

The Value of a Prerequisite

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“In 1991, a suit was lodged by the Mexican American Legal Defense and Educational Fund (MALDEF) against the California community colleges. It was this suit, settled out of court, that created an agreement under which we have operated for the last 15 years. The agreement signed into law requires content review, statistical analyses, and disproportionate impact studies to validate and apply a prerequisite. Title 5 55003(e) (e) states

A course in communication or computation skills may be established as a prerequisite or corequisite for any course other than another course in communication or computation skills only if, in addition to conducting a content review, the district gathers data according to sound research practices and shows that a student is highly unlikely to succeed in the course unless the student has met the proposed prerequisite or corequisite.”

Fulks, Janet. What Do Students Think About Prerequisites? Give a Listen to Their Views! May, 2009. <http://www.asccc.org/content/what-do-students-think-about-prerequisites-give-listen-their-views> (accessed June 12, 2015).

Janet Fulks was the Curriculum Committee Chair, Academic Senate for California Community Colleges.



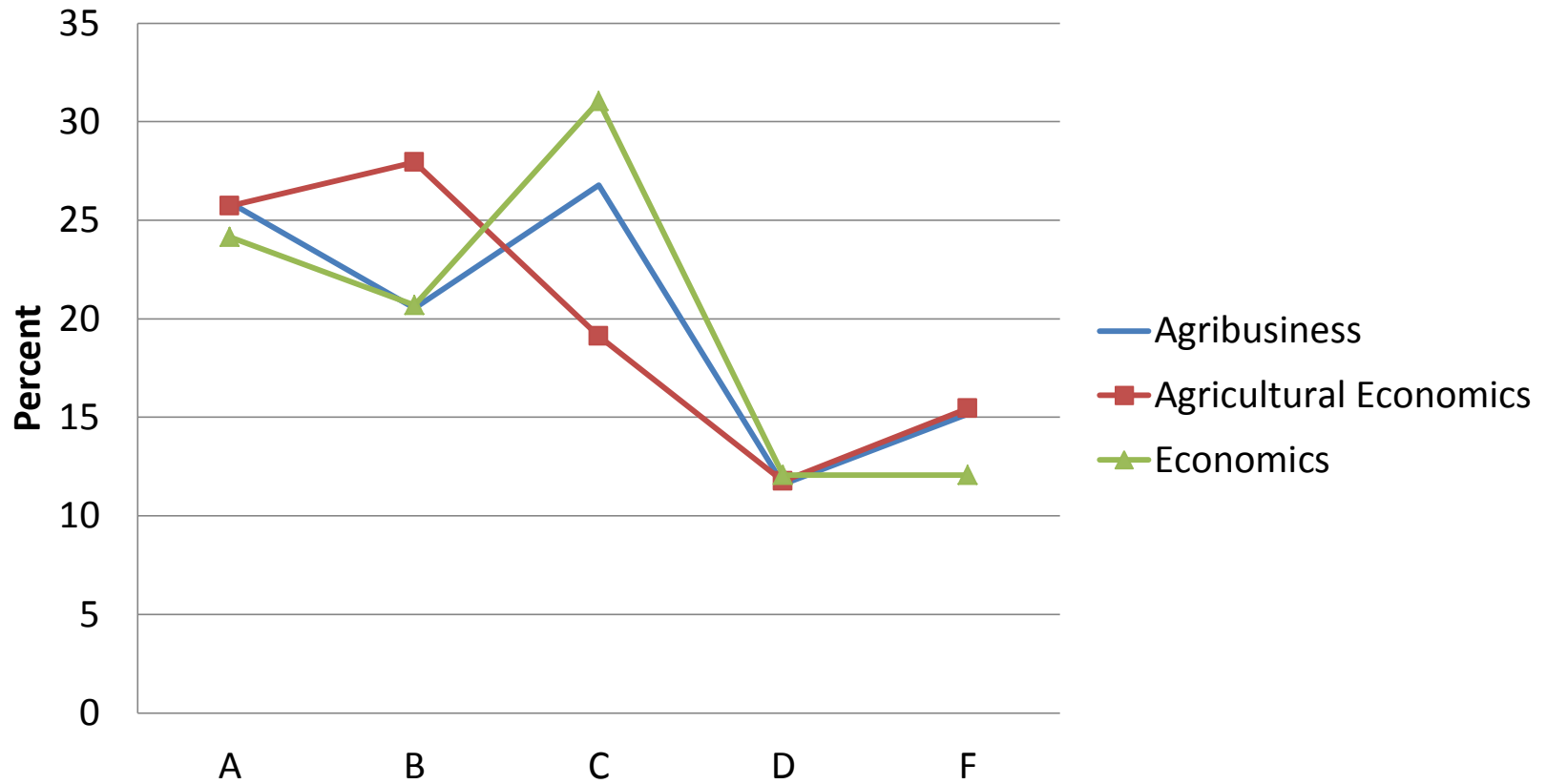
Course prerequisites are defined for student success.

At NDSU, calculus (MAT 146) is a prerequisite for intermediate microeconomics (ECON 341).

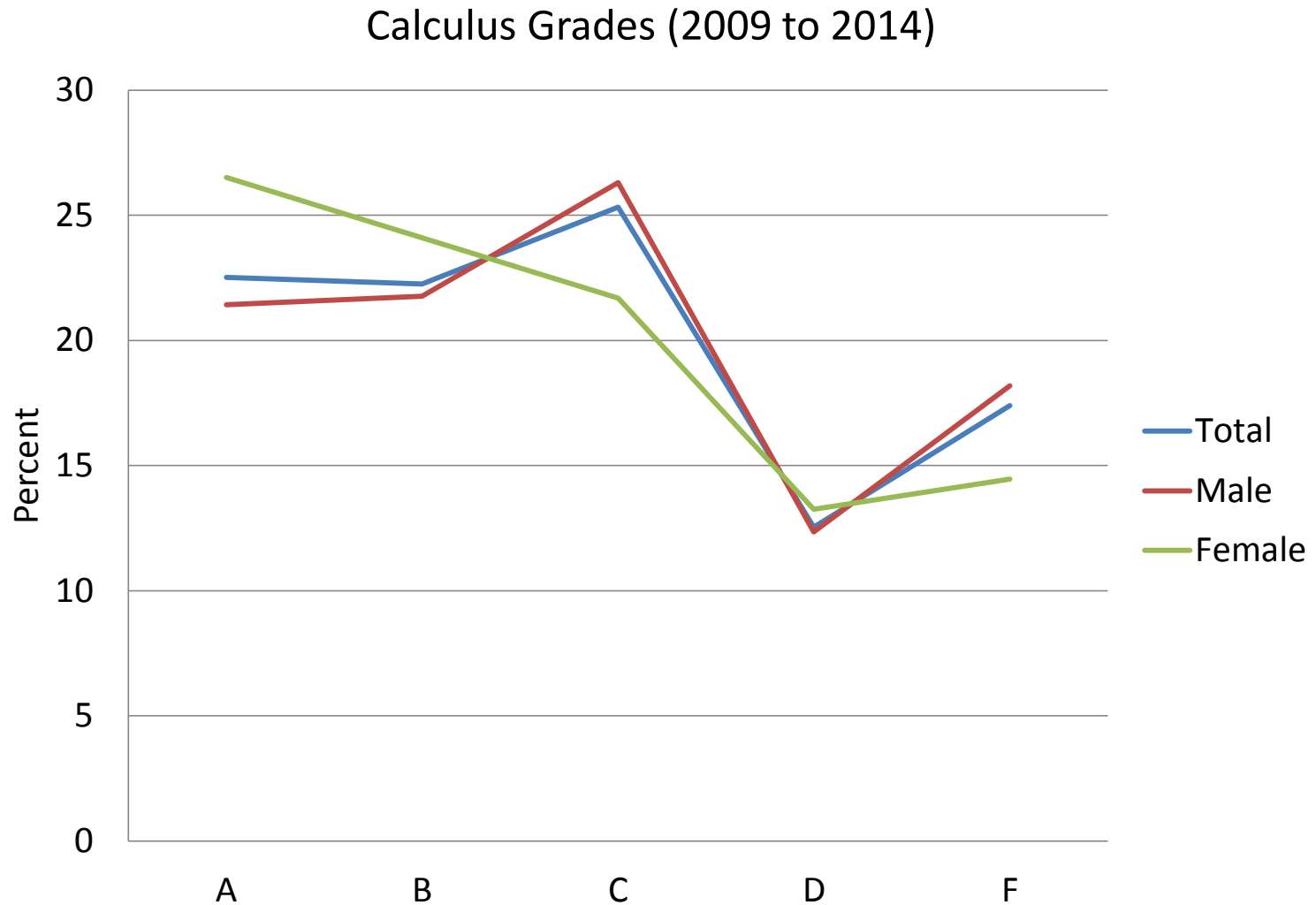
Students simply need to pass calculus.

How do our students do in calculus?

Calculus Grades (2009 to 2014)



How do our students do in calculus?



We considered amplification of the current prerequisite to require a grade of C or higher.

Debate ensued until someone asked for evidence that it would help students.

We compared the success between students passing the class with a D and those passing with a grade of C or higher.

Between 2009 and 2014, there were 290 qualifying students majoring in our programs who enrolled in ECON 341 (Intermediate Microeconomics).

Of the sample, 176 (61%) had earned a 'C' or higher in ECON 341. Of those 176, 156 (89%) earned a 'C' or higher in their most recent prior or concurrent MATH 146 attempt.

The association between performance in these courses was significant at $\alpha < 0.01$ ($X^2 = 8.72$, $p = 0.0031$) and a positive correlation ($r = 0.17$, $p = 0.003$) was identified.

		ECON 341		Total
		A, B or C	D, F or W	
MATH 146	A, B or C	156	86	242
	D, F or W	20	28	48
	Total	176	114	290

Chi-square test statistic : 8.7249

p-value: **0.0031**

$r = 0.1735$

A significant association was found between MATH 146 and ECON 341 grade outcomes among male students ($X^2 = 5.61$, $p = 0.0178$) and there was a positive correlation ($r = 0.16$, $p = 0.0178$).

		ECON 341		Total
		A, B or C	D, F or W	
MATH 146	A, B or C	123	73	196
	D, F or W	15	21	36
	Total	138	94	232

Chi-square test statistic : 5.6121

p-value: **0.0178**

$r = 0.1555$

These outcomes suggest an increased likelihood of success in ECON 341 given a successful grade in MATH 146.

The finding of no statistical association for female students can be attributed to their low numbers (58).

The statistical association identified between success in a prerequisite calculus class and intermediate microeconomics supports amplification of the prerequisite.



Criteria for determining prerequisites

Realistically this is a qualitative decision supported with quantitative data (from a well-designed research question and appropriate analysis).

Primary “costs” of pre-requisites are timing for student degree completion and role in limiting non-major course enrollment.

Primary “benefits” are positive effect on student learning (performance) and support of higher-level teaching.

