

*Making Value
for Society*

PRELIMINARY FINDINGS FROM ENGR1102 (WSU EGR101) IMPLEMENTATION **UPDATE 2016**

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The goal of ENGR 1102, based on Wright State's course EGR 101, was to improve likelihood of progression in engineering degree by remediating students who tested below Calculus I upon initial matriculation



INCOMING MATH PROFILES FOR 1ST YR STUDENTS 2014-2015

INITIAL UNIVERSITY MATH PLACEMENTS RESULTS	FALL 2014 (N=333)	ENG1102 (N=46)	FALL 2015 (N=368)	ENG1103 (N=27)
CALCULUS I OR HIGHER	54%	24%	55%	22%
PRE-CALCULUS	21%	41%	18%	52%
COLLEGE ALGEBRA OR BELOW	25%	35%	26%	26%



2014 ENGR 1101 INTRODUCTION TO ENGINEERING. 3 CR

Provides an understanding of the study and practice associated with bioengineering, electrical, civil and mechanical engineering technology disciplines. Emphasizes the importance of good communications and teamwork skills in a successful engineering environment. Provides practice in problem solving and design. Discipline specific labs.

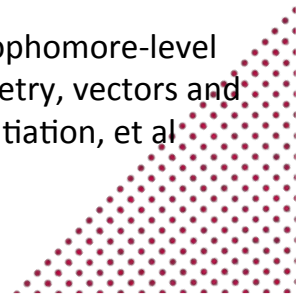
2015 ENGR 1102 INTRO MATHEMATICS FOR ENGINEERING APPLICATIONS. 3 CR



This course provides an overview of the salient math topics most heavily used in the core sophomore-level engineering courses. These include algebraic manipulation of engineering equations, trigonometry, vectors and complex numbers, sinusoids and harmonic signals, systems of equations and matrices, differentiation, integration and differential equations.

2016 ENGR 1103 INTRO TO MATHEMATICAL MODELING FOR ENGINEERS. 4 CR

This course will provide an overview of the salient math topics most heavily used in the core sophomore-level engineering courses. These include algebraic manipulation of engineering equations, trigonometry, vectors and complex numbers, sinusoids and harmonic signals, systems of equations and matrices, differentiation, et al



RESULTS

Underprepared 1st year students who tested into entry-level math courses (algebra to pre-calculus), **and took the ENGR1102/1103 course concurrent with their math class, achieved a statistically significant improvement between pre- and post-test**, with an effect size considered large ($t=2.56$, $\eta p^2=.138$).

Their improved math performance *after* taking ENG1102/1103 ($t=.342^*$, $p=.079$) is close to being statistically significant ($p<.05$).



Impact on Attrition/Retention

Cohort	# Enrolled	Attrition Goal YR 1	Actual Attrition	Retention Goal YR 2	Actual Retention*
Fall 2014	46	<25%	<20%	>45%	>70%
Fall 2015	27	<25%	<15%	--	>85%

Table 2: Projected vs actual attrition and retention for 2014-2015 for students enrolled in ENGR1102. *As of Spring 2016.



KEY FINDINGS AND NEXT STEPS

- ENGR 1102 improved the math performance of a statistically significant number of Temple Engineering students who tested below Calculus I, increasing their progression in the degree
- Collaborated with math department to infuse engineering-related course content in Calculus I-III sequences taught by Temple's math department
- Initiated exploration of psychological traits that may have contributed to student motivation to persist

