# Program Report for the Preparation of Math Teachers 

## Education Standards and Practices Board

COVERSHEET

Institution: University of North Dakota
State: ND
Date Submitted: February 2008
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Program documented in this report:
Name of Institution's program: __Mathematics for Teacher Education
Grade levels for which candidates are being prepared_7-12
Degree or award level: __B.S. with major in Mathematics
Is this program offered at more than one site? $\quad \square$ Yes $\quad$ No
If yes, list sites at which the program is offered: $\qquad$

Title of the state license for which candidates are prepared Mathematics

Program report status:
$x$ Initial review
Rejoinder
Response to national recognition with conditions

## State licensure requirement for national recognition:

ESPB requires $80 \%$ of the program completers who have taken the test to pass the applicable state licensure test for the content field, if the state has a testing requirement. Does your institution require such a test? Test information and data must be reported in Section II

```
X Yes }\square\mathrm{ No
```


## REPORT

I. Contextual Information - Provides the opportunity for institutions to present general information to help reviewers understand the program.

## Candidate Information

Directions: Provide three years of data on candidates enrolled in the program and completing the program, beginning with the most recent academic year for which numbers have been tabulated. Please report the data separately for the levels/tracks (e.g., baccalaureate, postbaccalaureate, alternate routes, master's, doctorate) being addressed in this report.

| Program: <br> Mathematics |  |  |
| :--- | :--- | :--- |
| Academic <br> Year | \# of Candidates <br> Enrolled in the <br> Program | \# of Program <br> Completers |
| Sum04- <br> Spr05 | 17 | 6 |
| Sum05- <br> Spr06 | 19 | 3 |
| Sum06- <br> Spr07 | 25 | 2 |

## 11010 MATHEMATICS EDUCATION <br> I. Contextual Information \& Program Response To ESPB Standards

## Program:_Math Education

Teachers must have studied the mathematics they could be expected to teach. A high school background of four years of mathematics including the equivalent of pre-calculus is assumed. They also must study mathematics from the next level to help them understand the significance of what they teach for later courses. Teachers should experience mathematics instruction that models the methods they will be expected to be able to use in their own classes. This instruction, designed to actively engage students in higher-level mathematical activities, will include attention to mathematical communication, reasoning, problem solving, connections, and representation.

Descriptive Information About the Program (In a paragraph or two, describe the program-this is your chance to put your best programmatic foot forward.)

Over the last dozen years The Mathematics Department at UND has developed a national reputation for being innovative in mathematics education. This includes a continued interest in courses which serve students who are not pursuing mathematically intensive careers ; developing Math115 Introduction to Mathematical Thought for general education purposes, experimenting with a modeling approach to teaching Math103 - College Algebra. The innovation also includes the development
of an accelerated in-stream pre-calculus course, Math112 - Transition to Calculus, as well as Math425 Cryptological Mathematics. The department has had the opportunity to participate in a Mathematicians in Education Reform series of workshops. The departmental repertoire of pedagogical approaches, and assessment strategies is large, running the range from "sage on the stage", to "guide on the side", from daily homework, to cooperative group assignments.

## Response to Standards

11010.1 The program requires problem solving and mathematical reasoning. The program uses varied performance assessments of candidates' understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard. Problem solving and mathematical reasoning occur in almost every math course required for the secondary math education certification. Math165 - Calculus I, Math166 - Calculus II, Math265 - Calculus III, Math266 Differential Equations, Math208 - Discrete Mathematics, Math321 - Applied Statistical Methods, Math330 - Set Theory and Logic, Math409 - Geometry, Math435 - Theory of Numbers, Math441 - Abstract Algebra, and Math442 - Linear Algebra. Problem solving is addressed in the calculus sequence and differential equations in the guise of word problems. Problem solving is an integral part of Discrete Mathematics. Mathematical reasoning is primarily developed in Discrete Mathematics, Set Theory and Logic, and the requisite 400level courses.

Assessments
a. Math Praxis II Exam
b. Math330 Final Exams
c. Math208 Final Exams

Results
a. Praxis II results for Math

Fall, 2006-Summer, 2007

| Fall, 2006-Summer, 2007 |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Program Area | ND Passing <br> Score | Total Test <br> Takers | Average <br> Score | Percent <br> Passing |
| Mathematics-20069 | 139 | 2 | 176 | $100 \%$ |

b.-c. Math330 and Math208 Final Exam Scores

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH208 - Discrete Mathematics | 5 | 4 | 6 | 11 | 6 | 32 |
| Final Exam Scores | $15.6 \%$ | $12.5 \%$ | $18.8 \%$ | $34.4 \%$ | $18.8 \%$ |  |
| MATH330 - Set Theory and Logic | 1 | 1 | 3 | 5 | 2 | 13 |
| Final Exam Scores | $7.7 \%$ | $7.7 \%$ | $23.1 \%$ | $38.5 \%$ | $15.4 \%$ |  |

Student Work Samples
Math208 Final Exams, Math330 final exams
11010.2 The program includes the study of mathematical connections, communication and representation. The program uses varied performance assessments of candidates’ understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard.

Connections with physics and engineering are made throughout the calculus sequence and differential equations. Connections with computer science are studied particularly in Math208 - Discrete Mathematics.

Communication is stressed in every mathematics course. Students are expected to accurately and efficiently communicate in the language of mathematics. More emphasis is placed on communication in the guise of mathematical proof in the classes Math330 Set Theory and Logic, Math409 - Geometry, Math435 - Theory of Numbers, Math441 Abstract Algebra, and Math442 - Linear Algebra.
Calculus concepts are represented algebraically, numerically and graphically. Also in Discrete Mathematics relations are represented as sets, via matrices, and graphically.

## Assessments

b. Math Praxis II Exam
c. Math409 Final Exams
d. Math208 Final Exams
e. Math330 Final Exams

## Results

a. Praxis II results for Math

| Fall, 2006-Summer, 2007 |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Program Area | ND Passing <br> Score | Total Test <br> Takers | Average <br> Score | Percent <br> Passing |
| Mathematics-20069 | 139 | 2 | 176 | $100 \%$ |

b-c. Final Exams from Math208, Math330, and Math409

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH208 - Discrete Mathematics | 5 | 4 | 6 | 11 | 6 | 32 |
| Final Exam Scores | $15.6 \%$ | $12.5 \%$ | $18.8 \%$ | $34.4 \%$ | $18.8 \%$ |  |
| MATH330 - Set Theory and Logic | 1 | 1 | 3 | 5 | 2 | 13 |
| Final Exam Scores | $7.7 \%$ | $7.7 \%$ | $23.1 \%$ | $38.5 \%$ | $15.4 \%$ | 7 |
| MATH409 - Geometry Final Exam | 0 | 4 | 6 | 5 | $7.8 \%$ | 22 |
| Scores | $0 \%$ | $18.2 \%$ | $27.3 \%$ | $22.7 \%$ | $31.8 \%$ |  |

Student Work Samples
Math409 Final Exams Math208 Final Exams Math330 Final Exams
11010.3 The program requires candidates to demonstrate an understanding of the concepts of school mathematics including algebra and function, number and operation, geometry, statistics, probability, and measurement. The program uses varied performance assessments of candidates’ understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard

The successful calculus student must have mastery of basic algebra and function - in the sense of formula. Functions as sets of ordered pairs are studied in discrete mathematics and set theory and logic. Number and operation are studied in discrete mathematics and theory of numbers. Geometry is studied in Math409. Probability and statistics are studied in Math321-Applied Statistical Methods. Measurement in the guise of unit analysis is used commonly in applications of calculus and differential equations.

## Assessments

a. Math Praxis II Exam
b. Math321 Finals
c. Skills Assessment in Math166 and Math266

Results
a. Praxis II results for Math

| Fall, 2006-Summer, 2007 |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Program Area | ND Passing <br> Score | Total Test <br> Takers | Average <br> Score | Percent <br> Passing |  |
| Mathematics-20069 | 139 | 2 | 176 | $100 \%$ |  |

b. Math321 finals

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH321 - Applied Statistical | 0 | 4 | 11 | 9 | 5 | 29 |
| Methods Final Exam Scores | $0 \%$ | $13.8 \%$ | $37.9 \%$ | $31.0 \%$ | $17.2 \%$ |  |

d. Embedded Questions Assessing Skills in Math166 and Math266

| Assessment Scores | F/D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Math166 - Calculus II Embedded | 27 | 8 | 8 | 39 | 81 |
| Final Exam Question | $33.3 \%$ | $9.9 \%$ | $9.9 \%$ | $48.1 \%$ |  |
| Math266 - Differential Equations | 4 | 13 | 27 | 7 | 51 |
| Embedded Final Exam Question | $7.8 \%$ | $25.5 \%$ | $52.9 \%$ | $13.7 \%$ |  |

1. What student work samples that demonstrate a range of quality:

Math321 Finals
11010.4 The program requires the study of the core mathematics content including calculus, axiomatic geometry, linear and abstract algebra, analysis, statistics, probability and computer programming. The program uses varied performance assessments of students' understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard

All students are required to complete a programming course from the computer science department. Probability and statistics are studied in Math321-Applied Statistical Methods. Axiomatic geometry is studied in Math409-Geometry. Abstract Algebra and Linear Algebra are required courses for secondary mathematics education majors. The calculus sequence is required of all majors.

## Assessments

a. Math Praxis II Exam
b. Math321 Final Exams
c. Math409 Final Exams
d. Math441 Final Exams
e. Math442 Final Exams

## Results

a. Praxis II results for Math

| Fall, 2006-Summer, 2007 |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Program Area | ND Passing <br> Score | Total Test <br> Takers | Average <br> Score | Percent <br> Passing |
| Mathematics-20069 | 139 | 2 | 176 | $100 \%$ |

b-e. Math321 Finals, Math409 Finals, Math441 Finals, Math442 Finals

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH321 - Applied Statistical | 0 | 4 | 11 | 9 | 5 | 29 |
| Methods Final Exam Scores | $0 \%$ | $13.8 \%$ | $37.9 \%$ | $31.0 \%$ | $17.2 \%$ |  |
| MATH409 - Geometry Final | 0 | 4 | 6 | 5 | 7 | 22 |
| Exam Scores | $0 \%$ | $18.2 \%$ | $27.3 \%$ | $22.7 \%$ | $31.8 \%$ |  |
| MATH441 - Abstract Algebra | 1 | 1 | 4 | 3 | 4 | 13 |
| Final Exam Scores | $7.7 \%$ | $7.7 \%$ | $30.8 \%$ | $23.1 \%$ | $30.8 \%$ |  |
| MATH442 - Linear Algebra | 0 | 0 | 3 | 5 | 6 | 14 |
| Final Exam Scores | $0 \%$ | $0 \%$ | $21.4 \%$ | $35.7 \%$ | $42.9 \%$ |  |

Student Work Samples
Sample Finals from Math321, Math409, Math441, and Math442
11010.5 The program requires the study of the history and philosophy of mathematics. The program uses varied performance assessments of candidates’ understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard

All secondary mathematics education majors must complete Math308-History of Mathematics. Much of the philosophy of modern mathematics is studied in Math330 - Set Theory and Logic. Normally this course includes for example, Russell's Paradox, and the Axiom of Choice.

Assessments
a. Math Praxis II Exam
b. Math308 Final Exams
c. Math330 Final Exams

Results
a. Praxis II results for Math

| Fall, 2006-Summer, 2007 |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| Program Area | ND Passing <br> Score | Total Test <br> Takers | Average <br> Score | Percent <br> Passing |
| Mathematics-20069 | 139 | 2 | 176 | $100 \%$ |

b-c. Final Exams from Math330 and Math308

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH308 - History of | 2 | 0 | 4 | 6 | 8 | 20 |
| Mathematics Final Exam Scores | $10 \%$ | $0 \%$ | $20 \%$ | $30 \%$ | $40 \%$ |  |
| MATH330 - Set Theory and | 1 | 1 | 3 | 5 | 2 | 13 |
| Logic Final Exam Scores | $7.7 \%$ | $7.7 \%$ | $23.1 \%$ | $38.5 \%$ | $15.4 \%$ |  |

Student Work Samples
Sample Final Exams from Math308 and Math330
11010.6 The program requires the appropriate use of technology. It requires the study, selection, and use of concrete materials to help students build understanding of mathematical concepts. The program uses varied performance assessments of candidates' understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard. Computer projects are required in the calculus sequence and differential equations. Appropriate use of technology is also an essential part of applied statistical methods. Concrete materials to help students build understanding of mathematical concepts are studied in Math400 - Secondary Math Methods.

Assessments
a. Computer project assignments in the calculus sequence
b. Minitab Assignments in Math321
c. Math400 Final Exams = Lesson Plans

## Results

a. Computer Projects from the calculus sequence

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH166 - Calculus II | 0 | 2 | 0 | 4 | 19 | 25 |
| Computer Lab II Scores | $0 \%$ | $8 \%$ | $0 \%$ | $16 \%$ | $76 \%$ |  |

b. Minitab assignments from Math321

| Assessment <br> Scores | F | D | C | B | A | N |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH321 - Applied Statistical | 5 | 5 | 14 | 12 | 9 | 45 |
| Methods Minitab Assignment \#3 | $11.1 \%$ | $11.1 \%$ | $31.1 \%$ | $26.7 \%$ | $20 \%$ |  |

Student Work Samples
Sample Minitab assignments, Sample Lesson Plans from Math400.
11010.7 The program requires the study of a variety of teaching methods and strategies. The program uses varied performance assessments of candidates' understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard.

Math400 - Secondary Math Methods is the primary place where students have the opportunity to address this standard. Students are exposed to a variety of teaching methods and strategies in their math courses.

Assessments
a. Math400 Writing Assignments (Fall 2005 and 2007)
b. Math 400 Lesson Plan(s) (Fall 2005 and 2007)
c. Critical Task: The Lesson Plan (Fall, 2007)

## Results

a. Math400 Writing Assignments (Fall 2005 and 2007)
b. Math400 Lesson Plan(s) (Fall 2005 and 2007) (See Work Samples)
c. Critical Task: The Lesson Plan (Fall,2007)

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH400 - Secondary Math | 0 | 0 | 0 | 0 | 2 | 2 |
| Methods Writing Assignment 1 | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |  |
| MATH400 - Secondary Math | 0 | 0 | 0 | 0 | 2 | 2 |
| Methods | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |  |
| Lesson Plan I Scores |  |  |  |  |  |  |
| MATH400 - Secondary Math | 0 | 0 | 0 | 0 | 2 | 2 |
| Methods | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |  |
| Lesson Plan II Scores |  |  |  |  |  |  |

## Critical Task: Lesson Plan

Rubric Scores: Lesson Plan: Middle/Secondary School: Fall, 2007

| N=10 | Does not meet | Meets | Exceeds |
| :--- | :---: | :---: | :---: |
| 1.1 TaL INTASC 1 Teacher candidate possesses | 0 | 6 | 4 |
| content knowledge |  |  |  |

Results of assessments indicate that our candidates understand and are able to teach mathematics with two notable exceptions. All candidates were weak in areas related to diverse perspectives and adapting instruction. Faculty have targeted these and have initiated discussions as to how to address the weaknesses.

Student Work Samples<br>Math400 Writing Samples and Lesson Plans

11010.8 The program requires the study of formative and summative assessment strategies to determine students' understanding of mathematics and to help candidates monitor their own
teaching effectiveness. The program uses varied performance assessments of candidates' understanding and abilities to apply that knowledge.

List course number, title, description and any accompanying activities or experiences in which students engage to meet this standard

Math400 - Secondary Math Methods.
Assessments
a. Math400 Writing Assignments (Fall 2005 and 2007)
b. Math400 Lesson Plan(s) (Fall 2005 and 2007)
c. Critical Task: The Lesson Plan (Fall, 2007)

Results

| Assessment <br> Scores | F | D | C | B | A | N |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MATH400 - Secondary Math <br> Methods Writing Assignment 1 | $00 \%$ | 00 | 0 | 0 | 2 | 2 |
| $0 \%$ | $0 \%$ | $100 \%$ |  |  |  |  |
| MATH400 - Secondary Math <br> Methods <br> Lesson Plan I Scores | 0 | $0 \%$ | $0 \%$ | $0 \%$ | 0 | $0 \%$ | | 2 |
| :---: |
| $0 \%$ |

Rubric Scores: Lesson Plan: Middle/Secondary School: Fall, 2007

| N=10 | Does not meet | Meets | Exceeds |
| :---: | :---: | :---: | :---: |
| 1.1 TaL INTASC 1 Teacher candidate possesses | 0 | 6 | 4 |
| content knowledge |  | 60\% | 40\% |
| 1.2 TaL INTASC 1 Teacher candidate uses tools | 0 | 7 | 2 |
| of inquiry to develop content knowledge (i.e., |  | 70\% | 20\% |
| uses books, articles, data bases, teacher editions, professional resources such as curriculum standards to research content) |  |  |  |
| 1.3 TaL INTASC 1 Teacher candidate selects | 10 | 0 | 0 |
| content to encourage diverse perspectives | 100\% |  |  |
| 3.2 TAAL INTASC 3 Teacher candidate plans | 9 | 1 | 0 |
| and adapts instruction for individual needs | 90\% | 10\% |  |
| 7.1 TAAL INTASC 7 Teacher candidate plans | 1 | 4 | 5 |
| for a range of materials and resources to | 10\% | 40\% | 50\% |
| enhance all student learning experiences |  |  |  |
| 7.2 TAAL INTASC 7 Teacher candidate plans | 0 | 5 | 5 |
| content rich learning opportunities aligned with |  | 50\% | 50\% |


| 8.1 TaL INTASC 8 Teacher candidate possesses | 0 | 8 | 2 |
| :--- | :---: | :---: | :---: |
| knowledge of tools for assessment |  | $80 \%$ | $20 \%$ |

Results of assessments indicate that our candidates understand and are able to teach mathematics with two notable exceptions. All candidates were weak in areas related to diverse perspectives and adapting instruction. Faculty have targeted these and have initiated discussions as to how to address the weaknesses.

Student Work Samples

## Math400 Writing Samples and Lesson Plans

11010.9 Candidate assessment data are regularly and systematically collected, compiled, aggregated, summarized, and analyzed to improve candidate performance, program quality, and program operations. The program disaggregates candidate assessment data when candidates are in alternate route, off-campus, and distance learning programs.

## Math Department Assessment Process:

The mathematics department has six learning goals for its majors. The program review cycle is every seven years. In the intermediate six years each learning goal is assessed twice. Every nonreview year is used to assess two learning goals, one per regular semester. The program review year is used to close the assessment cycle.

Proficiency in basic computational skills from calculus and pre-calculus is the first learning goal. Appreciation for the importance of proof, knowledge of what constitutes a proof, and the ability to read and construct proofs is the second learning goal. The third goal is the appreciation of the role that examples play in mathematics, especially when an example should be used. An awareness of the applicability of mathematics is the fourth goal. Appreciation of the beauty of mathematics as an independent discipline is the fifth goal. The final goal is the appreciation of the subtlety and complexity of mathematics.

Each semester that data is collected at least one course required by secondary math education majors is used. An e-copy of the schedule for a basic seven year cycle is included.

In addition to assessing the major, the department also assesses courses for essential studies (general education) purposes, and assesses courses which serve students from other majors.

## Department of Teaching and Learning Assessment Process:

Data Collection. Data are collected at transition points throughout the program to assess candidate performance, program quality and program operations. The Teaching and Learning Undergraduate Assessment Committee (UGAC) develops an annual schedule for the purposes of data collection. T\&L undergraduate faculty who assess critical tasks, staff in the Office of Advising and Admissions and staff in the Office of Field Experience are responsible for
submitting data presented in the table below. The UGAC monitors the collection process and follows up in a timely manner when data is missing.

Data Analysis and Reporting. The UGAC is responsible for submitting annual report to the undergraduate faculty in the Department of Teaching and Learning, the Chair of Teaching and Learning and the Associate Dean for Teacher Education (NCATE Coordinator) based upon a detailed analysis of data collected over the course of the previous year. The Assessment Committee facilitates an annual Assessment Retreat. Faculty discuss the report at the departmental and individual program level and develop a written plan of action designed to address areas of weakness. Should no areas of weakness be found, a written record of faculty discussion leading to this conclusion is created. In between assessment retreats, the UGAC monitors progress in the implementation of the action plan(s). In subsequent retreats, the action plans are revisited and revised in light of the new round of data analysis.

Unit Assessment System for the Elementary Education Program

| Initial Programs Undergraduate | Upon Admission to Teacher Education | Before Entering Student Teaching | Before <br> Program <br> Completion | After Completion |
| :---: | :---: | :---: | :---: | :---: |
| - Elementary <br> - ECE/Elementary <br> - Elementary/Middle | - GPA <br> - PPST Score <br> - Letter of Application <br> - Dispositions | - Critical <br> Tasks <br> (Child <br> Study, <br> Multicultura <br> 1 Teaching, <br> Lesson <br> Plan, <br> Beliefs and <br> Practices <br> Statement) <br> - Praxis II <br> Tests <br> - Dispositions | - Critical <br> Tasks (Midterm <br> Evaluation, <br> Final <br> Evaluation <br> - Dispositions | Assessments: <br> - Graduate Surveys <br> - Principal Surveys |

## II. Multicultural/Native American /Diversity Standard

The program requires the study of multicultural education including Native American studies and strategies for teaching and assessing diverse learners.

This response is prepared for all programs approved by ESPB. If you are reviewing an undergraduate or initial program only, please read the sections of this response headed Initial Programs. For Advanced or Professional Programs, please read the sections of this response headed Advanced Programs. Syllabi, vita and cited electronic work samples referred to in the report may be found in the folder labeled "MC-Diversity Standard."

## MULTICULTURAL EDUCATION/NATIVE AMERICAN STUDY

## Initial Programs

## Opportunity to Address/Meet Standard

T\&L 433: Multicultural Education: All candidates in the Teacher Education Program at the University of North Dakota are required to complete this course (There is also a correspondence course with the same prefix and title which is offered to those who are in non-UND programs. Rarely, an exception is made for a candidate in the program who is unable to take the on-campus course.)

## Course Description

This class takes an anthropological view of multicultural education. It will help students better understand students in culturally diverse classrooms as well as prepare them to teach about cultural diversity. This class examines several cultures but is particularly interested in American Indians of North Dakota. Those original groups include: Lakota, Dakota, and Nakota, Chippewa, and the three affiliated tribes: Mandan, Hidatsa, and Arikara (see attached sample syllabus TL 433).

## Assessments/Results

1. Critical Task: Multicultural Teaching is submitted and assessed in LiveText, an on-line data management system. This Critical Task is a research paper based upon an issue in multicultural education. The paper includes a lesson plan which is assessed to determine candidates' ability to apply what they have learned related to diversity. The task was piloted in the spring of 2007 and assessed formally for the first time in the fall of 2007.

Initial Programs Critical Task Assessment Results for Multi-Cultural Teaching Fall 2007 N=90

| Teaching \& Learning Standards | Does Not Meet | Fulfills Expectations | Exceeds Expectations |
| :---: | :---: | :---: | :---: |
| 1.2 Teacher candidate uses tools of inquiry |  |  |  |
| to develop content knowledge. | 13\% | 56\% | 30\% |
| 1.3 Teacher candidate selects content to encourage diverse perspectives. | 13\% | 53\% | 33\% |
| 6.2 Teacher candidate uses language to promote learning (e.g., use questioning |  |  |  |
| skills, discussion techniques, delivery style, | 14\% | 56\% | 29\% |

nonverbal cues).
6.3 Teacher candidate uses media and technology as effective learning and communication tools. 6.6 Teacher candidate's communication skills facilitate partnerships with students, families and colleagues.
$13 \%$

15\%
52\%
32\%

Standards 1.3 and 6.6 especially target candidates knowledge and dispositions related to diversity. As indicate in the table $84 \%-86 \%$ of candidates meet or exceed expectations in these categories.
2. Mid-Term Showcase: Candidates work in pairs to create a showcase of a culture that includes engaging hands on learning activities.

| Fall 2007 | Multicultural Ed |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| TL433: Section 1: Midterm <br> Showcase Scores | A | B | C | D | F |
|  | $\# 30$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| $\mathrm{~N}=30$ | $100 \%$ |  |  |  |  |

3. Native American Reservation Field Trip: The class participates in a field trip, to an

American Indian reservation school K-12. Each candidate is expected to write a 3-5 page paper reflecting on the field experience. At a minimum, the student should provide answers to the following questions after the field experience: (a) What does education and learning experiences mean to these students; (b) Is the educational system ensuring that the diverse needs of those students are met?

The field trip reflection assessment rubric covers three areas:
(a) Focus (i.e. relevant, specific and clear response to the above questions.... 10 points);
(b) Perspective (i.e. the student reflects on the field trip from a diverse/multiple perspective... 10 points );
(c) Language/Grammar (i.e., the students uses appropriate diversity terminology/ language as well as correct grammar... 5 points).

| TL 433 Section 1:Fall 2007 | A | B | C | D |
| :---: | :---: | :---: | :---: | :---: |
| Field Trip Reflection Scores (N=30) | $\# 26$ | $\# 4$ | $\# 0$ | $\# 0$ |
|  | $87 \%$ | $13 \%$ |  |  |

## Student Work Samples

1. For candidate work related to the critical task (\#1 above), please click on the any of the documents below:

- Sample 1 Does Not Meet Expectations
- Sample 2 Meets Expectations
- Sample 3 Exceeds Expectations

2. A variety of student work samples related to the showcase will be available in the hard copy exhibit room.

## Advanced Programs

## Opportunity to Address/Meet Standard

EFR 506: Multicultural Education: Candidates who have not taken T\&L 433 as undergraduates are encouraged to take this course. As described in the catalog the course is a "review of the conceptual, historical, and theoretical aspects of multicultural education. A major goal will be to provide educators with the processes for incorporating multicultural education into their own education environments to meet the needs of their culturally diverse students and to increase the cultural awareness and sensitivity of all students. North Dakota/Native American issues are primary elements of this course" (pg.249). (Also, see attached sample syllabi: EFR 5061; EFR5062.

## Assessments/Results:

Course Grades

| Sections 1-4: SU, 2007 |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Course EFR 506: Multicultural Education | A | B | C | D | F |
|  |  |  |  |  |  |
| $\mathrm{N}=28$ | $\# 26$ | $\# 1$ | $\# 0$ | $\# 0$ | $\# 1$ |
|  | $93 \%$ | $3.5 \%$ | $\%$ | $\%$ | $3.5 \%$ |

As indicated by the majority of A's and B's in the chart above, candidates taking this course met or exceeded course goals.

## STRATEGIES FOR TEACHING AND ASSESSING DIVERSE LEARNERS

## Initial Programs

## Opportunity to Address/Meet Standard

T\&L 315: Education of Exceptional Students: All candidates in our Early Childhood Education, Elementary Education and Middle Level programs are required to take this course(see attached syllabus T\&L 315).

Course Description: "An orientation course, especially for classroom teachers, stressing the identification, characteristics and educational problems of exceptional children" (college catalog p.184).

TEAM Methods: Candidates in Elementary Education, Early Childhood Education and Middle Level Education take a series of methods related courses that require them to demonstrate an ability to accommodate instruction for students with special needs. Initially, candidates are presented with a case of a virtual student. They view a video and review an IEP and create a lesson plan with accommodations for this student (see IEP of Nathan). Next,
candidates complete a 60-hour field experience. They select a lesson for assessment that includes accommodations for one or more students in their field experience setting.

Integration of Special Needs: The secondary education program has developed an integrated approach to guide candidates' knowledge about and skill in teaching diverse learners (see Integration of Special Needs within the Secondary Education Program document).

Assessments/Results
Course Grades

| Fall 06 - Spring 07 |  |  |  |  |  |  |  | A | B | C | D | F |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Course TL 315: Education of Exceptional Students | $\# 148$ | $\# 34$ | $\# 7$ | $\# 4$ | $\# 4$ |  |  |  |  |  |  |  |
| N=197 | $75 \%$ | $18 \%$ | $3 \%$ | $2 \%$ | $2 \%$ |  |  |  |  |  |  |  |

Over $93 \%$ of candidates from spring 2006 to fall of 2007 met or exceeded expectations related to the content of TL315 as demonstrated by the percent of A's and B's awarded.

TEAM Methods: Candidates development and implement a lesson plan and during the 60 hour field experience tied to the methods semester that is submitted and assessed in LiveText, an on-line data management system. INTASC Standard 3 and Program Standard 3.1 are assessed to determine candidates’ abilities to accommodate all learners needs. Results from fall 2006-spring 2007 are presented in the table below:

| Standard: 3.2 TAAL INTASC 3 Teacher candidate <br> plans and adapts instruction for individual needs | Not Met | Met | Exceeds |
| :--- | :---: | :---: | :---: |
| Fall 2006 | $6.4 \%$ | $70.2 \%$ | $23.4 \%$ |
| Spring 2007 | $13.8 \%$ | $74.2 \%$ | $12 \%$ |

During the 2006-2007 academic year 87.2\%-94.6\% of candidates met or exceeded the standard related to adapting instruction. The faculty reviewed data in May of 2007 and were disappointed in the lower results in the spring semester. It was at this point that the case of Nathan was developed for implementation in the fall of 2007. We hope to see improvements during the 07-08 academic year.

Integration of Special Needs: Candidates development and implement a lesson plan and during the 60 hour field experience tied to the methods semester that is submitted and assessed in LiveText, an on-line data management system. INTASC Standard 3 and Program Standard 3.1 are assessed to determine candidates’ abilities to accommodate all learners needs. The Lesson Plan for secondary programs is submitted and scored only in the fall since this is when the methods courses are offered. At the time of this report, no results are available. Results for fall 2007 will be available in the spring of 2008.

Student Teaching Evaluations: Mid-term and final evaluations during the student teaching semester provide additional evidence that candidates in all of our programs
address the needs of diverse learners in their classrooms. Cooperating Teachers and University Supervisors complete these evaluations at mid and end term during the student teaching semester. The results for candidates' in the area of exceptionalities in the fall 2006 and spring 2007 are presented in the table below:

| INTASC Standard 3: Teacher candidate plans and adapts instruction for individual needs |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Mid Term N = 86 |  |  |  | Final N = 86 |  |  |  |
| Fall 06- <br> Spring 07 | Deficient | Developing | Proficient | Not <br> Observed | Deficient | Developing | Proficient | Not <br> Observed |
| All <br> Programs | $0 \%$ | $30 \%$ | $58 \%$ | $12 \%$ | $0 \%$ | $10 \%$ | $75 \%$ | $15 \%$ |

As noted in the evaluations $85 \%-88 \%$ of candidates during student teaching are able to adequately address this standard. In addition, $20 \%$ of candidates moved from the developing to proficient category by the end of the their student teaching assignment.

## Advanced Programs

Opportunity to Address/Meet Standard
EFR 506: Multicultural Education: Candidates who have not taken T\&L 433 as undergraduates are encouraged to take this course. The emphasis of the course may vary dependent upon the semester. For example, in the summer of 2007 one section of EFR 506 emphasized issues in special education within the context of the multicultural framework (see syllabus EFR 506).

Assessment /Analysis
Course Grades

| Course | A | B | C | D | F |
| :--- | :---: | :---: | :---: | :---: | :---: |
| EFR 506: Multicultural Education: Sec3: SU, 2007 | $\# 12$ | $\# 1$ | $\#$ | $\#$ | $\# 1$ |
| N=14 | $86 \%$ | $7 \%$ | $0 \%$ | $0 \%$ | $7 \%$ |

As indicated by the majority of A's and B's in the chart above, candidates taking this course met or exceeded course goals.

Other important diversity aspects are part of the curriculum in the required courses of EFR 500: Philosophical Foundations of Education, TL 540: Philosophies and Theories of Curriculum, and TL 542: Models of Teaching. In addition, the candidate is required to take an additional three credits of foundations. Typically, they are advised to take EFR 505: Social Foundations of Education or EFR 507 Gender and Education; in either of these latter two courses, candidates study multicultural education, diversity education, and socioeconomic aspects related to access, equality, and equity.

TL 590 ST: Children's Literature in the Classroom. In this course, candidates in the reading specialist and elementary education advanced programs read multicultural literature and critique literature used in classrooms to determine its resonance with all students. Further, students complete projects which explore Native American Literature. The syllabus for TL590ST states the following goal:

- Expand your knowledge of the wealth of literature available for diverse children in classrooms (NBPTS \#2)

The goal is met through reading and discussing articles and children's literature and by assignments. Sample readings and assignments are provided to illustrate candidate experiences.

Sample articles on diverse learners (cultural, racial, gender, socioeconomic)

- Enteneman, J., Murnen, T. J., \& Hendricks, C. (2005). Victims, bullies, and bystanders in K-3 literature. The Reading Teacher, 59, pp. 352-364.
- Livingston, N. \& Kurkjian, C. (2005). Circles and celebrations: Learning about other cultures through literature. The Reading Teacher, 58, pp. 696-703.
- Louie, B. L. Guiding princiles for teaching multicultural literature. The Reading Teacher, 59, pp. 438-448.
- Wason-Ellam, L. (1997). "If only I was like Barbie." Language Arts, 74(6), pp. 430-437.
- Yenika-Agbaw, V. (1997). Taking children’s literature seriously: Reading for pleasure and social change. Language Arts, 74(6), pp. 446-453.

Multicultural and gender-based literature assigned for the course and read by candidates:

- Curtis, C. P. (1995). The Watsons Go To Birmingham. Yearling. ISBN: 0440414121
- DiCamillo, K. (2000). Because of Winn-Dixie. Scholastic. ISBN: 043925051X
- Erdrich, L. (1999). The Birchbark House. Scholastic. ISBN: 0439203406
- Munsch, R. (1980). The Paper Bag Princess. Annick Press. ISBN: 0920236162
- Ryan, P. M. (2000). Esperanza Rising. Scholastic.

Artifacts supplied to illustrate multicultural course experiences are listed here and supplied for perusal.

- PowerPoint by candidate-Contemporary Native Americans and Literature
- Character Comparison between Esperanza in Esperanza Rising and Opal in Because of Winn-Dixie
- Key Discussant Grade Report on Birchbark House with bibliography of Native America book resources and teaching ideas
- Multicultural Book Analysis

TL 590 ST: Writing in the Elementary School Classroom. In part this course is designed to increase candidates' ability to effectively teach diverse children to write, respecting development, culture, gender, and individuality. Though meeting a goal such as this is integrated throughout the semester, specific course readings and activities are devoted to the goal. Readings on gender and writing, specifically paying attention to boys, and culturally conscious writing instruction is also addressed. Multicultural and gender-based readings include the following:

- Dworin, J. E. (2006). The family stories project: Using funds of knowledge for writing. The Reading Teacher, 59(6), 510-520.
- Dyson, A. H. (1998). Fold processes and media creatures: Reflections on popular culture for educators. The Reading Teacher, 51(5). 392-402.
- Fletcher, R. (2006). Boy writers: Reclaiming their voices. (Chapter 10). Portland, ME: Stenhouse Publishers.
- Fu, D. \& Shelton, N.R. (2007). Including students with special needs in a writing workshop. Language Arts, 84(4), 325-336.
- Newkirk, T. (2000). Misreading masculinity: Speculations on the great gender gap in writing. Language Arts, 77(4), 294-300.
- Rubin, R. \& Carlan, V. G. (2005). Using writing to understand bilingual children’s literacy development. The Reading Teacher, 58(8), 728-739.

One artifact supplied to illustrate linguistic/cultural study of writers is a whole class effort to identify ways to support ELLs in the writing classroom. Candidates reviewed numerous books and articles, identified resources, and gleaned specific practical ideas for supporting young writers. The series of charts that evolved from that activity are supplied as an example of the type of learning event that is integrated in the course to learn about supporting multicultural learners in writing.

## Programs for Other School Professionals

In addition to the instruction and assessment in the above programs, the following coursework in Educational Leadership and School Counseling attend to multicultural and diversity issues.

## Educational Leadership:

Opportunity to Address/Meet Standard: Courses
EDL 514: Personnel, Supervision, and Staff Development: Various in-depth discussions regarding diversity occur (e.g., Native American and the BIA system). EDL 516 Policy and Educational Finance: Candidates conduct research on various schools, locations, and issues. An example of a research project may be an exploration of the funding for a Native American school.
EDL 519: The Principalship: Principals from various schools (including Indian Reservations) discuss the complexity of education and how it affects students, teachers, and communities.
EDL 501: Leadership, Planning, and Organizational Behavior: Studies include shaping school culture, addressing individual and group needs, setting goals and priorities according to the context of the community.
EDL 511: Personal Communications and Ethics: Discussions are held on how culture, age, and socioeconomics influences education.

## Assessments Include:

## Exams

Research Papers
Portfolios

## School Counseling:

Opportunity to Address/Meet Standard: Courses
Coun 518: Group Theory and Process: Addresses the principles and practices of support, task, psycho-educational, and therapeutic groups with various populations in a
multicultural context. Includes study of professional issues relevant to group processes, involves participation and leading group experiences.

Coun 531: Psychology of Women, Gender, and Development: This course presents current research and trends in developmental theory, particularly theories pertaining to psychological development of women and men. Issues such as abuse, ageism, depression, eating disorders, emotional experience and expression, heterosexism, feminism, and multiculturalism will be examined as related to the practice of psychology. Learning methods include writing, music, film, group discussion and creative projects.

Coun 532: Multicultural Counseling: "This course offers an introduction to counseling theories and interventions appropriate for American ethnic and non-ethnic minority clients. The values suppositions of various cultural groups will be examined"(college catalog p. 24).

Assessments Include:
Papers
Exams
Presentations
Counselor Preparation Comprehensive Examination (CPCE)
Student Internship Evaluation Forms

CURRICULUM EXHIBIT FORM BASIC PROGRAM
EDUCATION STANDARDS AND PRACTICES BOARD
SFN 14381 (05-06)

| Institution: University of North Dakota |  | Major: Mathematics |
| :---: | :---: | :---: |
| Credits are: Semester |  |  |
| Credits required for degree: 125 (36 of which must be numbered 300 or above, and 60 of |  |  |
| which must be from a 4-yr institution) |  |  |
| General Studies | Teaching Specialty | Professional Education |
| Must total at least 39 credits | Credits required: 51-52 | Credits required: 37-39 |
| Behavioral Sciences (9 Min) <br> Electives in at least 2 areas from the following departments: Anthropology, A\&S, <br> Communication, CSD, <br> Economics, Geography, History, <br> Honors, Humanities, Indian <br> Studies, Music, Nursing, <br> Nutrition, Political Science, <br> Psychology, Recreation and <br> Leisure, Rehab Services, <br> Sociology, Social work, Space <br> Studies, T\&L. 9 credits Total <br> Humanities <br> (9 Min) <br> Electives from at least 2 areas in the following departments: Art, EHD, English, Fine Arts, History, honors, Indian Studies, IT, Languages, Music, Philosophy, Political Science, Religion and Theater Arts. 9 credits Total <br> Natural Sciences (9 Min) <br> Electives in at least 2 areas and <br> 1 lab science from the following departments: Anthropology, <br> Atmospheric Sci, Biology, <br> Chemistry, Computer, Sci, <br> Economics, Geography, <br> Geology, Honors, Humanities, IT, <br> Mathematics, Nutr and Dietetics, <br> Philosophy, Physics, Psychology, <br> Sociology and Space Studies 9 credits Total <br> Symbolic Systems <br> Engl 110 Composition <br> Engl 120 Composition <br> Comm 110 Public Speaking (3) <br> OR Engl 125 OR Advanced <br> Composition Course <br> 9 credits Total | Math 165 Calculus I 4 <br> Math 166 Calculus II 4 <br> Math 265 Calculus III 4 <br> Math 266 Elementary Differential Equations 3 <br> Math 208 Discrete Mathematics 3 <br> Math 308 History of Math 3 <br> Math 321 Applied Statistical Meth 3 <br> Math 330 Set Theory and Logic 3 <br> (Two Semester Sequence) <br> Math 409 Geometry 3 <br> Math 435 Number Theory <br> 3 <br> (Two Semester Sequence) <br> Math 441 Abstract Algebra 3 <br> Math 442 Linear Algebra <br> 3 <br> Computer Science Requirement CSCI 160 Computer Science (4) or higher level computer science courses in programming such as CSCI 161, 170 ect. <br> Writing Requirements (8-9 credits) <br> Engl 110, 120, 125, 305, 308, 408, 411, 412, ISBE 320, Hist 240, Hon 489 | T\&L 325 Exploring Teaching in Secondary Schools (3) <br> T\&L 345 Curriculum <br> Development (3) <br> T\&L 350 Dev \& Ed of Adolescent <br> (3) <br> T\&L 386 Field Experience <br> (Optional 1) <br> T\&L 390 Special Interest Topics (1-3) <br> Math 400: Methods and <br> Materials: Middle/Secondary <br> Mathematics (3) <br> T\&L 433 Multicultural Ed (3) <br> T\&L 460 Micro Teaching (3) <br> T\&L 486 Field Experience (1) <br> T\&L 488 Senior Seminar (1) <br> T\&L 495 Independent Study <br> (Optional 1) <br> T\&L 487 Student Teaching (16) |
| Total | 51-52 Total | 37-39 Total |

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