Assessment Report, 2010/2011 Academic Year
Mathematics General Education Program

Prepared by Gregg Waterman, Mathematics General Education Assessment Coordinator

Introduction

This math department serves two important roles in the general education of OIT students: (1) Students receive basic mathematical training expected of any college graduate. (2) Students receive major-specific mathematical training in support of courses taken in their majors. During the fall departmental meeting on assessment the department agreed that the following mission, objectives and outcomes needed no changes:

Mission

All OIT students will receive a basic mathematics education expected of a college graduate. Those needing it will receive further instruction in support of their major courses of study.

Educational Objectives

Individuals having completed their required math courses at OIT will have an understanding of the fundamental skills of mathematics, and will understand and be able to apply mathematical concepts as needed in their major courses and daily lives.

Expected Student Learning Outcomes

Upon completion of their required math courses, students will be able to

1. apply mathematical concepts and principles to perform symbolic computations
2. create, use and analyze graphical representations of mathematical relationships
3. use mathematical concepts and techniques to solve applied problems

Data Collection/Assessment Schedule

Program Student Learning Outcomes	Academic Year Assessed		
	’08-9	’09-10	’10-11
1. Apply mathematical concepts and principles to perform symbolic computations.	X		X
2. Create, use and analyze graphical representations of mathematical relationships.	X	X	
3. Use mathematical concepts and techniques to solve applied problems.	X		

Table 1: Assessment schedule.

2010-11 Assessment Activities

Outcome 1: *Apply mathematical concepts and principles to perform symbolic computations.*

This outcome was assessed in Math 111 and Math 251 during the fall term of 2010. In each of those courses, final exams given in all sections of the course contained three questions related to this outcome. For the purposes of assessment, students’ answers were recorded as correct or incorrect, and a student was considered proficient in this outcome if they answered two or more of three questions correctly. Results were as follows:

	Course	
	Math 111	**Math 251**
Number of Students	102	73
Percentage Proficient	63.6%	60.6%

Table 2: Percentages of students demonstrating proficiency

The Mathematics Department feels that these results are acceptable, given the nature of the assessment activity.

Detailed assessment results are kept by Gregg Waterman, Assessment Coordinator for the Mathematics General Education Program.

Evidence of Student Learning

The Math Department will be assessing this outcome again in the Fall of 2011 as part of the mathematics ISLO assessment to be conducted during the 2011-2012 academic year.

Changes Resulting from Assessment

Outcome 2: *Create, use and analyze graphical representations of mathematical relationships.*

During the fall term of 2008 an assessment of Outcome 2, *Create, use and analyze graphical representations of mathematical relationships*, was conducted in several math courses. Results were acceptable in all but Math 111. In the Spring of 2009 the math faculty developed specific performance criteria for graphical comprehension in that course. At the start of the fall 2009 term, all faculty teaching Math 111 were reminded of the criteria, and the assessment process was repeated for graphical comprehension at the end of the fall 2009 term. The faculty devised five questions that were included in final exams for six sections of Math 111. A score of three or more correct was considered to demonstrate proficiency. The results for this re-assessment are shown below in Table 3. I was not able to find the data to determine the number of students in Fall 2008, but the sample was fairly large (undoubtedly over 80 students).

Term of Assessment	Number of students/ Percent performing at proficiency or higher
Fall 2008	?/54.6
Fall 2009	133/58.7

Table 3: Assessment of graphical comprehension in Math 111, Fall 2008 and Fall 2009

Feeling that the amount of improvement was less than satisfactory, the department agreed that in the fall 2010 term each person teaching Math 111 would include similar questions on either a quiz, hour exam, or both. The department then reassessed these items again on fall 2010 final exams. The result of that assessment is shown in Table 4 below.

Term of Assessment	Number of students/ Percent performing at proficiency or higher
Fall 2010	102/78.8

Table 4: Assessment of graphical comprehension in Math 111, Fall 2010

Some members of the Mathematics Department felt that the improvement observed was due, at least in part, to greater emphasis on graphing skills in daily instruction. It was also felt that the improvement could have occurred because of revision of one of the assessment questions on which students had previously scored particularly low.

<u>Appendix A</u>: Student Learning Outcomes/Course Curriculum

The courses listed in the following table are the core of the Mathematics Department's service courses, and are offered every term. The table indicates the extent to which each of the three student learning outcomes is addressed in each course. *Emphasized* indicates that there are at least three *core* performance criteria addressing that outcome, and *addressed* indicates that there are some performance criteria (core or non-core) addressing the outcome.

Course	**Student Learning Outcome**		
	Computation	**Graphing**	**Application**
Math 111	Emphasized	Emphasized	Addressed
Math 112	Emphasized	Emphasized	Emphasized
Math 243			
Math 251	Emphasized	Addressed	Emphasized
Math 252	Emphasized	Addressed	Emphasized
Math 254N	Emphasized	Addressed	Addressed
Math 321	Emphasized	Addressed	Emphasized
Math 361	Emphasized	Emphasized	Emphasized