

Assessment #1 –PRAXIS II

Description of Assessment and Use

The Praxis II Content Knowledge test in Mathematics (0061/5061) is designed to assess the mathematical knowledge and competencies necessary for a beginning teacher of secondary school mathematics. The State of Missouri requires candidates to achieve a minimum score of 137 on this test in order to be certified to teach secondary mathematics. UCM candidates are required to take the Praxis II prior to student teaching. If they do not achieve the minimum score, they must retake the test before they can be certified to teach secondary mathematics in Missouri. The test contains 50 multiple-choice questions and candidates have 2 hours to complete the test. A graphing calculator is required for the test.

The following is taken from the ETS website and provides a thorough description of the test: The examinee will be required to understand and work with mathematical concepts, to reason mathematically, to make conjectures, to see patterns to justify statements using informal logical arguments, and to construct simple proofs. Additionally, the examinee will be expected to solve problems by integrating knowledge from different areas of mathematics to use various representations of concepts, to solve problems that have several solution paths, and to develop mathematical models and use them to solve real-world problems.
(<http://www.ets.org/s/praxis/pdf/5061.pdf>)

The data tables (**see pages 3 and 4 of this document**) show Praxis data for the 22 program completers of the three-year period described in this report.

Alignment with NCTM Standards

The completers for the three-year period of this report were required to take the PRAXIS II Mathematics: Content Knowledge (Exam 0061/5061). This version was administered from September 2005 until August 2013. All program completers for the three-year period of this report took the Praxis during this time period. The Praxis II has been aligned with the NCTM CAEP Standards (2012) through the collaborative work of NCTM and ETS. The table below shows this alignment.

Praxis II Mathematics: Content Knowledge (Exam 0061/5061) Alignment to NCTM CAEP Mathematics Content for Secondary (2012) September 2005 through August 2013 Administrations	
NCTM CAEP Standards (2012) Mathematical Domains	NCTM CAEP Standards (2012) Mathematical Domain Competences Addressed
A.1 Number and Quantity	A.1.1, A.1.2, A.1.3, A.1.4
A.2 Algebra	A.2.1, A.2.2, A.2.3, A.2.5
A.3 Geometry and Trigonometry	A.3.2, A.3.3, A.3.4, A.3.5, A.3.6, A.3.7
A.4 Statistics and Probability	A.4.1, A.4.3, A.4.4
A.5 Calculus	A.5.1, A.5.3, A.5.5
A.6 Discrete Mathematics	A.6.1, A.6.2

The alignment table is available at:

<http://www.nctm.org/uploadedFiles/Praxis%200061%205061%20Alignment%20to%202012%20Math%20Content%20Secondary.pdf>

Analysis of the Findings

For the three-year period of this report (see Data Tables, page 3 of this document), the mean Praxis II score of our candidates is 147.4, surpassing the minimum required score by 10 points. Nineteen of the twenty-two candidates achieved the minimum score. This represents a passing rate of 86.4% of our candidates.

Our students' scores on the subtests varied depending on the domain as shown in the percent of questions answered correctly on each subtest: Functions and Calculus subtest, 50% correct; Algebra and Number Theory subtest, 63.8% correct; Measurement, Geometry, Trigonometry subtest, 62.5% correct; Data Analysis and Statistics subtest, 75.7% correct; and Matrix Algebra and Discrete Mathematics subtest, 60.1% correct.

Interpretation of the Findings

We believe that our data indicates our students are meeting the mathematics content standards described in the 2012 NCTM CAEP Mathematics Content for Secondary standards. Our mean scores is 10 points above the required pass score and 86.4% of our candidates passed the Praxis II during the time period reflected in the report. Program faculty work together to examine data from this exam and make program decisions based on this data.

Our data indicates that our students consistently score well on the Data Analysis and Statistics subtest and consistently score less well on the Functions and Calculus subtest. We have taken steps to address their relative lack of success on the Functions and Calculus subtest.

First, we recently began requiring our students to take a course titled Advanced Perspectives on High School Mathematics. The course is designed to help our candidates examine the mathematics taught at the high school level through the lens of university mathematics. Our goal is that they see clearly how the mathematics they are studying at the university connects to the mathematics of the secondary school. In addition, this course focuses heavily on developing an understanding of functions. Candidates learn about functions and then are asked to prepare and teach lessons about various functions and their representations.

Second, we have implemented an elective lab session for our Calculus I and Calculus II courses. Calculus I and II meet on Monday-Thursday and our lab sessions meet on Friday. The lab session is taught by a mathematics education faculty member and is designed to provide additional exploration and support on the topics being studied in the content course. The Calculus I and II instructors and the lab instructor work together closely so that the lab session enhances the understanding of the calculus topics being studied. The lab sessions are only open to mathematics education students and the low teacher to student ratio allows our students the opportunity to receive a great deal of one-on-one help. We believe these two measures will provide necessary support for our students that will lead to increased success on the Praxis Functions and Calculus subtest.

PRAXIS II SCORES
Overall and Subtest
Program Completers – 2010-2013

****The following NCTM CAEP Standards (2012) Domain Competencies are covered by PRAXIS II 5061:
A.1.1, A.1.2, A.1.3, A.1.4, A.2.1, A.2.2, A.2.3, A.2.5, A.3.2, A.3.3, A.3.4, A.3.5, A.3.6, A.3.7, A.4.1, A.4.3, A.4.4, A.5.1,
A.5.3, A.5.5, A.6.1, A.6.2**

Year	Completer	Score	Pass or Fail	Algebra Number Theory	Measure. Geometry Trig.	Functions Calculus	Data Analysis Statistics	Matrix Algebra Discrete Math
				8 possible	12 possible	14 possible	8 possible	8 possible
2010-2011	1			7	9	9	6	6
	2			5	5	7	6	7
	3			6	8	9	5	5
	4			5	10	11	6	3
	5			7	9	12	7	6
	6			7	6	4	5	2
	7			5	5	8	6	4
2011-2012	8			7	10	5	7	7
	9			4	9	6	8	6
	10			6	6	6	6	5
	11			5	4	6	7	7
	12			5	8	8	7	5
2012-2013	13			NA**	NA**	NA**	NA**	NA**
	14			2	6	5	6	5
	15			NA**	NA**	NA**	NA**	NA**
	16			4	7	6	5	3
	17			6	8	8	4	3
	18			4	8	8	7	5
	19			4	8	7	6	5
	20			5	9	11	6	4
	21			3	7	6	5	4
	22	We have been unable to obtain PRAXIS data on one of our students. She is currently teaching and the Missouri Department of Elementary and Secondary Education has confirmed that she passed. However, she did not request that her scores be sent to UCM and we have been unable to obtain them.						

PRAXIS Mathematics: Content Knowledge (5061) Alignment to NCTM CAEP Standards (2012)

Mathematics Content for Secondary. Available:

<http://www.nctm.org/uploadedFiles/Praxis%200061%205061%20Alignment%20to%202012%20Math%20Content%20Secondary.pdf>

** We did not receive subtest scores for two of our candidates. One of these candidates scored very well overall with a score of 175. The other candidate obtained the minimum passing score of 137.

**PRAXIS II Summary Data
Program Completers – 2010-2013**

***The following NCTM CAEP Standards (2012) Domain Competencies are covered by PRAXIS II 5061:
A.1.1, A.1.2, A.1.3, A.1.4, A.2.1, A.2.2, A.2.3, A.2.5, A.3.2, A.3.3, A.3.4, A.3.5, A.3.6, A.3.7, A.4.1, A.4.3, A.4.4, A.5.1,
A.5.3, A.5.5, A.6.1, A.6.2**

	Mean Score	Pass Rate	Algebra/Num. Theory Subtest	Measure/Geometry/Trig Subtest	Functions/Calculus Subtest	Data Analysis/Statistics Subtest	Matrix Algebra/Discrete Math Subtest
OVER 3 YEAR PERIOD	147.4	19/22 or 86.4%	5.1 out of 8 or 63.8% correct	7.5 out of 12 or 62.5% correct	7.1 out of 14 or 50.0% correct	6.1 out of 8 or 75.7% correct	4.8 out of 8 or 60.1 correct
BY YEAR							
2010-2011	149.4	6/7 or 85.7%	6 out of 8 or 75% correct	7.4 out of 12 or 61.7% correct	8.6 out of 14 or 61.4%	5.9 out of 8 or 73.8%	4.7 out of 8 or 58.8%
2011-2012	147.2	5/5 or 100%	5.4 out of 8 or 67.5% correct	7.4 out of 12 or 61.7% correct	6.2 out of 14 or 44.3% correct	7 out of 8 or 87.5% correct	6 out of 8 or 75% correct
2012-2013	146	8/10 or 80%	**4 out of 8 or 50% correct	**7.6 out of 12 or 63.3% correct	**7.3 out of 14 or 52.1% correct	**5.6 out of 8 or 70% correct	**4.1 out of 8 or 52.3% correct

PRAXIS Mathematics: Content Knowledge (5061) Alignment to NCTM CAEP Standards (2012)

Mathematics Content for Secondary. Available:

<http://www.nctm.org/uploadedFiles/Praxis%200061%205061%20Alignment%20to%202012%20Math%20Content%20Secondary.pdf>

** We did not receive subtest scores for two of our candidates. One of these candidates scored very well overall with a score of 175. The other candidate obtained the minimum passing score of 137.