Quantitative Literacy, Adaptive Learning, and ALEKS

OVERVIEW

ECU received the UNC Student-Success Grant in support of implementation of an adaptive learning project. In the process of redesigning and piloting a quantitative literacy general mathematics course for non-STEM majors, ECU adopted ALEKS, an adaptive learning courseware system. The new course was piloted in Fall 2018 with continual adjustments being made for Spring 2019.

CHALLENGE

Design a course that is…
- Adaptive
- Able to serve students of diverse ability and background
- Rigorous
- Supported by the University at large
- Appeals to non-STEM students
- Supports at least 3 ECU Stretch Goals
- Amendable to being taught by graduate students and contingent faculty
- Adoptable by other UNC’s

CURRICULUM

➢ Algebra
  • Exponents & Scientific Notation
  • Linear Equations
  • Ratio, Proportions, & Variation
  • Rectangular Coordinate System, Linear Equations, Graphing & Slope of a line
  • Functions
  • Simple & Compound Interest
  • SALT Money
➢ Geometry
  • Points, Lines, Planes, & Angles
  • Triangles
  • Right Triangle Trigonometry
  • Fractals
  • Tessellations
➢ Probability
  • Fundamental Counting Principle
  • Permutations & Combinations
  • Odds and Expectations
  • Addition & Multiplication Rules
  • Conditional Probability
  • Binomial Distribution
➢ Statistics
  • Gathering and Organizing Data
  • Measures of Average, Variation, & Position
  • Normal Distribution

STRETCH

The course design is intended to support four of ECU’s stretch goals
- Rural Completion
  • Tier 1 & Tier 2 Counties
- Five-Year Graduation Rates
  • Increase financial literacy to decrease stop outs
- Undergraduate Degree Deficiencies
  • Remove barrier of general math requirement
- Research Productivity
  • Ability to read research paper within major

HORIZON

What’s next?
- Obtain a laboratory environment to better support the course design
- Write additional hands on activities for inclusion in the course pack
- Breakdown of data to evaluate overall success of new course design in relation to institutional learning goals

PROCESS

➢ Identify stretch goals, areas of need, and key areas of study
➢ Review current Quantitative Literacy courses and resources
➢ Submit Proposal to UNC System
➢ Write course pack and ALEKS course
➢ Release to faculty
➢ Edit course pack and content
➢ Pilot
➢ Edit again
➢ Pilot new delivery method

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