### Undergraduate Degree Program

**Program - CASE Mathematics with Mathematic Education SLO (BA)**

#### Mission Statement

The mission, in mathematics, of the department of mathematics and statistics, is to provide excellent teaching, perform high quality research in several different subfields of mathematics, and serve the discipline, university, community, and state. We aim to provide our students with a sound education in mathematics and prepare them to contribute significantly to 9-12 education.

#### Mathematics and Statistics

**Outcomes**

FIU graduates should be able to achieve the following:

<table>
<thead>
<tr>
<th>Content Knowledge and Skills (including Technology)</th>
<th>Direct Measures</th>
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<tbody>
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<td><strong>Content Knowledge</strong></td>
<td><strong>Procedures:</strong></td>
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| Graduates will demonstrate competency in the subject knowledge of Mathematics, especially in writing and critiquing mathematical proofs of statements about the structure of mathematical theories. Graduates will demonstrate competency in classroom management and in using a variety of teaching techniques. | **Assessment Instrument:** Closed-ended Exam  
**Assessment Method:** The exam will assess the following indicators of subject knowledge:  
- Demonstrates a core knowledge of Calculus, and Elementary Ordinary Differential Equations, their applications, and their solutions by several well-understood techniques.  
- Identifies basic theories, structures, and computational techniques of Linear Algebra and Discrete Mathematics.  
- Applies general mathematical models and theories and abstract reasoning to solve concrete problems and/or formulate mathematical proofs  
- Analyzes and critiques proofs and solutions to problems for correctness | **Course Assessed:** An Exit Exam will be given to all students in the Problem Seminar in Mathematics.  
**Minimum Criteria for Success:** Graduates will attain a minimum score of 70% of the possible points on subject knowledge. |

<table>
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<th>Critical Thinking</th>
<th>Direct Measures</th>
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<td><strong>Critical Thinking</strong></td>
<td><strong>Procedures:</strong></td>
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| Graduates will demonstrate competency in critical thinking by evaluating the correctness and relevance of mathematical proofs and computations. | **Assessment Instrument:** Rubric  
**Assessment Method:** Students a mathematical statement with an incorrect proof. The students have to:  
declare what's wrong with the proof  
determine whether the statement is true or false  
Then either correct the proof if the statement is true or provide a counterexample if the statement is false  
**Course Assessed:** All graduating students  
**Minimum Criteria for Success:** Students will earn a 7 out of 10 possible points. |

<table>
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<tr>
<th>Communication (Oral or Written)</th>
<th>Direct Measures</th>
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| **Communication Skills - Oral** | **Procedures:**  
**Assessment Instrument:** Rubric  
**Assessment Method:** A three-member faculty panel will use the attached rubric describing 4 indicators of oral communication |

B.S. graduates will demonstrate effective oral communication skills through their subject knowledge of Mathematics, organization of ideas, adequate connection to an audience, and
<table>
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<th>Communication Skills - Written</th>
<th>Procedure:</th>
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| Graduates will demonstrate effective written communication skills through their ability to provide appropriate content, organize arguments, make effective use of language, logic and standard mathematical notations, and use scientific editors such as TEX to present their work. | **Assessment Instrument:** Rubric  
**Assessment Method:** A three-member faculty panel will use the attached rubric describing 4 indicators of written communication skills (5-point rating scale; 20-point maximum) to assess students' performance on an expository essay.  
Indicators will include:  
- Content & development  
- Organization  
- Language  
- Conventions and use of technology  
A mean score for each student will be obtained from the faculty ratings.  
**Course Assessed:**  
**Sampling:** All graduating seniors will be evaluated when they make their presentation in the problem seminar.  
**Minimum Criteria for Success:** Graduates will attain an average minimum score of 12-points on the written communication rubric. |