

Student Learning Outcomes for MATH 22

Discrete Mathematics

Team Members:

Team Leader:

[Lisa Markus](#) (5523) in MATH

Other members:

1. [Lisa Markus](#) (x5523) MATH
2. [Doli Bambhania](#) (x5382) MATH

Additional team members/notes about team:

Doli Bambhania, Lisa Markus,

Additional Notes:

Outcomes:

Outcome 1 Phase I: Statement

Critique a mathematical statement for its truth value, defend choice by formulating a mathematical proof or constructing a counterexample.

Outcome 1 Phase II: Assessment Strategy Used:

Assessment Quarter: Spring 2011

Assessors: Lisa Markus, Lisa Markus

Assessment Tools: *No tools assigned.*

Outcome 1 Phase III: Reflect & Enhance

Number of people involved in Phase III: 1

Changes:

Methods:

The assessment was performed using a quiz. The quiz contained two statements. The students had to either prove (by writing a formal mathematical proof) or disprove (by giving a counterexample). One statement was true, the other false, although the students did not

know this in advance.

Findings and Conclusions:

7 out of 34 students did not recognize the first statement as false, and proceeded to give an incorrect proof rather than a counterexample. Every student attempted to prove the true statement, with only 1 student being unable to come up with a reasonable formal mathematical proof.

Enhancement (Planned Actions)**Part I:**

In the future, I will place more emphasis on examining statements and trying to decide their truth value before attempting a proof. It is a good idea to try a few examples to fit a statement to help determine the truth value.

Part II:

None needed.

Outcome 2 Phase I: Statement

Analyze and apply patterns of discrete mathematical structures to demonstrate mathematical thinking.

Outcome 2 Phase II: Assessment Strategy Used:

Assessment Quarter: Spring 2011

Assessors: Lisa Markus

Assessment Tools: *No tools assigned.*

Outcome 2 Phase III: Reflect & Enhance

Number of people involved in Phase III: 1

Changes:

Methods:

The assessment, done in class for 10 points of extra credit, was attempted by all students present that day. A recursively defined sequence was given. The students had to come up with an explicit formula for the sequence, then use mathematical induction to prove their formula holds.

Findings and Conclusions:

In general, the students were able to write out several terms of the sequence, but about half the students had difficulty coming up with an explicit formula. However, most students were able to outline a suitable proof by induction, even if it did not work out due to using the wrong formula.

Enhancement (Planned Actions)**Part I:**

Pattern recognition is an important skill, and requires much practice. Also, writing down a

pattern using formal mathematical writing is essential for students wishing to pursue further study in mathematics. In the future, I will spend more time giving examples on pattern recognition and assign more homework on the topic.

Part II:

None needed.

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