courses that utilize blended learning principles, which range from supplementing face-to-face classes to creating fully online courses. Redesigns change assumptions about lectures in that lectures do not occur in the classroom. Instructors instead capitalize on current technologies like online video for content delivery. Using of instructional technologies can aid in: actively engaging students in learning (in class and online), providing students with individualized assistance, building in ongoing assessment and prompt feedback, and monitoring student progress.

What elements in the course are subject to redesign?

The elements in the course that are subject to redesign are teaching method, student engagement methods, mode of content delivery, and sometimes the course content itself.

What’s wrong with traditional lectures?

- Treats all students as if they are the same
- Ineffective in engaging students
- Inadequate individual assistance

- Poor attendance and success rates
- Students fail to retain learning
- Students fail to transfer knowledge to higher level courses

What's wrong with multiple sections?

- In theory: improved interaction
- In practice: large class sizes
- In practice: dominated by the same presentation techniques
- Lack of coordination
- Inconsistent instruction and quality across sections
- Inconsistent outcomes

Doesn't CR defeat the value we place on having faculty engaged with students?

Not necessarily. It could free up in class time for more interactivity, engagement, and responsiveness between faculty and students. It also allows faculty to focus on the more difficult concepts during face-to-face class time by enabling students to learn easy to master topics on their own (online).

Isn't CR just another name for teaching online?

That is one method—there are several others, but all incorporate instructional technology. Teaching online is much broader than redesigning a large enrollment course.

What are some of the major models for CR?

1. [The Supplemental Model](#)— retains the basic structure of the traditional course and a) supplements lectures and textbooks with technology-based, out-of-class activities, or b) also changes what goes on in the class by creating an active learning environment within a large lecture hall setting. (It is recommended that you do not redesign your course only using the Supplemental Model.)
2. [The Replacement Model](#)— reduces the number of in-class meetings and a) replaces some in-class time with out-of-class, online, interactive learning activities, or b) also makes significant changes in remaining in-class meetings.
3. [The Emporium Model](#)— replaces lectures with a learning resource center model featuring interactive computer software and on-demand personalized assistance¹.
4. [The Fully Online Model](#)— eliminates all in-class meetings and moves all learning experiences online, using Web-based, multimedia resources, commercial software, automatically evaluated assessments with guided feedback and alternative staffing models.
5. [The Buffet Model](#)— customizes the learning environment for each student based on background, learning preference, and academic/professional goals and offers students an assortment of individualized paths to reach the same learning outcomes.
6. [The Linked Workshop Model](#)— provides remedial/developmental instruction by linking workshops that offer students just-in-time supplemental academic support to core college-level courses.
7. [Course Flipping](#)— reverses the traditional notion of what happens inside and outside the classroom; it changes assumptions about lectures in that lecture does not occur in the classroom. Instructors capitalize on current technologies (e.g., video recording) for content delivery. Every hour of lecture in the classroom can be condensed to a 6-minute, 8-minute, 10-minute video (as examples) that can be published to the Internet and shared with students. Face-to-face classroom meetings are redesigned to capitalize on challenging and engaging collaborative learning. This technique for course redesign creates efficiency, accountability, and meets the needs of diverse learners. More information about Course Flipping is available online at <http://www.fi.ncsu.edu/project/fizz/>

¹ Contact Traci Temple (ttemple@ncsu.edu, 513-3193) to discuss if NCSU has the facilities to replace lectures with a learning resource center.

8. [SCALE-UP](#)—The Student-Centered Active Learning Environment for Undergraduate Programs (SCALE-UP) approach is another model of redesign². The basic idea is that you give students something interesting to investigate in class. While they work in teams, the instructor is free to roam around the classroom-asking questions, sending one team to help another, or asking why someone else got a different answer. There is no separate lab class and most of the "lectures" are actually class-wide discussions. More information about SCALE-UP is available online at <http://www.ncsu.edu/per/scaleup.html>

Continuous assessment and feedback are essential to improving student learning. How can this be accomplished?

- Automated (computer-based) assessment and feedback
- Repetition and frequent feedback
- Quizzes
- Peer-to-peer assessment

About Reducing Costs

How can you both save money and improve learning?

Cost savings may be accomplished by using instructional technology, incorporating active learning strategies, pooling resources, streamlining faculty involvement, and making quality enhancements to a course. Note that to date, the NCSU CR goals have been focused on improving student learning outcomes and finding ways to help faculty accommodate the increasing enrollments in gateway courses.

This sounds like a lot of work. How can it really save money?

By reducing instructional resources while keeping enrollments constant:

- Substitute online tutorials for staff-led tutorials
 - Stream recorded lectures
 - Use already created online resources from publishers (i.e., MERLOT)
- Automate course delivery and assignment evaluation
 - Use a learning management system such as Moodle
 - Automate online assessment of exercises, quizzes, and tests
- Effective use of resources
 - Share resources between courses
 - Allow for staffing substitutions
 - Reduce space requirements
 - Use undergraduate learning assistants
 - Use graduate teaching assistants

² Contact Dr. Traci Temple (ttemple@ncsu.edu, 513-3193) to discuss the NCSU facilities that can be used for the SCALE-UP model.

By increasing course enrollment while keeping course expenditures constant

- Increase section size
- Increase number of sections using course assistants to supplement faculty
- Decrease the need for classroom space by replacing face-to-face classroom time with synchronous and asynchronous online learning

And/or,

- Reduce the number of repetitions required to pass the course
 - Reduce DFW rate

How do you go about measuring whether costs have been reduced?

- Measuring costs of the traditional course
- Measuring personnel costs
- Instructional costs of redesigned course

About CR at NCSU

Can CR really work at a school like NCSU?

Yes, provided there is funding for projects. Our data indicates the following:

- student learning is the same or improved in the redesigned course
- student learning improves the next subsequent course in a series
- Faculty can teach more students without using more resources by incorporating instructional technology (i.e., computer automated grading and feedback).

What type of support does NCSU have for a CR project?

The DELTA CR Grant is a competitive award program that provides support for faculty committed to redesigning large-enrollment courses. DELTA CR Grants provide both monetary and staff resources. DELTA staff time is determined upon meeting with the stakeholders to assess course needs.

Who do I contact if I'm interested in redesigning my course?

More information can be found at: delta.ncsu.edu/teach/lcr. Questions about the DELTA CR Grants should be directed to Dr. Traci Temple (ttemple@ncsu.edu, 513-3193).

How can one get funding for CR?

More information about internal funding for course redesign can be found at: delta.ncsu.edu/teach/lcr or by contacting Dr. Traci Temple (ttemple@ncsu.edu, 513-3193).

What NCSU courses are being or have been redesigned?

The following DELTA CR Grant courses were or are being redesigned:

1. Statics (MAE 206), Department of Mechanical and Aerospace Engineering
2. Introduction to Statistics (ST 311), Department of Statistics
3. Precalculus, Algebra (MA 107), Department of Mathematics
4. Precalculus, Algebra and Trigonometry (MA 111), Department of Mathematics
5. Calculus I (MA 141), Department of Mathematics
6. Applied Differential Equations I (MA 341), Department of Mathematics
7. Concepts of Financial Reporting (ACC 210), Department of Accounting
8. Foundations of Graphics (GC 120), Science, Technology, Engineering, and Mathematics Education
9. Physics for Engineers and Scientists I (PY 205N), Department of Physics
10. College Physics—lab component (PY 211/212), Department of Physics

How to Learn More about Course Redesign

Is there research that indicates that CR works?

NCSU began tracking student success as a result of course redesign in 2010, following the pilot phases of the first redesigned courses. The data (qualitative and quantitative) indicates that: student learning remains the same or improves as a result of CR, DFW rates are reduced, learning in redesigned courses is better than in traditional lecture. Redesign appears to be most effective for marginal students and evidence suggests that there is a positive linear trend in grades in subsequent courses.

The NCAT provides research from the courses that participated in the Pew Program in Course Redesign. The findings show:

- The institutions in the original Program in Course Redesign embarked upon a systematic program to:
 1. Understand the full instructional cost of delivering courses
 2. Determine how information technology can be introduced as an instructional aid and labor-saving device
 3. Assess how well students are learning

The program produced five flexible yet distinct course redesign models that achieved both positive gains in student learning and reduced costs to the institution.

- Of the 30 institutions, 25 measured significant increases in student learning in the “redesigned” course when compared to the traditional course, while the other five showed learning equivalent to traditional formats.
- Of the 24 institutions that measured student retention, eighteen showed significant increases in course completion.
- All 30 institutions were able to reduce instructional costs, on average by 37%, with a range of 20% to 77%.
- Through a grant from Lumina Foundation for Education, NCAT was also able to examine the data and determine that these redesign strategies, while effective for all students, have a positive impact on traditionally underserved students (minority students, low-income students, and adult students).

In collaboration with faculty who are redesigning courses at NCSU, DELTA has published two preliminary, internal [CR assessment reports](#) for two courses, GC 120 and MA 111.

Where can I read more about CR?

Information about Course Flipping can be found online:

- Flipping the Classroom with Fizz, Summer Shorts in Instructional Technologies, DELTA, NCSU <http://mediasite.online.ncsu.edu/online/Viewer/?peid=ab9e6f3e2f4a48c294f6af28ce88bb051d>
- Flipping the Classroom - Simply Speaking, Penn State University (YouTube video), http://www.youtube.com/watch?v=26pxh_qMppE
- FIZZ, Friday Institute, Dr. Lodge McCammon, <http://www.fi.ncsu.edu/project/fizz/> and fi.ncsu.edu/fizz
- *Five Best Practices for the Flipped Classroom*, edutopia, <http://www.edutopia.org/blog/flipped-classroom-best-practices-andrew-miller>
- *The flipped classroom infographic: A new method of teaching is turning the traditional classroom on its head*, <http://www.knewton.com/flipped-classroom/>
- *Flipping out? What you need to know about the flipped classroom*, Inside Higher Ed, <http://www.insidehighered.com/blogs/gradhacker/flipping-out-what-you-need-know-about-flipped-classroom>

Information about the Student-Centered Active Learning Environment for Undergraduate Programs (SCALE-UP) approach is available online at <http://www.ncsu.edu/per/scaleup.html>

The National Center for Academic Transformation lists these resources:

- [The Learning MarketSpace](#)
The Learning MarketSpace is an electronic newsletter published quarterly by the National Center for Academic Transformation that highlights ongoing examples of redesigned learning environments using technology and examines issues related to their development and implementation. The newsletter is published in January, April, July and October.
- [Policy Alert: Course Redesign Improves Learning and Reduces Cost](#)
(http://www.highereducation.org/reports/pa_core/core.pdf)
This 2005 article published by the National Center for Public Policy and Higher Education provides a brief overview of the Program in Course Redesign.
- [Improving Learning & Reducing Costs: Redesigning Large-Enrollment Courses](#)
(<http://www.thencat.org/Monographs/ImpLearn.html>)
This 1999 monograph explores the theory and practice of redesigning learning environments using technology to enhance learning and reduce costs upon which the Program in Course Redesign was based.
- [Improving Learning and Reducing Costs: New Models for Online Learning](#)
(<http://www.educause.edu/ir/library/pdf/erm0352.pdf>)
This 2003 article published in the EDUCAUSE Review describes the five redesign models that emerged from the Program in Course Redesign.
 - **Case Studies**
These case studies illustrate each of the six redesign models described in the preceding article. Each case includes a one-page project abstract, a full academic plan, a full cost savings plan, ongoing progress reports and a final outcome report for each institution.
 - [Fairfield University: Biology \(Supplemental\)](#)
 - [The University of Tennessee: Spanish \(Replacement\)](#)
 - [The University of Alabama: Intermediate Algebra \(Emporium\)](#)
 - [Florida Gulf Coast University: Fine Arts \(Fully Online\)](#)
 - [The Ohio State University: Statistics \(Buffet\)](#)
 - [Austin Peay State University \(Linked\)](#)
- [Lessons Learned](#) (<http://www.thencat.org/PCR/Outcomes.htm>)
Each of these three monographs offers an in-depth analysis of the Program in Course Redesign projects, with a focus on the most important quality improvement and cost reduction techniques used in the redesigns, the implementation issues they encountered, and the projected sustainability of the course redesigns.
 - [Round I Redesigns: Lessons Learned](#)
 - [Round II Redesigns: Lessons Learned](#)
 - [Round III Redesigns: Lessons Learned](#)
 - [Descriptions of more than 100 large-scale course redesigns sorted by discipline, by model and by degree of success](#)

More information about course redesign at NCSU can be found at delta.ncsu.edu/teach/lcr or by contacting Dr. Traci Temple, Assistant Director for Instructional Development, DELTA (ttemple@ncsu.edu, 513-3193).