Co-Requisite Courses & the Flipped Classroom: An Alternative for Developmental Education

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MTSU’s Solution

MTSU’s Solution—College Algebra track
Math 1710K

MTSU’s Solution—Liberal Arts track
Math 1010K

MTSU’s Solution
5 contact hours—4 direct contact in the classroom; 1 virtual math lab hour.
3 Credit hours (4 workload hours)
MTSU’s Solution—Statistics track

Math 1530K

Former Developmental Math Structure

Math Redesign Structure

College Algebra (1710K)
Initially had a custom supplement made

Now, the “Review” sections from the book are offered as an option for instructors to cover

Current Text: *College Algebra with Modeling & Visualization*, 4th edition, by Rockswold
General Studies Mathematics (1010K)
Initially the same custom supplement for college algebra was used

Now, all instructors use the two algebra chapters from the book. These chapters are not covered in the non-prescribed class.

Current text: *Mathematical Ideas*, 12th ed. by Miller, Heeren, and Hornsby

Introductory Statistics (1530K)
Two Criteria:
1. Focus on algebra topics that will help students succeed in the course
2. Algebra topics that focus on mathematical literacy purposes to ensure that students pass a non-prescribed college algebra class should they change their major


Intermediate Topics for College Algebra
Solving a linear equation (Basic)
Graphing a linear Equation (Basic)
Factoring
Square Roots

Intermediate Topics for General Studies Math (1010K)
Linear Equations and applications
Linear Inequalities
Properties of Exponents and Scientific Notation
Polynomials and Factoring
Quadratic Equations and applications
Lines and slopes and graphing linear equations
Linear Models
Introduction to Functions
Systems of Equations
Exponential and log functions

Intermediate Topics for Statistics (1530K)
Solving Equations
Graphing Equations
Writing equations of lines (emphasis on interpretation of slope and intercepts)
Functions (definition and notation)
Exponential Functions and models

Former DSP Students in Regular Math 1010 prior to 2006 compared to K courses

- Math 1010
- Math 1010K
- K better

A to C
D, W, I, or F
Retention Fall 2010-Spring 2012

Course | Percent Retained | %A-C
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DSPM 0850 Intermediate Algebra (2003-2006) | 65.1 | |
Math 1000K Essentials of Mathematics (n = 2083) | 80.5 | 66 |
Math 1010K Math for General Studies (n = 1290) | 83.1 | 63 |
Math 1710K College Algebra (n = 2670) | 82.5 | 63 |
Math 1530K Applied Statistics (n = 216) | 89.8* | 73* |

*1530K was first offered in Fall 2011. This is two semesters’ of data.

Advantages of Redesign

- Reduces time/cost for completion
- General Ed credit provided
- Reduced stigma

Students complete general education mathematics requirements early thus increasing likelihood of earning bachelor’s degree

(Adelman, 2006)


Disadvantages of Redesign

- Additional contact hours
- Scheduling
- More coordination required