

The LSU R2R Model for Math 1021 College Algebra

The LSU Department of Mathematics is now delivering Math 1021 College Algebra using a model that it developed as a selected member of Roadmap to Redesign (R2R), a program developed by the National Center for Academic Transformation (NCAT) to spread redesign practices that resulted from an earlier NCAT program funded by the Pew Charitable Trust entitled Program in Course Redesign (PCR). These practices involved redesign of large-enrollment courses through effective use of technology to reduce costs and increase student learning. Other schools using similar designs for mathematics are Virginia Tech, Alabama, Idaho, UNC at Chapel Hill and Greensboro, Georgia State University, Ole Miss, and Wayne State University. Mathematics was not the only discipline involved; Spanish, English, biology, chemistry, statistics, and sociology were also included.

LSU chose a modified version of the emporium (computerized learning lab) model, named for the Virginia Tech Math Emporium which began eight years ago. The main feature of this model is that it requires active participation from students rather than the traditional passive lecture format. In the LSU version, students in a 3-credit hour course spend one hour a week in a small class in the traditional classroom setting and then spend a minimum of 3 flexible hours a week in a teacher and tutor staffed learning lab in Pleasant Hall using specialized software called MyMathLab which is specific to their textbook. The learning lab staff is available to give students immediate, personalized help with math concepts and skills or computer use questions. Homework, quizzes, and tests are taken using exercises algorithmically generated by the software. Help and Example buttons guide students through the homework, and the pdf textbook and streaming videos can be accessed through the software. Section videos taped at LSU using experienced, highly successful instructors are available on the math website for those students who want additional classroom instruction. Homework can be attempted an unlimited number of times and quizzes can be attempted up to ten times before the due date. This active approach to learning emphasizes students “doing” mathematics, not just “watching” someone else do mathematics, and the repeated opportunities accompanied with constant, individualized feedback promote learning each new concept to mastery level.

Since students in College Algebra at LSU take a common final exam each semester, learning outcomes for this R2R program are best measured by comparing drop rates, final exam medians, and success rates from R2R sections with like data from sections which used other delivery methods. After running a pilot and several semesters of combinations of delivery methods while constructing the Pleasant Hall learning lab and making improvements on the R2R course design, the Fall 2006 results show the success that the program has achieved. The record low drop rate of 6% coupled with the final exam median of 78% and the highest-ever ABC rate of 75% earned by the 94% who remained in the course all semester is exceptional, not only in LSU history but also in national comparisons. These results are so positive that Math 1022 Trigonometry and Math 1023 Precalculus are now being offered in this R2R delivery method as well.

By student request, one Early Completion pilot section for Math 1021 and one for Math 1022 is being offered in Spring 2007. This course format will allow students who choose this option to work at a faster pace and complete the course earlier than required without having class meetings and with optional learning lab hours.