



**North Dakota Education Standards and Practices Board
Initial Program Report
Preparation of Mathematics Teachers
(05-17)**

COVER SHEET

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2. Date Submitted: November 30, 2018
3. Preparer of this Report:
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5. Name of Institution's program: Mathematics Education
6. Grade levels for which candidates are being prepared: 5-12
7. Degree or award level (select one)
 - a. Initial
 - i. ☒ Baccalaureate
 - ii. ☐ Post Baccalaureate
8. Is this program offered at more than one site?
 - a. ☐ Yes
 - b. ☒ No
9. If your answer is yes to the above question, list the sites at which the program is offered:
10. Program report status (check one):
 - a. ☐ Initial Review
 - b. ☒ Continuing Review
 - c. ☐ Focused Visit

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SECTION I: CONTEXTUAL INFORMATION

1. Candidate Information

Directions: Provide three cycles 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, post-baccalaureate, alternate routes, master's, doctorate) being addressed in this report.

Program:

Academic Year	# of Candidates Enrolled in the Program	# of Program Completers
2017-2018	16	3
2016-2017	9	1
2015-2016	9	2

* Enrolled candidates are those formally admitted to the program as of the institution's official fall reporting date or as of October 15 of each academic year.

** Program completers are those candidates for whom a degree is conferred within the selected academic year. The academic year begins in the fall and concludes in the spring or summer of the following year depending upon whether candidates are granted degrees in the summer.

2. Curriculum Exhibit (Select 1)

- a. ☐ **Option 1:** Complete the Curriculum Exhibit Form below. **Include an electronic link to each syllabus for courses listed under the Teaching Specialty and the Professional Education columns.**
- b. ☐ **Option 2:** Upload the Program Status Sheet (must include general studies, specialty area, and professional education courses). **Include an electronic link to each syllabus for courses listed under the Teaching Specialty and the Professional Education columns.**

Curriculum Exhibit Form SFN 14381. Provides the opportunity for institutions to document the entire program including general studies, teaching specialty, and professional education.

- Curriculum exhibit forms are to be prepared for every basic and advanced program being brought forward for either initial or continuing approval by the Education Standards and Practices Board (ESPB).
- A separate sheet is to be completed for **each** program for which approval is requested. If more than one program is offered within an approval category, a separate sheet must be completed for each of those programs. For example, if both instrumental and vocal/choral music majors are offered, complete a separate sheet for each. Also, for example, a separate sheet must be completed for each of the science and social science majors.

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**CURRICULUM EXHIBIT FORM BASIC PROGRAM
EDUCATION STANDARDS AND PRACTICES BOARD
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Institution: Mayville State University		Major: Mathematics Education
Total credits required for degree: 128		
General Studies	Teaching Specialty	Professional Education
Credits Required: 36	Credits Required: 32	Credits Required: 41
<u>Communication: 9 credits</u> ENGL 110 College Composition I (3) COMM 110 Fund Public Speaking (3) ONE of the following: ENGL 120 College Composition II (3) ENGL 125 Business & Tech Writing (3) <u>Computer Information System: 1 credit</u> CIS 175 Information Literacy (1) <u>Humanities & Social Science: 15 credits</u> Humanities: minimum 6 credits Social Science: minimum 6 credits GEOG 103 Multicult Wrld, Global Issues (3) PSYC 111 Intro. to Psychology (3) <u>Mathematics & Science: 11 credits</u> Mathematics: minimum 3 credits MATH 103 College Algebra (3) Science: minimum 4 credits (lab 1 credit)	<u>Pre-requisite Courses:</u> MATH 165 Calculus I (4) MATH 105 Trigonometry (2) MATH 166 Calculus II (4) MATH 265 Calculus III (4) MATH 323 Probability & Statistics (3) MATH 389 Modern Geometry (3) MATH 412 Differential Equations (3) MATH 420 History and Philosophy of Mathematics (3) MATH 435 Theory of Numbers (3) MATH 443 Algebraic Structures with Programming for Majors (3) MATH 480 Mathematics Comprehensive (1)	EDUC 250 Intro. To Education (3) EDUC 272 Educational Technology (2) EDUC 290 Theories of Learn. & Mgmt. (2) EDUC 380 Teaching ELLs (2) EDUC 381 Human Relations & Cultural Diversity (3) EDUC 390 Special Needs in an Inclusive Environment (3) EDUC 400 Student Teaching (10) EDUC 401 Electronic Portfolio, Assessment, and Seminar (2) EDUC 401S Pre-Student Teaching Seminar (0) EDUC 422 Educational Assessment (2) EDUC 426 Reading In the Content Area (2) EDUC 480 General Methods for Secondary Educators (4) EDUC 480L Gen. Methods Field Exp. (1) EDUC 483 Secondary Methods for Math (2) PSYC 255 Child & Adolescent Psyc (3)
NOTE* A cumulative GPA of 2.75 must be earned in teaching major, minor, and professional education courses. A grade of "C" or better is required for all professional and methods education courses, excluding EDUC 250 where a "B" is required.		

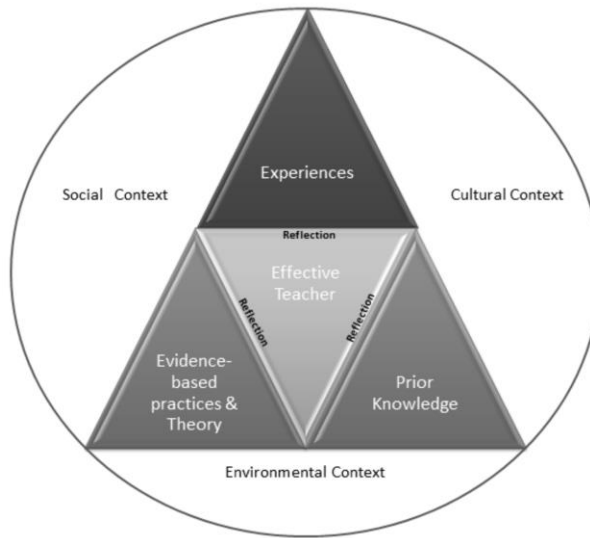
ESPB does not advocate, permit, nor practice discrimination on the basis of sex, race, color, national origin, religion, age or disability as required by various state and federal laws.

- 3. Descriptive Information about the Program:** Provide a one to two paragraph description to help reviewers understand your program (include information that describes how a student typically moves through the program from entry to exit).

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The Mayville State Educator Preparation Program (EPP) is committed to creating a collaborative culture that frames the development of teacher candidates' knowledge, skills and dispositions through intentional, dynamic, integrated, and diverse teaching and learning experiences that support personalized, professional growth to positively impact learners. Our vision is to be a leader in educator preparation through transformative, relevant programming, learner-centered pedagogy, and partnerships that enable unique opportunities for quality experiences supportive to learning and leadership. We prepare highly qualified professionals to work with diverse populations in multiple environments.

The Reflective Experiential Teacher conceptual framework supports the inclusion of effective, research-based teaching strategies. It is based upon a belief that teacher candidates develop the ability to reflect on and apply current research findings, theoretical knowledge, and effective teaching practices.



The InTASC model core teaching standards outline what teachers should know and be able to do to ensure all learners reach the goal of being ready to enter college or the workforce in a global society. These standards outline the common principles and foundations of teaching practice that cut across all subject areas and grade levels and that are necessary to improve student achievement. The EPP uses the InTASC standards as a guide to measure teacher candidate proficiencies of the Reflective Experiential Teacher framework. The standards emphasize that candidates must demonstrate knowledge, performances and dispositions in four categories: the learner and learning, content, instructional practice, and professional responsibility. These create the program's Student Learning Outcomes (SLOs):

SLO 1 *Learner & Learning:* Teacher candidates understand diversity in learning and developmental processes and create supportive and safe learning environments for students to thrive.

SLO 2 *Content:* Teacher candidates understand subject matter deeply and flexibly so they can advance their students' learning, address misconceptions and connect ideas to everyday life.

SLO 3 *Instructional Practice:* Teacher candidates will plan instruction, utilize effective instructional strategies and technologies, and continuously assess students for mastery and decision-making purposes.

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SLO 4 *Professional Responsibility*: Teacher candidates take responsibility for student learning, positive relationships, their own professional growth, and the advancement of the profession.

Learner & Learning	Content	Instructional Practice	Professional Responsibility
•Learner Development •Learning Differences •Learning Environments	•Content Knowledge •Application of Content	•Assessment •Planning for Instruction •Instructional Strategies	•Professional Learning & Ethical Practice •Leadership & Collaboration

Mathematics Education, B.S.ED.

MSU's mathematics education program provides teacher candidates with the knowledge, skills, and techniques that are essential for teaching mathematics. Candidates develop an awareness of the vital connections between mathematical topics and their real world applications. The online mathematics education program, with a minor in business administration, accounting, special needs, library media & information science, or general science is a transfer student-oriented program. Students planning to teach (in grades 5-12) must complete a major, 36 hours of essential studies courses, the mathematics core requirements, and the secondary professional courses required for teacher certification. All math education majors must complete a minor program except students with a previously earned Bachelor's degree. Teacher certification also requires completion of EDUC 398-Secondary Education Field Experience, EDUC 483-Secondary Methods for Mathematics, and EDUC 426-Reading in the Content Area. Pre-requisite courses, MATH 165 (Calculus I), COMM 110, ENGL 110, ENGL 120 or ENGL 125, and PSYC 111 are required, as well.

Mathematics Content Area Student Learning Outcomes:

SLO 1: Students will acquire a content knowledge base commensurate with career goals.

SLO 2: Students will communicate mathematics information both orally and in writing.

SLO 3: Students will apply mathematics in context, including at least one experiential situation, to solve problems.

SLO 4: Students will construct and critically analyze mathematical arguments.

SLO 5: Students will integrate technology appropriate to their major into their work

Admission to the EPP:

Students intending to earn a teaching certificate in conjunction with a degree must complete and submit a formal application to the Teacher Education Program. Students are informed of requirements by academic advisors and complete necessary forms in EDUC 250. Students who have not been admitted to the program have limited course offerings at or beyond the 300 level. Figure 1 shows how candidates progress through the program from admission to completion. An example program of study/sequence of courses (Figure 2) for Secondary Education majors is included.

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Criteria for Admission:

1. Display satisfactory skills as demonstrated by successful completion of the following courses with these minimum grades:

- | | |
|--|---|
| a. ENGL 110- College Composition I | C |
| b. ENGL 120- College Composition II | C |
| c. or ENGL 125- Business/Technical Writing | C |
| d. MATH 103- College Algebra | C |
| e. COMM 110- Fundamentals of Public Speaking | C |
| f. PSYC 111- Introduction to Psychology | C |
| g. PSYC 255- Child & Adolescent Psychology | C |
| h. EDUC 250- Intro to Education | B |

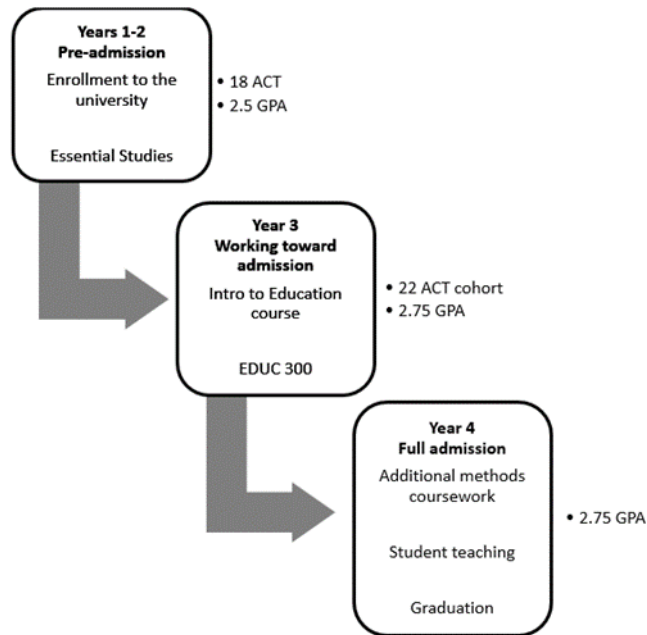


Figure 1. Admission and progression in teacher education programs

2. Successfully complete the Praxis Core Academic Skills for Educators test prior to admission to Teacher Education with scores that meet North Dakota licensure requirements.

(1) meeting the passing score of 156 for Core Academic Skills for Educators: Reading (5712), meeting the passing score of 160 for Core Academic Skills for Educators: Writing (5722), and meeting the passing score of 150 for Core Academic Skills for Educators: Mathematics (5732)

or

(2) meeting a composite score of 466 with no score being below the minimum set for each test; test minimums: 149 for Core Academic Skills for Educators: Reading (5712), 153 for Core

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Academic Skills for Educators: Writing (5722), and 143 for Core Academic Skills for Educators: Mathematics (5732)

3. Attain a cumulative grade point average of 2.75;
4. Pass admission interview with a score of 2 or 3 (scores of 0 or 1 considered by the Subcommittee of Admission and Retention);
5. Consideration of recommendations from faculty, staff, or other references;
6. Proof of current student liability insurance;
7. Proof of fingerprinting and a background check clearance; and
8. Receive final approval from the Subcommittee of Admission and Retention when all criteria are met.

	Freshman Year	Summer	Sophomore Year	Summer	Junior Year	Summer	Senior Year
Fall	COMM 110 (3) ENGL 110 (3) PSYC 111 (3) GEOG 103 (3) HIST 101, 102, 103, 104 (3) UNIV 100 (1) CIS 175 (1) 17 credits	SPED 389 (3) Content Area (6) 9 credits	EDUC 250 (3)* EDUC 272 (2) EDUC 290 (2) HPER 100 (2) SCI 102 & L (4) Content Area (6) 19 credits	SPED 395 (2) EDUC 381 (3) Content Area (3) 8 credits	EDUC 426 (2) MATH 307 (3) EDUC 318 (3) SPED 386 (3) SPED 387 (2)* Content Area (3) 16 credits	SPED 396 (3) SPED 397 (3) Content Area (3) 9 credits	EDUC 481, 2, 3, 4, 5 (2) EDUC 398 (1)* SPED 382 (3) SPED 383 (2)* SPED 351 (1)* EDUC 401s (0) Content Area (8) 17 credits
Spring	ENGL 120 (3) PSYC 255 (3) HPER 210 (1) SCNC 101 & L (4) MATH 103 (3) HUM Elect. (3) 17 credits		EDUC 390 (3) SPED 384 (3) SPED 385 (2)* HUM Elect. (3) SPED 330 (3) Content Area (3) 17 credits		EDUC 480 (4) EDUC 480L (1) EDUC 380 (2) EDUC 422 (2) SPED 350 (3) Content Area (6) 18 credits		EDUC 401(2) EDUC 400 Student Teaching (10)* SPED 400b Special Ed (5)* 17 credits
	34 credits	6 credits	36 credits	8 credits	36 credits	9 credits	34 credits

*Courses indicated are designated clinical experience; highlighted courses indicate professional core

- UNIV 100 is a 1 credit course only required for incoming freshman

- 38SH for Content area coursework included in plan-will vary according to each Secondary Education Major, consult the course catalogue for requirements of each major

- Composite in Biology Education: 57 credits

- Composite in Chemistry Education: 53 credits

- Composite in Social Science Education: 43 credits

- English Education: 34 credits

- Physical Education: 38 credits

- Geography Education: 32 credits

- Health Education: 32 credits

- History Education: 34 credits

- Mathematics Education: 29 credits

Figure 2. Degree Plan for Secondary Education Majors with Special Education Major Included

Continuance in the Teacher Education Program:

Admission to teacher education does not guarantee that a candidate will be retained in the program. To continue in the Teacher Education program, the candidate must:

1. Maintain a cumulative grade point average of 2.75;
2. Demonstrate expected acceptable dispositions



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3. Continue to obtain satisfactory recommendations from faculty, staff, and field-experience supervisors.

If requirements for continuance are not maintained, the Admission and Retention Committee (A&R) may recommend suspension from the program. If any one of the above three criteria are not met, the Chair of the Division of Education will review and may appoint a 3-person subcommittee of the A&R Committee to review the student file and relevant materials (InTASC evaluations, Disposition Evaluations, GPA, Coursework, etc.). A determination of action will be made by the 3-person committee that may include: mentoring, improvement plan, probation, suspension. A recommendation of suspension or expulsion from the program will be moved to the full A&R Committee.

Exiting the Teacher Education Program:

A favorable recommendation for teacher certification upon completion of the entire teacher education program requires:

1. All teacher education graduates must earn a minimum grade point average of 2.75 in their cumulative, major, minor, and professional education coursework. A grade of “C” or better is required for all professional and methods education courses, excluding EDUC 250 where a “B” is required; and
2. All teacher education graduates are required to take Praxis Subject Area Assessment Tests and Principles of Learning and Teaching (Early Childhood Education, Elementary or Secondary) prior to graduation.
3. Successful completion of electronic portfolio and presentation; and
4. A favorable recommendation from the Teacher Education Committee.

Upon exit, students may continue to expand their certifications through the addition of minors, majors and endorsements. Students seeking an additional SPED major immediately following completion of their first major must complete the major requirements which may or may not include 30 unduplicated credit hours.

4. Changes in the Program since the Last Review: Please describe any changes since the last review and include rationale for those changes.

The following changes in core courses in professional education occurred since the last comprehensive review in 2013 and focus visit in 2015. A rationale for each decision is provided.

Professional Education Courses			
	Change	Rationale	CAEP Alignment
1	EDUC 250 (2 SH) and EDUC 298 (1 SH) which are co-requisite will be combined into one course listed as EDUC 250 (3 SH) for F18-total credits maintained	This course has a common numbering in the NDUS and will now ensure the practicum experience occurs for transfer students beginning a teacher training program. For candidates who transfer a 2 SH course, EDUC 298a was created to	1.1 2.3

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		ensure the EDUC 250 embedded clinical experience is completed.	
2	EDUC 272 (1 SH) increased F18 to two semester hours	To better support candidate knowledge and application of the ISTE standards for teaching with technology, the course was increased to 2 SH.	1.1 1.5 CCT-T
3	EDUC 422 Learning Theory and Evaluation (3 SH) was separated into two courses; EDUC 290 Theories of Learning and Management (2 SH) and EDUC 422 Educational Assessment (2 SH)	The 422 course contained content about foundational concepts and theories of learning needed at the beginning the beginning of the education program to best scaffold instruction, as well as advanced methods and application of educational assessment. To best scaffold instruction, EDUC 290 now contains the foundational content and does not require admission, while EDUC 422 is advised to be taken closer to program completion and requires admission. This change was made to better support candidate's learning progressions.	1.1
4	EDUC 380 Teaching English Language Learners (1 SH) was added to the professional education core courses in F14	This course was added to support teaching knowledge and skills related to the specific learning needs of the EL population. While concepts were integrated across methods courses, establishing a stand-alone course dedicated to specialized topics better supports candidates ready to teach all students. This change was also made in response to graduate survey results; completers indicated they did not feel well prepared to design instruction for EL students.	1.1 1.4 CCT-D
5	EDUC 380 Teaching English Language Learners (1 SH) increased from one credit to 2 effective F18.	To deepen candidates' understanding of the strengths and needs of EL students, this course was increased by one semester hour. In addition, this change supports the possibility for students to use the course as the first course towards and EL endorsement through a collaborative partner.	1.1 1.4 CCT-D
6	EDUC 426 Reading in the Content Area (2 SH) was realigned with curricula; some course content on literacy was integrated into the methods instruction of EDUC 480 General Methods for Secondary Educators, thereby reducing EDUC 426 from 3 SH to 2 SH and increasing EDUC 480 from 3 SH to 4 SH while keeping the program/degree total the same.	The ND state content standards underwent a series of revisions, which established Appendix D of the ELA Standards titled "ND Standards for Literacy in History/Social Studies, Science, and Technical Subjects Grades 6-12" connected to college and career readiness anchor standards for reading and writing. This integration of literacy into methods supports the curriculum focus of literacy as the "spine that holds everything together" at the secondary level. By maintaining EDUC 426, candidates have focused development of instructional strategies to teach reading and comprehension as well as a literacy-based teaching field experience.	1.1 1.4 2.3

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7	EDUC 480 General Methods for Secondary Educators (3 SH) was increased from three credits to 4 SH	Credits for the course changed from 3-4 to increase the number of credits dedicated to teaching methods for all secondary majors, integrate core literacy concepts of the ELA standards, and better support Checkpoint 2 development and evaluation of the capstone portfolio.	1.1 1.4 3.4
8	EDUC 480L General Methods Field Experience (1 SH) was added as a co-requisite clinical experiences for all secondary education programs	The course was added to increase the amount of time spent in a school setting prior to student teaching, and to scaffold application of instructional methods from general methods (spring semesters only) to content methods (fall semesters only). With implementation of the new experiences, the previous requirements from EDUC 398 moved to EDUC 480L, and teacher candidates now complete a minimum of three taught lessons in EDUC 398 instead of one. This changes also supports experience in multiple settings.	1.1 2.3 3.4
9	EDUC 401s Pre-Student Teaching Seminar (0 SH) was added F15	The seminar has always been required, but was added as a transcribed course to ensure registration, streamline preparation for the student teaching experience, gauge understanding of codes of ethics and professional practices, and support co-selection of school partners for the student teaching clinical experience. EDUC 401s is required the semester immediately prior to student teaching Previously, candidates were instructed to attend the seminars, but no registration was required.	2.1 3.6

Note: SH = Semester Hour; CCT = Cross-Cutting Theme; D = Diversity; T = Technology

Teaching Specialty Area: Mathematics Education			
	Change	Rationale	CAEP Alignment
1	The mathematics core requirements decreased from 33 to 29	The last institutional program review of the BS in Mathematics degree (non-teaching) conducted by the Division of Math and Science concluded some courses provide a broad foundation that serve as pre-requisite concepts to upper level courses. Since many students have taken courses such as College Algebra and Calculus I as dual credit in high school, these courses are now pre-requisites and not requirements.	1.1 5.5

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2	MATH 165 Calculus I (3 credits) was a required course, and it is now a prerequisite.	MATH 165 Calculus I is often taken by students in high school as a dual credit course or as an AP course and is now a pre-requisite instead of a requirement for majors. The last institutional program review of the BS in Mathematics degree (non-teaching) conducted by the Division of Math and Science concluded MATH 165 Calculus I provides a broad foundation of pre-requisite concepts to upper level math courses. This facilitated the move of the course out of the core requirements to pre-requisite. This allowed for scaffolding of concepts to support inquiry and depth of knowledge in content at the upper course levels.	1.1 5.5
3	MATH 103 College Algebra (3) moved from a core content course to a required essential studies course for secondary education majors	MATH 103 College Algebra is another course similar to MATH 165 that students often take as dual credit in high school and is now a pre-requisite instead of a requirement for majors.	1.1 5.5
4	MATH 476S Comprehensive Exam (1) replaced with MATH 480 Mathematics Comprehensive (1)	The proctored exam for MATH 476S was pass/fail and students were allowed to use notes and a graphing calculator, Excel, geogebra, or other appropriate technology. Students were required to retake any section where they failed to answer at least 3 of 5 questions correctly. No record was kept regarding which sections students needed to take more than once. MATH 480 is now a 1 credit course where students earn a letter grade. The course includes a paper and a proctored exam with multiple sections based on the content of the mathematics program of study (college algebra, trigonometry, three sections of calculus, probability and statistics, geometry, number theory, differential equations, algebraic structures, and history of mathematics). Students continue to be allowed to use notes and appropriate technology and have the option to retake a section with a grade lower than 3 of 5 questions. Since students are graded on their performance in the course, they may choose not to retake a failed section of the exam or receive a lower letter grade.	1.1 5.5
5	ASC 93 Algebra Preparation III is now a prerequisites for MATH 103 College Algebra	The sequence ASC 91, 92, and 93 is the new set of courses that replaced MATH 101 and 102 as prerequisites for MATH 103 for students who did not score at least 22 on the ACT or other qualifying exam.	1.1 5.5
6	The ACT score for math increased from 21 to 22 for students to take MATH 103 without taking prerequisites	A board policy change and now requires students' with ACT math scores less than 22 to take the ASC sequence prior to MATH 103.	1.1 5.5

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	for MATH 103 College Algebra		
7	Addition of Mathematics BSED online/distance program	Course offerings have significantly changed with additional online offerings as the program has grown. MSU now offers many mathematics courses in one learning management shell to enable on campus students to interact in online settings with students taking the courses online; this provides diversity and opportunities for students to share experiences with those who have applied mathematics in the field. Online enrollment continues to increase, and the program has been ranked in the top six nationwide by five organizations reporting best online bachelor's in mathematics education and best online value. • #1 Best Online Bachelor's in Math Education by College Choice as reported at: https://www.collegechoice.net/rankings/best-online-math-education-degrees/ • #3 Best Value Online for Bachelor's in Math Education by AffordableColleges.com as reported at: https://www.affordablecolleges.com/rankings/affordable-online-bachelors-degrees-math-education/ • #3 Most Affordable Online Colleges – Bachelors of Mathematics by SR Education Group as reported at: https://www.onlineu.org/most-affordable-colleges/mathematics-degrees • #4 The 5 Best Online Bachelor in Mathematics Degree Programs by TheBestSchools.org as reported at: https://thebestschools.org/rankings/best-online-bachelor-in-mathematics-degree-programs/ • #6 Most Affordable Online Math Education Degrees by College Choice as reported at: https://www.collegechoice.net/rankings/cheapest-online-math-education-degrees/ MSU did not have any online mathematics education majors prior to 2018; however, there are several students who will complete the program online in the next two years.	1.1 5.5
8	The curriculum of MATH 435 Theory of Numbers now requires students to research real-life applications of number theory and summarize research in at least three short papers	As a result of program assessment, these papers were added as course requirements to ensure students demonstrated writing skills and technology skills throughout the mathematics program.	1.1 5.5

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- 5. Field & Clinical Experiences:** Briefly describe the required field & clinical experiences that are specific to your program including the number of hours for early field experiences and the number of hours/weeks for student teaching or internships.

Some professional courses provide school-based field experiences under the dual supervision of the responsible University Mentor and selected competent and qualified Field Mentors in P-12 schools. Clinical Experiences/Student Teaching Experiences are an integral part of the professional education program that are designed to help the candidates understand the relationship between classroom theory and application to practice. The Director of Student Placement monitors experiences, making sure candidates are assigned to multiple settings, which increases the amount and types of diverse P-12 students with which candidates interact. Information on experiences is managed through the Field Placement database to assist in making informed decisions about where to place candidates. It is not likely candidates will be placed in schools in which they have attended. Selection for experiences are made balancing factors such as diversity of school, recommendations from district administrators, travel time & distance, school schedule, course schedule, and personal considerations (e.g., disability, socioeconomic status, transportation, family).

Field Experience (Observation and/or Practicum)	Student Teaching	Total Number of Hours
• EDUC 250- 25 hours Observation • EDUC 390- 6 hours observation • EDUC 426- 12 hours hands on (Pelican & West Fargo) • EDUC 398- 30 hours hands on (per major) • EDUC 480L- 30 hours hands on	EDUC 400- Grade 5-12 (15 weeks)	• 31 hours of observation • 72 hours of hands on experience/field experiences • 15 weeks of student teaching experiences

SECTION II: RESPONSE TO STANDARDS

- 1. Areas of Weakness from Prior Review:** How has the program addressed and resolved the weaknesses targeted in the previous program review and not previously resolved? Describe actions taken to address the weakness and provide evidence that the weakness has been resolved.

There were two areas of weakness noted from the prior ESPB Content Expert recommendations for Mathematics Education. The State Team Report to PAAC (April 27-30, 2013) indicated Standard 11010.8 and 11010.9 were both “Met with Weakness”. There were no standards indicated as Not Met for Mathematics Education.

The two standards from the report are not included in the revised ESPB mathematics program approval standards from 2017. The program approval standards dated July 1, 2012 also did not include 11010.9, so it is unclear as to the exact standard that is referenced in the State Team Report from 2013.

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11010.8 Met with Weakness

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.*

11010.8 Met with Weakness. The evidence provided clearly indicates that assessment practices are being taught. The evidence provided does not specifically identify the types of assessment strategies that are being taught. The words "formative" and "summative" are not found in the syllabi. The words "formative" and "summative" do not exist on the syllabi for EDUC 398 and EDUC 483. "Met" was decided upon based on the fact that "assessment" is referenced in the objectives and in the activities of the syllabi. It is the belief of the evaluator that assessment practices are being taught. The evidence provided on the syllabi does not clarify the specific details of what is being taught with regard to formative assessments for learning or summative assessment of learning.

Action: Although knowledge and use of a variety of assessments to inform practice and make instructional decisions is not a new concept taught in the mathematics education program, the exact terms "formative" and "summative" assessments were not explicitly stated in the syllabi or catalogue well enough for the prior review. The courses in which candidates explore assessment included the following:

- EDUC 290 Theories of Learn. & Mgmt. (2)
- EDUC 422 Educational Assessment (2)
- EDUC 480 General Methods for Secondary Educators (4)
- EDUC 480L Gen. Methods Field Exp. (1)
- EDUC 483 Secondary Methods for Mathematics
- EDUC 398 Secondary Education Field Experience (1)
- EDUC 400 Student Teaching (10)

Candidates are prepared for educational assessment in the mathematics classroom using the 3-step Backwards Design process: (1) identify desired math knowledge and skills, (2) determine acceptable assessment evidence, and (3) plan learning experiences and instruction. Candidates learn to ground performance expectations of what learners must do to show proficiency on the state K-12 mathematics standards. Candidates are taught through direct, indirect, experiential, interactive, and independent teaching methods that curriculum and assessment must be developed in a way that builds students' knowledge and ability toward mathematics performance expectations. In EDUC 290, candidates explore theoretical perspectives on learning, cognition, and behavior of learners that impact instructional/assessment decisions and respect the individual strengths and needs of learners. Candidates analyze motivation and engagement as it relates to building self-direction and how to formatively assess the learning environment. In EDUC 480, candidates learn to write both academic objectives as well as affective objectives that address the social and personal development of the learner. Candidates' study how to gather information about student interests and design performance assessments to measure both. Formative assessment and feedback is explicitly taught to candidates as a high-yield instructional strategy in EDUC 480, reinforced in EDUC 483, and demonstrated in the co-requisite field experiences. In EDUC 483 Secondary Methods for Mathematics, candidates practice formative assessment skills during their mini-lesson teaching sessions. They are asked to use a variety of techniques, then reflect on the effectiveness of each during the lesson. Candidates will create an assessment tool for the lesson they teach and their peers will give them feedback on their assessment tool. They are asked to reflect on the results of this experience and share any new found knowledge with their peers. Also, candidates are asked to score or grade a completed summative assessment tool as if a student had turned it in to them. They are asked to support their reasons for their grading choices.

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In EDUC 422: Educational Assessment, teacher candidates demonstrate an understanding of research-based best practices in assessment and use a range of planning tools for desired learning results and multiple sources of evidence of student learning. Beginning with the identification of learning goals and purpose for assessment, candidates: (1) diagnosis diverse student needs, (2) learn to use formative assessment and feedback, (3) critique existing assessment tools using quality criteria, (4) design, adapt and select a range of evaluations, (5) use technology to support assessment practices, (6) communicate standards-based results, and (7) use assessment results to improve the teaching and learning process through data-based decision-making.

Candidates complete the EDUC 422 Key Assessment, in which they critique a variety of assessments against quality criteria and then apply that knowledge to create their own assessments. This includes diagnostic, formative, standardized (critique only), summative, modified summative, performance, checklist, and rubric assessments. The development of the assessments is focused around a curricular topic appropriate to secondary mathematics education. As a key assessment, candidates are required to demonstrate a minimum level of proficiency (C or better).

Proficiency in a variety of assessments for a beginning educator is demonstrated during the student teaching experience in mathematics. The end of program formal evaluation of skills related to assessment practices (InTASC standard 6/SLO 3) is completed by the cooperating teacher and the university supervisor, and the candidate also self-evaluates their knowledge, skills and dispositions for assessment. In addition, candidates show knowledge and skills of assessment in the capstone portfolio; the candidate provides artifacts that exemplify both knowledge and performance skills as well as a written rationale to explain how the artifacts confirm understanding of assessment that best supports students.

11010.9 Met with Weakness

11010.9 Standard Unknown

11010.9 Met with Weakness. The NCATE Math Standards Program Report indicated the following information: "There has been an explosion of assessments with the addition of 14 new assessments for math courses. The new assessments assess four learning outcomes identified by the Mathematics Department. The Department is in the process of collecting data on a 3 year rotation of assessments of the four SLO's listed below. The descriptions of the individual assessments for each of the mathematics courses can be found on the assessment table for each of the Mathematics Standards." The four Student Learner Outcomes provide the basis for a good approach. The evaluator searched the NCATE location for current evidence and found additional assessment data that included a "Math Education Pre-Post Test and Candidate Reflection from 2011", Mathematics Major-Praxis II Meeting Minutes, Single Assessment Regular Teacher Preparation Program assessments involving the Geometry Walk, Calculus II, and Math Secondary Methods, as well as the Mayville State University Key Assessment Transition Points Chart. Assessment efforts exist, but the information is not easily accessible. The data provides more than plans for the future, the data demonstrates evidence of MaSU efforts to learn from assessments that have been in place. The evaluator's thought is that the process makes sure that future evaluators are given clear directions to find any information that MaSU wants the evaluators to see.

Action: It appears from the evaluator comments that the weakness was in providing clear direction to evidence files for reviews. The 2018 evidence files are organized in an online exhibit room to clearly demonstrate artifacts and evidence that all teacher education programs meet the ESPB program approval standards.



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2. Course/Assessment Matrix:

- Complete the matrix below.
 - List courses that address each of the ESPB standards for your program.
(All courses listed should be linked to an electronic syllabus.)
 - List the assessments that most clearly align with each standard.
(Choose from among those listed in Section IV: Evidence of Meeting the Standard.)
- Provide a short narrative describing how the program addresses the standard.
(For example, identify course objectives, activities and related experiences.)



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SECTION III: ADDRESSING THE STANDARDS

State Standard	Course Prefix and Title (with electronic links to syllabi)	Assessment (from among those listed under Section IV : Evidence of Meeting the Standard)
11010.1 Mathematical Practices and Processes The program requires the candidate to demonstrate the following: a. makes sense of problems and perseveres solving them b. reasons abstractly and quantitatively c. constructs viable arguments and proofs d. critiques the reasoning of others e. uses mathematical models f. attends to precision g. identifies elements of structure h. engages in mathematical communication	MATH 443 Algebraic Structures with Programming	Capstone Portfolio-Standards 4 & 5 (SLO 2)

Narrative: Students in Math 443 use mathematical models to solve problems involving two or more equations and variables, prove and analyze the proofs of others using math induction and other formal proofs, attend to precision using matrices and determinants, reason abstractly regarding elements of structure such as real numbers, integers, as well as rings, fields, and groups, and engage in mathematical communication in discussion forums and in class discussions.

11010.2 Mathematical Connections The program requires the teacher candidate to demonstrate the interconnectedness of mathematical ideas and how they build on one another. The candidate recognizes and applies connections among mathematical ideas and across various content areas as well as real-world contexts, using the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.	MATH 420 History and Philosophy of Mathematics EDUC 480 General Methods for Secondary Educators	Capstone Portfolio-Standards 4 & 5 (SLO 2)
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Narrative: Students in Math 420 explore how mathematical ideas connect from both the historical perspective and in applications. Students present mini-presentations with PowerPoint presentations including audio on several mathematical concepts and connect these topics to their final presentation topics. The final project in the course requires students to write a paper and a final presentation to make connections between a



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mathematician and other mathematical ideas. In EDUC 480 General Methods for Secondary Educators, candidate create a performance assessment for real-world application called GRASPS. Candidates construct an assessment with components that follow the acronym: Goal, Role, Audience, Situation, Product, and Standards/Criteria. The assessment begins with establishing a real-world goal, problem, challenges, or obstacle as the learner task. The learner's role is defined for the task and the audience is identify with in the context of the scenario (e.g., a client or committee) and the situation is explained. The product is an explicit definition of what the learners will create and why. The standards/criteria/indicators for success provide students with a clear picture of achievement and are included in rubric format for learners. Teacher candidates apply this knowledge and simulated practice with real-world performance assessments in the 15-week student teaching semester.

11010.3 Secondary School Content Knowledge The program requires the teacher candidate to demonstrate and applies knowledge of secondary mathematics concepts, algorithms, procedures, applications in varied contexts, and connections within and among mathematical domains (Number, Algebra, Geometry, Trigonometry, Statistics, Probability, Calculus, and Discrete Mathematics)	Math 105 Trigonometry Math 166 Calculus II Math 323 Probability and Statistics Math 381 Geometry Math 435 Theory of Numbers Math 443 Algebraic Structures with Programming Math 480 Comprehensive Final Exam	Praxis II Mathematics: Content Knowledge
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Narrative: Teacher candidates demonstrate and apply knowledge of mathematical concepts, algorithms and procedures in all mathematics courses by solving problems, writing proofs, and communicating mathematical concepts and connections between concepts. Demonstrations of the students' knowledge can be found in the activities of each course as well as in their portfolio, Praxis performance, and comprehensive final exam in MATH 480.

11010.4 Undergraduate Mathematics Content Knowledge The program requires the teacher candidate to demonstrate and apply knowledge of the core mathematics content including calculus, axiomatic geometry, linear and abstract algebra, statistics, probability, and computer programming.	Math 480 Comprehensive Final Exam Math 443 Algebraic Structures with Programming Math 166 Calculus II Math 389 Geometry Math 323 Probability and Statistics	Praxis II Mathematics: Content Knowledge
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Narrative: Teacher candidates demonstrate and apply undergraduate mathematical content knowledge as they complete activities and exams in college mathematical courses. Demonstrations of the students' knowledge of calculus, axiomatic geometry, linear and abstract algebra, statistics and probability can be found in the Math 480 comprehensive final exam, the Math 443 final exam, and their portfolio. Students write and analyze computer programs in activities in Math 443, and this will be added to the Math 443 final exam in the future.



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11010.5 Historical Perspective The program requires the teacher candidate to demonstrate knowledge of the historical development and perspective of mathematics including contributions of significant figures and diverse cultures.	MATH 420 History and Philosophy of Mathematics MATH 480 Comprehensive Final Exam	MATH 480 Comprehensive Final Exam
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Narrative: Teacher candidates complete individual and group mini-presentations in MATH 420 History and Philosophy of Mathematics to demonstrate knowledge of the historical development and perspectives of mathematics and an individual final presentation and paper on significant mathematical figures of diverse cultures to share with their peers. In MATH 480 students are assessed on their understanding of the history of mathematics on the comprehensive final exam, and students are required to provide an historical reference to the topic of the paper required for MATH 480.

11010.6 Instructional Tools The program requires the teacher candidate to select and use appropriate instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and makes appropriate decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools.	MATH 323 Probability and Statistics MATH 389 Geometry EDUC 483 Secondary Methods for Mathematics MATH 443 Algebraic Structures with Programming	MATH 443 Algebraic Structures with Programming
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Narrative: Teacher candidates use graphing calculators, Geogebra, Excel spreadsheets, presentation tools such as PowerPoint, and online software including matrix calculators, linear graphing programs, and traditional and virtual manipulatives ranging from playing cards, dice, rice, and candy to simulations of geometric figures and fractals to create mathematical models, sketches, and presentations of mathematical concepts. Students discuss limitations and uses of these tools. During the student teaching experience, candidates reflect on their lessons and choice of instructional tools to inform practice. These personal reflections on instruction are submitted weekly, and candidates are provided feedback and guidance on their instructional choices by the assigned university supervisor.



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11010.7 Content Pedagogy The program requires that the teacher candidate is able to successfully implement a variety of instructional strategies. The candidate demonstrates the following: a) Applies knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains. b) Analyzes and considers research in planning for and leading students in rich mathematical learning experiences. c) Plans lessons and units that incorporate a variety of strategies and mathematics-specific instructional tools to promote conceptual understanding and procedural proficiency. d) Provides students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace. e) Implements techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.	EDUC 483 Secondary Methods for Mathematics EDUC 398 Secondary Education Field Experience EDUC 480 General Methods for Secondary Educators EDUC 480L General Methods Field Experience EDUC 400 Student Teaching	Capstone Portfolio-Standards 4 & 5 (SLO 2)
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Narrative: Expertise in teaching develops in context over time and is not linear; a teacher candidate’s skills progress along a continuum of proficiency for particular areas at different paces. As such, teacher candidates in math education receive explicit instruction in teaching methods throughout their professional education core courses as instructors use the four stage sequence of direct instruction: teacher demonstration, opportunities to practice teaching science under supervision, independently using methods in real situations (i.e., clinical experiences), and generalization/proficiency across topics and contexts (i.e., student teaching). This formative process includes modeling of effective knowledge, skills and disposition of teaching as candidates should have the opportunity to see what effective practice looks like. Candidate demonstration of the ability to teach college and career-ready math standards at increasing levels of proficiency and sophistication is required through the beginning, middle and end of formal methods instruction in designated courses and clinical experiences.



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The first formal evaluation of pedagogical skills for pre-service science teachers occurs in EDUC 480: General Methods for Secondary Educators. The methods course prepares candidates to provide high-quality instruction for diverse middle level and secondary students through the conceptual approaches of understanding by design, differentiated instruction, universal design for learning and authentic literacy. Candidates develop a preliminary philosophy of teaching, learn to craft effective lessons, design varied instruction, conduct formative assessment, and respond to learner needs in order to promote positive student outcomes, meet standards, and support the development of 21st Century Skills. Opportunities to design and experiment with content instruction are embedded. Candidates transfer skills of teaching learned during the course to the classroom during the co-requisite clinical experience EDUC 480L: General Methods Field Experience, a 30-hour field placement in a secondary science classroom. Candidates observe cooperating teachers, examine the professional practice of teaching, reflectively journal, and teach a minimum of one lesson. The teacher candidate is formally observed and evaluated once during the experience; the observation includes pre and post conference reflection and feedback on teaching skills.

In EDUC 483: Secondary Methods for Mathematics, candidates continue to develop their skills for teaching, building on methods from EDUC 480/L. Candidates create lesson plans that they will implement as part their teaching practice. The candidates include mathematical standards in their planning and engage one another through a variety of teaching strategies in the role-playing lessons they teach. Teacher candidates view parts of the Harry Wong video series with follow-up discussion and reflection. Classroom discourse is emphasized in their planning which allows for rich mathematical discussions during and after the lessons. Teacher candidates are given many classroom scenarios to discuss in MATH 483, giving them several opportunities to share their classroom beliefs with their peers and to learn from one another's views.

Candidates have the opportunity to teach lessons to secondary students in the co-requisite practicum EDUC 398: Secondary Education Field Experience. The experience includes observation of the cooperating math teacher, teaching three mathematics lessons of which two must be consecutive, reflectively journal, demonstrate professional disposition and model ethical practice. The teacher candidate is observed by the content methods instructor at least once during the experience; this observation includes pre and post conferences and feedback on instruction. The second formal evaluation of teachings skills is completed in EDUC 398 by the cooperating teacher and the methods instructor, and the candidate also self-evaluates their own growth.

Proficiency in teaching skills as a beginning educator is demonstrated during a full-time supervised student teaching experience in the teacher candidate's major areas of study. Placement locations are carefully selected for 15 weeks of practice teaching at an accredited school in which experienced cooperating teachers in the classroom support the candidate in conjunction with qualified university supervisors. Teacher candidates are placed in school settings that provide them new and diverse teaching experiences to allow for greater professional growth in instructional practice. The end of program formal evaluation of teaching skills is completed by the cooperating teacher and the university supervisor, and the candidate also self-evaluates their own growth and readiness for the classroom. In addition, candidates are evaluated on teaching skills (i.e., SLO's) in the four general categories of teaching skill performance via the capstone portfolio: the learner and learning, content, instructional practice, and professional responsibility. The candidate provides artifacts that represent knowledge and performance skills as well as written rationales to explain how each artifact confirms they have attained the skills of a beginning teacher.

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SECTION IV: EVIDENCE OF MEETING THE STANDARDS

It is expected that your program makes use of multiple assessments to ensure that all standards are met. If the program is offered in more than one site or in more than one method (e.g. online as well as face-to-face) provide aggregated (program level) AND disaggregated (site or method specific) data. Complete tables **1.A-1.D** described below and provide information requested related to the two-four additional assessments you selected in 2.

1. Required Assessments:

1. A Praxis II: Content Test: Complete Table 1.A reporting at least 3 years of data

Praxis II: Mathematics Content Knowledge 2015-2018					
Year	Content Area Test Name and Number	ND Passing Score	Total # of Test Takers	Average Score	Percent Passing
2017-2018	5161	160	3	164	66.7%
2016-2017	5161	160	1	142	0%
2015-2016	5161	160	2	144	0%

1. B Praxis II: PLT (Principles of Learning and Teaching): Complete Table 1.B reporting at least 3 years of data

Praxis II: Principles of Learning & Teaching: Grades 7-12 2015-2018					
Year	Content Area Test Name and Number	ND Passing Score	Total # of Test Takers	Average Score	Percent Passing
2017-2018	5624	157	3	176.0	100%
2016-2017	5624	157	1	165.0	100%
2015-2016	5624	157	2	179.5	100%

1. C Cumulative GPA at the point of completion: Complete Table 1.C reporting at least 3 years of data (Courses included in the calculation must be required for all candidates.)

Year	N (number of candidates)	Overall Average GPA	Range of GPA
2017-2018	3	3.83	3.75-3.90
2016-2017	1	3.12	NA
2015-2016	2	3.31	3.00-3.61

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1. D Student Teaching Performance (Clinical Experience) Evaluation (please report data only in the area of content knowledge).

1. Build Table 1.D that includes the following:
 - a. The N (number of candidates)
 - b. Proficiency scale (e.g. Beginning, progressing, proficient, exceeds proficient)
 - c. Performance results at each proficiency level (at least 3 years of data)
2. Attach an electronic copy of the performance instrument

EDUC 400 Student Teaching-Final InTASC Skills Evaluation 2015-2018				
Year	N (number of candidates)	Evaluator	Average Score	Target Score
2017-2018	3	University Supervisor	3.23	3.0
		Cooperating Teacher	2.97	
2016-2017	1	University Supervisor	3.16	3.0
		Cooperating Teacher	2.64	
2015-2016	2	University Supervisor	3.30	3.0
		Cooperating Teacher	3.11	

- b. Additionally, select from among the following assessments for a total of 6-8. Provide a description of the assessment, a data table showing three years of results, an electronic copy of the assessment instrument (test, project, paper, etc.) and, where appropriate, the rubric or scoring guide.**

a. Pre-student Teaching Practicum Evaluations

Description of the Assessment: The intended use of the InTASC Skills evaluation is to measure the core skills teachers should be able to do in today's learning context to ensure students reach their learning goals. The evaluation is a measure of the candidates teaching performance skills of the 10 InTASC standards. The evaluation was revised in fall of 2017 when the state-wide student teacher skill observation (STOT) was adopted; this should be considered as results are presented across three years of data. It is comprised of 34 items that measure the four program student learning outcomes (SLOs): learning and learning, content, instructional practice, and professional responsibilities. The assessment is used to monitor the advancement of teaching skills and growth from the time of admission through completion. The skills evaluation is completed by the candidate, the course instructor and/or clinical supervisor, and clinical educators. Specifically, the assessment occurs:

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- at three structured progression checkpoints during preparation (the beginning-EDUC 480, middle-EDUC 484, and end of the training program-EDUC 400 student teaching)
- in all clinical experiences
- as requested by course instructors to document unsatisfactory or exemplary skill progression

Teacher candidates are trained to use the InTASC Skills Evaluation/STOT by their instructors in which the evaluation occurs. At the beginning of the program, candidates are trained by their methods instructors to self-evaluate. Each subsequent instructor explains the process when completed in their respective course. Student teaching clinical supervisors and clinical educators both complete a formal orientation in which training related to the assessment occurs. Acceptable and ideal targets are set collectively by faculty and included for students in the Teacher Education Handbook as well as provided in the corresponding course by the instructor.

EDUC 480 General Methods-InTASC Skills Evaluation 2015-2018				
Year	N (number of candidates)	Evaluator	Average Score	Target Score
2017-2018	3	Instructor	2.83	2.5
2016-2017	1	Instructor	NA*	2.5
2015-2016	2	Instructor	NA**	2.5

*candidate was an elementary education/mathematics double major and only took EDUC 398

**non-numeric data is available in a previous database format, accessible if requested

EDUC 398 Content Methods-InTASC Skills Evaluation 2015-2018				
Year	N (number of candidates)	Evaluator	Average Score	Target Score
2017-2018	3	Instructor	2.86	2.5
		Field Mentor (n = 1)	2.29	
2016-2017	1	Instructor	2.51	2.5
		Field Mentor	2.80	
2015-2016	2	Instructor (n = 1)	2.73	2.5
		Field Mentor (n = 1)	3.87	

*non-numeric data is available in a previous database format, accessible if requested

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b. Key Performance Tasks: MATH 480 Mathematics Comprehensive

Description of the Assessment:

The MATH 480 Mathematics Comprehensive is a comprehensive review and examination covering the content of the courses required for the mathematics education major and the mathematics major. Students read comprehensive math review materials, identify additional materials, and write a paper summarizing all materials. By studying all the materials and completing the exam, students demonstrate their use of critical thinking, mastery of basic math principles, and computational skills. The researching and writing of a second paper shows how mathematical ideas have been discovered by diverse cultures and impacted historical events from early to present times.

MATH 480 Mathematics Comprehensive Final Grade 2015-2018			
Year	N (number of candidates)	Final Grades	Target Grade
2017-2018	3	A = 3 B = 0 C = 0 D = 0 F = 0	C or better
2016-2017	1	A = 1 B = 0 C = 0 D = 0 F = 0	C or better
2015-2016	2	A = 2 B = 0 C = 0 D = 0 F = 0	C or better

c. Capstone Project (portfolio, teacher work sample, etc.)

Description of the Assessment: The intended use of Capstone Portfolio is to measure teacher candidates' ability to meet the knowledge, skills and dispositions identified in the 10 InTASC standards evidenced by quality artifacts and well-written rationales. Teacher candidates integrate technology, experiences with diversity, and application of essential studies learning outcomes throughout the portfolio. The portfolio serves as a reflective tool for teacher candidates to use while exploring career placement opportunities.

The assessment is used to monitor progression towards mastery as Checkpoint 3 is preceded by Checkpoints #1 and #2. Checkpoint #3 is completed after 10 weeks of the Student Teaching Experience with a self-evaluation of the teacher candidates' portfolio entries and a public presentation; the portfolio and presentation are evaluated by two faculty reviewers. Faculty Portfolio Reviewers rate using the rubric, and scores are reconciled for a final rubric score and letter grade.

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Training to complete the capstone project begins upon admission to the EPP; teacher candidates are provided with the Teacher Education Handbook which contains all instructions and rubrics of the capstone portfolio. Expectations are introduced during the admission process through modeling and discussion by the instructor of EDUC 250: Introduction to Education (Checkpoint 1), revisited and expanded upon during methods courses (Checkpoint 2), and again at student teaching through pre-student teaching seminars and during-student teaching seminars (Checkpoint 3). Candidates are provided with the Portfolio Appendices, which address training for specific requirements.

Capstone Portfolio: Final Results 2015-2018					
Year	N (number of candidates)	Evaluator		Scores	Target Score
2017-2018 3		Student 1	Reviewer 1	218.0	157-240
			Reviewer 2	219.0	
			Reconciled	218.5	
		Student 2	Reviewer 1	217.0	
			Reviewer 2	228.0	
			Reconciled	222.5	
		Student 3	Reviewer 1	230	
			Reviewer 2	220	
			Reconciled	225	
		Cohort Reconciled Average			
2016-2017	1	Reviewer 1		216.5	157-240
		Reviewer 2		240.0	
		Reconciled		228.25	
2015-2016	2	Final Reconciled Grades		A = 1 B = 1 C = 0 D = 0 F = 0	C or better

*Previous version of portfolio in quality assurance system with only reconciled grade for reporting. Individual candidate raw scores available for each candidate in the database if requested.

Capstone Portfolio: SLO 2: Content Knowledge & Application Results 2015-2018				
Year	N (number of candidates)	Evaluator	Scores	Target Score
2017-2018	3	2 Reviewers Reconciled	3.31 3.81 3.88	3.0
2016-2017	1	2 Reviewers Reconciled	NA	3.0



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2015-2016*	2	NA	NA	NA
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*Previous version of portfolio in quality assurance system without option to separate SLO 2: Content (began fall 2016). Individual candidate raw scores available for each candidate in the database if requested.

d. Employer survey results related to content knowledge

Description of the Assessment: Findings from the surveys administered to supervisors of first-year teachers during the spring of each academic year for the prior year graduating cohort are provided; the first-year teachers for the 2018 survey are completers from the 2016-2017 academic year. Results are displayed as an aggregate and are not disaggregated by program level or content area. The Supervisor Survey asks those who supervise first-year teachers to assess the novices' readiness for the teaching profession. The survey asks supervisors to assess the quality of completers' instructional practices, abilities to work with diverse learners, abilities to establish positive classroom environment, and levels of professionalism. The survey is administered to direct supervisors of teacher preparation completers employed in schools approximately one year after the teachers completed their preparation programs. Participation in this survey was limited to supervisors of prior-year completers who were employed as teachers. The actual response count for the 2018 Supervisor Survey for Mayville State University is 39% (11/28); the response rate for 2017 was 71%, for 2016 was 88.2% and for 2015 was 40% (first year of using the common metric supervisor survey). Data presented in should be used with caution. Survey respondents are not necessarily representative of the institution's completers. While these findings could prompt discussions about ways to improve coursework, clinical experiences, and efforts to connect graduates with teaching jobs, the unknown response rate limits the extent to which these data should be used to inform decision-making. The Supervisor Survey is one tool for assessing the effectiveness of MSU teacher preparation program graduates and should be used in combination with multiple and varied assessments and data sources for programmatic decision making. The table below presents frequencies and percentages. There is a complementary report which presents the aggregate results for the state for all institutions that contributed data which may be helpful in providing context and data for benchmarking institution-level results.

For this content expert review, survey items related to content preparation have been disaggregated and compiled from the 2015, 2016, 2017 and 2018 results. As required, an electronic copy of the supervisor survey results, ND aggregate, and NExT aggregate are included with this report. NExT holds the copyright on these surveys, and they have given permission for the teacher preparation programs in ND to use the instruments as a collaborative group. Institutions are not allowed to alter the surveys and must administer it "as is." However, items may be added to the end the surveys for individual institutional use. In exchange for free access to the surveys, MSU contributes results of the surveys to a state aggregate.

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Supervisor Survey-Selected Items for Content Knowledge	Year	Total Respondents	Unable to Respond		Disagree		Tend to Disagree		Tend to Agree		Agree	
		n	#	%	#	%	#	%	#	%	#	%
Effectively teaches the subject matter in his/her licensure area.	2018	20	0	0	0	0	1	5.0	6	30.0	13	65.0
	2017	18	0	0	0	0	2	11.1	6	33.3	10	55.6
	2016	29	0	0	0	0	2	6.9	5	17.2	22	75.9
	2015	11	0	0	0	0	0	0	4	36.4	7	63.6
Selects instructional strategies to align with learning goals and standards.	2018	20	0	0	0	0	0	0	8	40.0	12	60.0
	2017	18	0	0	0	0	2	11.1	7	38.9	9	50.0
	2016	29	0	0	0	0	2	6.9	5	17.2	22	75.9
	2015	11	0	0	0	0	1	9.1	3	27.2	7	63.6
Designs activities where students engage with subject matter from a variety of perspectives.	2018	20	0	0	0	0	3	15.0	5	25.0	12	60.0
	2017	18	0	0	0	0	5	27.8	5	27.8	8	44.4
	2016	29	0	0	0	0	4	13.8	4	13.8	21	72.4
	2015	11	0	0	0	0	1	9.1	3	27.2	7	63.6
Accounts for students' prior knowledge or experiences in instructional planning.	2018	20	0	0	0	0	2	10.0	5	25.0	13	65.0
	2017	18	0	0	0	0	2	11.1	10	55.6	6	33.3
	2016	29	0	0	0	0	5	17.2	6	20.7	18	62.1
	2015	11	0	0	0	0	2	18.2	3	27.2	6	54.5
Designs long-range instructional plans that meet curricular goals.	2018	20	0	0	0	0	2	10.0	9	45.0	9	45.0
	2017	18	0	0	2	11.1	4	22.2	4	22.2	8	44.4
	2016	29	0	0	2	6.9	5	17.2	9	31.0	13	44.8
	2015	11	0	0	0	0	1	9.1	3	27.2	6	54.5
Regularly adjusts instructional plans to meet students' needs.	2018	20	0	0	1	5.0	5	25.0	5	25.0	9	45.0
	2017	18	0	0	1	5.6	3	16.7	6	33.3	8	44.4
	2016	29	0	0	1	3.4	4	13.8	7	24.1	17	58.6
	2015	11	0	0	0	0	1	9.1	3	27.2	7	63.6
Connects core content to students' real-life experiences.	2018	19	0	0	0	0	1	5.3	6	31.6	12	63.2
	2017	18	0	0	0	0	3	16.7	7	38.9	8	44.4
	2016	27	0	0	0	0	4	14.8	8	30.0	15	55.6
	2015	11	0	0	1		2	18.2	2	18.2	6	54.5
Helps students develop critical thinking processes.	2018	20	0	0	0	0	2	10.0	7	35.0	11	55.0
	2017	18	0	0	0	0	5	27.8	6	33.3	7	38.9
	2016	29	1	3.4	1	3.4	4	13.8	7	24.1	16	55.2
	2015	11	0	0	0	0	0	0	5		6	54.5
Helps students develop skills to solve complex problems.	2018	20	0	0	0	0	2	10.0	10	50.0	8	40.0
	2017	18	0	0	0	0	4	22.2	8	44.4	6	33.3
	2016	29	0	0	1	3.4	5	17.2	7	24.1	16	55.2
	2015	11	0	0	0	0	0	0	3	30.0	7	70.0
Makes interdisciplinary connections among core subjects.	2018	20	0	0	0	0	1	5.0	9	45.0	10	50.0
	2017	18	0	0	0	0	4	22.2	8	44.4	6	33.3
	2016	11	0	0	0	0	1	9.1	3	27.2	7	63.6
	2015	11	0	0	1	0	2	18.2	3	27.2	5	45.4
Knows where and how to access resources to build global awareness and understanding.	2018	20	0	0	0	0	4	20.0	9	45.0	7	35.0
	2017	18	1	5.6	0	0	2	11.1	7	38.9	8	44.4
	2016	29	0	0	1	3.4	4	13.8	8	27.6	16	55.2
	2015	11	0	0	0	0	1	9.1	3	27.2	7	63.6

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e. Graduate survey results related to content knowledge

Description of the Assessment: The transition to teaching survey is administered to completers the academic year following their graduation. All completers are invited to complete the survey, but those who are teaching complete an additional section to rate the quality of their preparation. The survey is administered approximately one year after the graduates completed their preparation programs and is not disaggregated by program area. The response rate for the 2018 Transition to Teaching Survey was 63% (26/41). This report should be used with care. Survey respondents are not necessarily representative of institution's completers. A response rate exceeding 30% on a survey is generally considered adequate, and findings can prompt discussions about ways to improve coursework, clinical experiences, and efforts to connect graduates with teaching jobs. The Transition to Teaching Survey is one tool for assessing the effectiveness of ND teacher preparation program graduates and should be used in combination with multiple measures.

Part A of the survey asks completers about their licensure and employment status. Completers who are not teaching only complete Part A. Part B of the survey asks completers to rate how well prepared they felt across multiple domains of teaching including instructional practices, diverse learners, learning environment, and professionalism. Completers were asked to respond using the following scale: disagree; tend to disagree; tend to agree; and agree. Part C of the survey asks completers about the context of the schools where they are teaching, including the environment and available resources. Part D of the survey asks completers if they would recommend their teacher preparation program and teaching profession to others.

For this content expert review, survey items related to content preparation have been disaggregated and compiled from the 2015, 2016, 2017 and 2018 results. As required, an electronic copy of the transition to teaching survey results, ND aggregate, and NExT aggregate are included with this report. A final note to acknowledge that the transition to teaching and supervisor surveys may not be reproduced or distributed, in whole or in part, without the prior authorization of the Bush Foundation. Surveys and results are intended for internal audiences only.

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Transition to Teaching Survey- Selected Items	Year	Total Respondents	Disagree	Tend to Disagree		Tend to Agree		Agree		
		n	#	%	#	%	#	%	#	%
Effectively teach the subject matter in my licensure area.	2018	20	0	0	1	5.0	6	30.0	13	65.0
	2017	21	0	0	2	9.5	5	23.8	14	66.7
	2016	28	1	3.6	3	10.7	10	35.7	14	50.0
	2015	10	0	0	0	0	3	30.0	7	70.0
Select instructional strategies to align with learning goals and standards.	2018	20	0	0	0	0	8	40.0	12	60.0
	2017	21	0	0	1	4.9	9	42.9	11	52.4
	2016	28	0	-	1	3.6	10	35.7	17	56.7
	2015	10	0	0	0	0	6	60.0	4	40.0
Design activities where students engage with subject matter from a variety of perspectives.	2018	20	0	0	3	15.0	5	25.0	12	60.0
	2017	21	1	4.8	0	0	10	47.6	10	47.6
	2016	28	0	-	1	3.6	12	42.9	15	53.6
	2015	10	0	0	0	0	4	40.0	6	60.0
Account for students' prior knowledge or experiences in instructional planning.	2018	20	0	0	2	10.0	5	25.0	13	65.0
	2017	21	0	0	2	9.5	10	47.6	9	42.9
	2016	28	0	-	1	3.6	15	53.6	12	42.9
	2015	10	0	0	0	0	5	50.0	5	50.0
Design long-range instructional plans that meet curricular goals.	2018	20	0	0	2	10.0	9	45.0	9	45.0
	2017	21	1	4.8	1	4.9	12	57.1	7	33.3
	2016	28	0	-	1	3.6	14	50.0	13	46.4
	2015	10	0	0	0	0	6	60.0	4	40.0
Regularly adjust instructional plans to meet students' needs.	2018	20	1	5.0	5	25.0	5	25.0	9	45.0
	2017	21	1	4.8	3	14.3	5	23.8	12	57.1
	2016	28	1	3.6	0	-	12	42.9	15	53.6
	2015	10	0	0	1	10.0	4	40.0	5	50.0
Connect core content to students' real-life experiences.	2018	19	0	0	1	5.3	6	31.6	12	63.2
	2017	21	0	0	0	0	8	38.1	13	61.9
	2016	28	0	-	0	-	9	32.1	19	67.9
	2015	10	0	0	0	0	5	50.0	5	50.0
Help students develop critical thinking processes.	2018	20	0	0	2	10.0	7	35.0	11	55.0
	2017	21	0	0	5	23.8	9	42.9	7	33.3
	2016	28	0	-	4	14.3	11	39.3	13	46.4
	2015	10	1	10.0	0	0	3	30.0	6	60.0
Help students develop skills to solve complex problems.	2018	20	0	0	2	10.0	10	50.0	8	40.0
	2017	20	0	0	7	35.0	6	30.0	7	35.0
	2016	28	0	-	5	17.9	11	39.3	12	42.9
	2015	10	1	10.0	1	10.0	4	40.0	4	40.0
Make interdisciplinary connections among core subjects.	2018	20	0	0	1	5.0	9	45.0	10	50.0
	2017	21	0	0	2	9.5	8	38.1	11	52.4
	2016	28	0	-	2	7.1	11	39.3	15	53.6
	2015	10	0	0	2	20.0	4	40.0	4	40.0
Know where and how to access resources to build global awareness and understanding.	2018	20	0	0	4	20.0	9	45.0	7	35.0
	2017	21	1	4.8	1	4.8	9	42.9	10	47.6
	2016	28	0	-	5	17.9	11	39.3	12	42.9
	2015	10	1	10.0	0	0	7	70.0	2	20.0

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f. Additional assessment of choice: [MATH 443 Final Take Home Exam](#)

Description of the Assessment:

The MATH 443 take home final exam was a 100 point assessment that requires students to prove or disprove two equations using math induction; to solve a system of equations; find linear transformations of vectors; complete a Cayley table for multiplication in $\mathbb{Z}_n$ (where $4 < n < 12$); manually compute the determinant of a given 3×3 matrix using two methods; evaluate expressions using modular arithmetic; determine if two given vectors are orthogonal; find unions and intersections of sets of numbers; complete a truth table using Boolean algebra with three variables; evaluate two relations and determine if they are one-to-one, onto or both; find the distance between two vectors; write a matrix equation equivalent and a vector equation equivalent to the given system of equations; find the eigenvalues and eigenvectors of a given 3×3 matrix; determine if given sets are groups given a binary operation; evaluate sums, products, quotients, conjugates, and inverses of complex expressions; convert complex numbers from polar to rectangular form and from rectangular to polar form. Students also need to show an example of their favorite matrix solving technology, give an example problem and directions to use the technology, show the solution provided by this technology, and use another form of technology to check your work and show the result.

The MATH 443 proctored final exam was a 100-point assessment with 20 points on abstract algebra sections including problems on the analysis of a Cayley table to determine elements in the set, the identity, an inverse, and the result of a binary operation; determining if a statement could be proven by math induction or if it is false; analyzing Boolean algebra statements, modular arithmetic, properties of addition or multiplication, and determining which sets are groups for addition or multiplication. The proctored final exam had five 20-point sections on linear algebra concepts including solving systems of equations, determining free variables, and finding general solutions to systems of equations with more than one solution; writing a vector equation and matrix equation equivalent to a given system; describing solutions in parametric vector form; finding linear combinations of vectors and matrices; finding the product of matrices; finding the determinant and inverse of 2×2 and 3×3 matrices; finding the rank of a matrix with a given basis; determining the graph of a given transformation; finding a basis for a space spanned by given vectors; finding eigen values and eigen vectors in an eigenspace in $\mathbb{C}^2$.

The target values for the final exam was for students to earn at least 80% on the exam of their choice. It was noted that some students had performed so well on unit exams that they realized they needed less than 80% on the final exam to earn an A in the course.

MATH 443 Final Exam Score 2015-2018			
Year	N (number of candidates)	Scores	Target Score
2017-2018	3	88/100 99/100 95/100	80
2016-2017	1	83/100	80

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2015-2016*	2	N/A*	N/A
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*data not available from previous instructor

a. Respond to the following questions:

a. Analysis of findings: Describe how the data provided above demonstrate that candidates in the program meet the standards.

Teacher candidates in the math education program as a cohort over the last three years have demonstrated inconsistent results in meeting acceptable targets for their content area knowledge and skills for effective teaching. Although neither of the two candidates from 2015-16, nor the one candidate from 2016-17 passed the Praxis II: Mathematics Content Knowledge, two of the three candidates have full time teaching positions outside the state of North Dakota. In 2017-18, two of three candidates passed the Praxis II on their first attempt. Of the teacher candidates that have graduated from the program between 2015 – 18, all but one is known to be teaching mathematics full time.

All six teacher candidates submitted a research paper and successfully completed each section of the MATH 480 final comprehensive exam at or above the required measure. Feedback was given and the results of the exams was discussed with each individual student. More detailed information will be recorded in the future. Recording scores on each subcategory and tracking the specific results began spring semester 2018. The recording will track performance on each section of the Comprehensive Exam and scores on the research paper by student and include a summary of performance for each semester. The summary will also include a breakdown by performance of on-campus and on-line students. We will also be tracking the institution where students completed each of the courses. This should provide a clear view of strengths and weaknesses in our mathematics program and allow us to make necessary changes to ensure better student success rates.

Analysis also indicates the program systematically assesses teacher candidates at the beginning, middle, and end of their teacher training, evaluating knowledge and skills of the program standards. The courses required for the content specialty area of mathematics align with the required program standards for teacher licensure. All content areas of study required for a mathematics education program are included in the MSU program; two candidates initially had low scores in student teaching, but they both improved dramatically when they were placed with new cooperating teachers. One of the two low-performing teacher candidates was hired full time in the second school at the conclusion of the student teaching experience. Multiple sources of assessment evidence show that candidates have opportunities to progressively building pedagogical and content knowledge throughout teacher training in the categories of learner and learning, content, instructional practice and professional responsibility.

It is noted that with six graduates in the last three years, mathematics education is considered a low enrollment program. This has been an overall enrollment trend at the undergraduate level for low enrollment in secondary education programs compared to early childhood and elementary levels. However, the number of students at MSU who are currently enrolled as mathematics education majors

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and admitted to the EPP has increased; it is known that the increase can be attributed to the addition of an online program option for mathematics education. It is the only secondary education program that can be completed online. It is expected the number of graduates will increase in the upcoming years with this enrollment pattern.

Year	# of Candidates Enrolled at MSU	# of Candidates Admitted	N (# of Graduates)
2017-2018	28	16	3
2016-2017	17	9	1
2015-2016	13	9	2

b. Response to findings: What changes have you made in your program as a result of data analysis? Provide a rationale for your decision.

Through the program review process, a number of important topics have been brought to the attention of the EPP that require further consideration in a continuous improvement model. These items will be added to the Division of Education annual accountability management system (AMS) as part of the yearly action plan. An update on these action items will be documented in the 2018-2019 AMS report available in November, 2019.

- A Math Club has been created on campus. Two of their current activities are:
 - Math homework nights- club members are tutoring students in any math course on campus. Teacher candidates are gaining teaching experience and reviewing math content as they tutor these students.
 - Student plan to lead Praxis practice for secondary mathematics majors, elementary mathematics majors and education majors for the PLT.
- Instructors are implementing Praxis type problems into course assessments. Plans are to do this in MATH 435, MATH 412, MATH 443, MATH 165, MATH 166, MATH 265 and MATH 389.
- The Division of Math and Science will revise student learning outcomes for the mathematics department from five to four by incorporating technology from its own student learning outcome to being included in other student learning outcomes.
- With the growing mathematics program, there is a need for another full time mathematics instructor.