

## COLLEGE OF MENOMINEE NATION

**Course Title:** Methods for Teaching Mathematics  
**Course Number:** EDU 306-01  
**Credits:** 3  
**Pre-Requisites:** EDU 250  
**Semester:** Fall 2017  
**Room Number:** SD 226  
**Class Days:** Monday  
**Class Time:** 6:00-8:50 PM  
**Instructor:** Cassandra Watson  
**Office Location:** SD 021B  
**Office Hours:** Monday and Tuesday 5:00 – 6:00 PM or by appointment  
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### Catalog Course Description:

*This course centers on how teachers create a positive classroom environment to facilitate children's mathematical thinking through Cognitively Guided Instruction (CGI). To this end, teacher candidates learn how to design and develop thematic activities where children solve problems by inventing/presenting their own mathematical problem solving strategies; where children learn to take responsibility for their own learning; and where turn-taking is a valuable commodity given the powerful results of students learning from each other.*

### Required Texts:

Kennedy, L. M., Tipps, S., & Johnson, A. (12<sup>th</sup> Ed.). *Guiding Children's Learning of Mathematics*. Wadsworth Cengage Learning, USA.

### Library Reference Texts:

Carpenter, T., Loef - Franke, M., and Levi, L. (2003). *Thinking Mathematically: Integrating Arithmetic and Algebra in Elementary School*, National Council of Teachers of Mathematics, Inc., Heinemann: Portsmouth, NH.

Miner, E. (Ed.) (1975). Omaeqnomenew Kiketwanan: An English-Menominee Word List. Wisconsin Native American Languages.

Nasir, N. and Cobb, P. (2007). *Improving Access to Mathematics: Diversity and Equity in the Classroom*, Teachers College Press, New York.

Secada, W. (Ed.) (2002). *Changing the Faces of Mathematics: Perspectives on Indigenous People of North America*, NCTM, Inc.

*Teaching Children Mathematics* journal

### Course websites:

American Indians and mathematics  
[http://www.ccd.rpi.edu/Eglash/csdt/teaching/papers/indig\\_it.htm](http://www.ccd.rpi.edu/Eglash/csdt/teaching/papers/indig_it.htm)  
American Indian Children's Literature  
<http://americanindiansinchildrensliterature.blogspot.com/>

<b>CMN General Education Objectives at Professional Level</b>	<b>Assessment by Activity</b>
Analytical Abilities/Critical Thinking/Level 5	Activity List and Rubric Reflections of Course Activities <ul style="list-style-type: none"> <li>• Problem types</li> </ul>
Analytical Abilities/Problem Solving/Level 5	Activity List and Rubric Reflections of Project Activities <ul style="list-style-type: none"> <li>• Problem solving sessions with children</li> </ul>
Communication/Written/Level 5	Reflections of Written Project Activities <ul style="list-style-type: none"> <li>• Chapter Paper</li> <li>• Project Journal from problem solving sessions</li> </ul>
Communication/Spoken/Level 5	Reflections of Oral Presentation for Project Activities <ul style="list-style-type: none"> <li>• Culturally Responsive Presentation in problem solving sessions</li> </ul>
Communication/Multi-Media/Level 5	Reflections of Oral Presentation for all Activities Summative Final
Culture & History/Selection of Cultural Aspects and Perspective/Level 5	Reflections of Cultural <ul style="list-style-type: none"> <li>• Aspects/Perspectives/Creating story problems</li> </ul>
Human Experience/Professional Skills/Level 5	Reflections of Facilitating for Problem Solving along Lines of Culture

<b>CMN Teacher Education Program Outcomes</b>	<b>Assessment by Activity</b>
1/Utilize knowledge of typical and atypical development in children	CGI developmental stages in journals/video
2/Administer and interpret various developmentally appropriate assessments	Culturally responsive project activity
3/Plan developmentally appropriate and culturally responsive curriculum	Culturally responsive project activity Lesson video and plan Presentation of video segment
4/Collaborate to establish positive relationships with peers, students, and families	Activity List and Rubric Reflections of Project Activities <ul style="list-style-type: none"> <li>• Problem solving sessions with children</li> </ul>
5/Recognize the influences of family, culture, and community on children's development and learning	Culturally responsive project activity
6/Synthesize contemporary research related to young children	
7/Modify curriculum and instruction to meet the needs of individual children	Culturally responsive project activity
8/Incorporate cultural elements to create positive learning experiences	Culturally responsive project activity
9/Create environments that are healthy, respectful, supportive, and challenging for all children	CGI content for environmentally friendly classrooms Observation log Quizzes

<b>Course Learning Outcomes: Teacher candidates will...</b>
1/Develop working knowledge of Cognitively Guided Instruction (CGI) problem types mathematical relationships/connections amongst standards
2/Utilize child's thinking in order to make instructional decisions
3/Analyze child's thinking patterns within developmental mathematical structures
4/Plan/assess classroom routines that facilitate children's thinking and interactive communications – explanations/representations/reasoning of children's solutions
5/Design/assess/differentiate – tasks/tools/theme based activities that use American Indian perspective/context/materials; story literature, educational software to exemplify/situate/create story problems
6/Utilize/assess effective strategies to assess social-cultural classroom self/colleagues
7/Reinforce tribal language (words and concepts) in classroom activities
8/Increase confidence level in new problem solving tasks (teacher candidate/children)
9/Develop knowledge/skills/dispositions regarding professional development
10/Choose/reflect upon artifacts that document course outcomes for e-portfolio

### **Course Activities, Assessment Activities and Grading**

1. Daily assessment of classroom activities – participation/collaboration  
Participation in the Methods for Teaching Mathematics classroom involves instructor/student, student/instructor, and student/student interactions to facilitate learning. Thus, participation moves beyond just learning techniques, it's about learning the most effective teaching processes while working together, collaborating in healthy ways to increase the learning potential of the entire class. This class will focus on teaching and learning from each other.
2. 10 verifiable hours of classroom observation in field placement setting
3. Problem Solving Sessions (PSS) described in observation log journal  
Teacher candidates will work in a school setting to solve mathematical problems with primary level students (Grades K-2) or intermediate level (Grades 3-5). Observations will adhere to school protocols and will include child's mathematical profile (for individual assessment). Additionally, children will be interviewed to find interests, thinking patterns, and confidence levels regarding mathematics problem solving. Given guidance during course class time, teacher candidates will observe children as they work to solve problem types: how they figure; how they represent thinking – verbally, use of written symbols; and how they justify their propositions in ways that convince others (in large group or whole class setting). A journal written to record/reflect on student activities for each problem solving session will identify problem types given, children's thinking/reasoning, children's work collected, comments on solution strategies along with plans for next session.
4. Critical analysis of Culturally Responsive (CR) activities  
Two page paper including citation of chapter selected from *Changing the Faces of Mathematics: Perspectives on Indigenous People of North America*, and from researching recent articles; description of context for problem solving.

5. Quizzes

6. Unit Plan (edTPA): Teacher candidate will choose a central focus in mathematics as a theme to develop a 3 to 5 lesson plan unit. This class will use the edTPA format of 15 rubrics for planning the unit, presenting one lesson while being videotaped in the field placement, and assessing the lessons and the teaching of the lessons in an elementary classroom.

7. Program Outcome Assessment and Reflection

8. Summative Final

**Assessment of Student Learning:** A composite of activity rubrics will be used to assess artifacts from this course and be added to CMN's teacher education electronic portfolio.

**\*\*All 10 verifiable hours of classroom observation in field placement setting are required to pass this course. If all 10 hours are not completed, the teacher candidate will not pass this course.\*\***

Assignment	Points
Daily Participation/Collaboration	25
Problem Solving Session Observations	30
Cultural Paper {draft due 4 <sup>th</sup> week}	25
Cultural Paper {final due 6 <sup>th</sup> week}	100
Quizzes	50
Unit Plan (edTPA)	200
Program Outcome Assessment/Reflection	20
Summative Final	50
<i>Total points</i>	<i>500</i>

Students can determine what their grade is by adding the total points earned and dividing by total possible points. Here is the way to set up the equation.

Points earned ÷ total points = \_\_%  
Example: 395 ÷ 500 = 79% (grade C)

**Grading Policy:**

A total course grade is tabulated across all course activities using percentages.

95-100% = A

90-94.9% = AB

85-89.9% = B

80-84.9% = BC

75-79.9% = C

70-74.9% = CD

65-69.9% = D

0-64.9% = F

**Program Outcome Assessment:**

For assessment of your program of study, CMN collects assessments and reflections from each of your program emphasis courses that best demonstrate the program outcomes - knowledge, skills, and attitudes - required in your program of study. These program outcomes are essential to your preparation for further study and/or your profession.

The assessment for this course is the Unit Plan (edTPA). Upon completion of your assessment, you will write a reflection based on your learning and email both the assessment and reflection to your instructor saved using the following naming conventions.

For assessment: Term\_Student Last Name\_First Name\_Course Number\_Assessment

For reflection: Term\_Student Last Name\_First Name\_Course Number\_Reflection

Term: Fall - FA, Spring - SP, Summer - SU

For example: FA17\_Watson\_Cassandra\_EDU306\_Assessment

FA17\_Watson\_Cassandra\_EDU306\_Reflection

**Attendance Policy:**

Activities completed in class will be recorded/evaluated. Comparable assignments may be required when a teacher candidate is not present in class.

**Class Participation:**

Participation is based upon your independent work ethic. Points will be given to you depending upon your weekly reports, quizzes, and organization of assignments. Participation in discussions will provide evidence of assigned readings and/or exploration of websites assigned as well as contribution to group activities.

**Course Policies:**

Reflections will be due at the same time observations, activities, projects, presentations, and papers are due.

**Late work:**

It is the responsibility of the student to make up any work missed because of an absence. Acceptance of late work will be a joint decision between instructor and student. The instructor reserves the right to lower the grade by one letter grade for any late work and refuse to accept for grade any work turned in after the agreed upon time period.

**Lab Rules/Safety:**

Help put class materials in ERL storage room. Provide safety measures for use of manipulatives in the classroom especially during flu season

**Classroom Conduct:**

Emphasis on collaboration. Please be advised that cell phones or pagers need to be turned off during class time.

**Student Time Expectation:**

In addition to participating in every meeting of this course, each student is expected to spend a minimum of six verifiable hours per week outside of class meeting times on the course subject matter, including text readings, text exercises, creating writing and speaking assignments, visiting course website, and monitoring time management goals.

## **Course Schedule/Semester Calendar**

### **Week 1 August 21**

1. Introduction to syllabus – expectations regarding course assignments, reflections/assessment/grading, inclusion of aspects of culture
2. edTPA Unit Plan

Assignment: Read Chapters 1 through 7  
Search for article on CGI and complete annotated bibliography for class discussion

### **Week 2 August 28**

#### **Overview of Cognitively Guided Instruction (CGI)**

Review: Discuss safe and friendly problem solving environment

1. Classroom discussion regarding the “Big Ideas” What is CGI?

Assignment: Practice Word Problem Types  
Finish reading Chapters 1 through 7  
Cultural Paper draft due week 4

### **Week 3 September 4**

#### **Labor Day – NO CLASS**

### **Week 4 September 11**

#### **Introduction of Cognitively Guided Instruction**

Review: CGI Problem Types

1. Direct modeling activity
2. Solve non-standard problems

#### **Build Classification Structure**

Review: Discuss Teacher Belief Systems and Constructivism

1. Discuss CGI philosophy and compare own belief systems
2. Analyze Join Result Unknown/Separate Result Unknown problems
3. Write problems to fit problem type chart

Assignment: Identify problem types from sample sets  
Read Chapter 8

**Week 5**  
**September 18**

**Learning Problem Types for Direct Modeling and Other Strategies**

Review: Problem Types (Personal Strategies Used to Recognize)

1. View/discuss direct modeling episodes
2. View/discuss separating/separating from episodes
3. Describe strategies for particular problems
4. Discuss relationships among strategies

Assignment: Read Chapters 9 & 10  
Cultural paper due week 6

**Week 6**  
**September 25**

**Children's Solution Strategies for Addition/Subtraction**

Review: Discuss progress in first draft of classroom environment and routines

1. View CGI Classrooms
2. Discuss variation of direct modeling

Assignment: Read Chapters 10 & 11  
Prepare for discussion regarding field placement classroom curriculum

**Week 7**  
**October 2**

**Introducing Multiplication/Division Problem Types**  
**Integrating Arithmetic and Algebra**

Review: Children already are thinking algebraically

1. Discussion regarding field placement curriculum
2. Developing mathematical thinking
3. Issues in equality
4. Developing and using relational thinking
5. Making conjectures about mathematics

Assignment: NCTM website for geometry activities for various grade levels  
- use of manipulatives in CGI classroom  
Read Chapters 13 & 14

**Week 8**  
**October 9**

**Fractions and Decimals**

1. Station rotations

Assignment: Review websites to share with class of various activities for  
Fractions/Decimals/Percents  
Read Chapters 13 & 14

**Week 9**  
**October 16**

**Decimals and Percents**

**MIDTERM**

1. Progress on writing unit plan (edTPA Task 1)
2. Decimal Squares
3. <http://www.mathsisfun.com/decimal-fraction-percentage.html>

Assignment: Read Chapters 12,16,17 Locate journal articles on Connections between Concepts of Fractions/Decimals/Percents
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**Week 10**  
**October 23**

**Extending Number Relationships to Larger Numbers**

Review: Discuss Connections between Concepts of Fractions/Decimals/Percents

1. Share collected activities re: Fractions/Decimals/Percents
2. Discuss relative magnitude activities
  - a. Connections to real-world ideas/reasonableness of numbers
  - b. Approximation and rounding/numbers beyond 1000
3. Discuss how children conceptualize large numbers

**Week 11**  
**October 30**

**Integrating Arithmetic and Algebra**

Review: Discussion on children who already think algebraically

1. Progress on teaching of unit plan with videotaping (edTPA Task 2)
2. Developing mathematical thinking
3. Developing and using relational thinking

Assignment: Read Chapters 15 & 18 Prepare culturally responsive activity
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**Week 12**  
**November 6**

**Selecting Culturally Responsive (CR) Activities**

Review: Present/discuss children's geometric concepts/activity

1. Discuss cultural paper
2. Discuss implementation of PSS within geometric concept development

Assignment: Locate 3 sources of CR children's literature in mathematics
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**Week 13**  
**November 13**

### **Implementing Culturally Responsive Activities**

Review: Present culturally responsive activity

1. Progress on assessing of completed unit plan (edTPA Task 3)
2. Look at Mathematics Standards from Common Core
3. Look at the NIES Part 2 study regarding mathematics in Indian education settings

Assignment: Read Chapters 19 & 20 Prepare for video presentation on field placement classroom teaching
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**Week 14**  
**November 20**

### **Culturally Responsive Activities/Exploring Data Analysis**

1. Comparisons, averages, and balance; graphical representations
2. Video Presentations

Assignment: edTPA due week 15
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**Week 15**  
**November 27**

1. Continue Video Presentations (if needed)
2. Work on Summative Final
3. Revise reflections for artifacts

Assignment: Program Outcome Assessment and Reflection emailed by week 16 Field placement classroom observation log due week 16
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**Week 16**  
**December 4**

### **Final Presentations**

1. Present Summative Final project

### **College of Menominee Nation Policies**

#### **Assessment of Student Learning:**

All Associate and Bachelor degree-seeking students are required to participate in various assessment activities. Those assessments provide valuable information regarding progress in achieving CMN's mission, general education objectives, and program outcomes. In addition, aggregate results from these assessments are used by administration, faculty, and staff to improve curriculum, instruction, and services for students. Further, these aggregate results may be reported to accrediting agencies. For more information, regarding these assessments, contact the Assessment of Student Learning Coordinator.

**ADA Statement:**

Individuals who have any disability, either permanent or temporary, which might affect their ability to perform in this class, are encouraged to inform the Disability Counselor in the Office of Disability Services, Room 101. Adaptation of curriculum instruction or assessments may be made as required to provide for equitable participation.

**Course Evaluations:**

All students are encouraged to provide the instructor with suggestions or other forms of constructive feedback regarding the class. Students can do this informally by speaking with the instructor, either in class or by appointment, and if instructor is unavailable, can arrange an appointment with the Dean of Letters and Science. This can also be done formally by completing the evaluation form distributed at mid-semester and again at the end of the course. If a student has a concern, issue, or question, the student must take the responsibility to approach the instructor in a timely manner.

**Class Cancellation Due to Inclement Weather or Building Closure:**

Closures resulting from severe weather conditions, natural disasters, or mechanical failure will be announced by the President or her designee. Campus closing will be announced on WTCH-AM 960 and WIXX radio stations as well as Fox 11 and Channel 2 TV stations. When in doubt, call 715-799-5600 for a recorded message. Notifications of class cancellations will be posted on campus. If no announcement/posting is made, student should remain for 10 minutes after class is scheduled to begin.

**Academic Conduct:**

Academic honesty is an absolute for the fulfillment of College of Menominee Nation mission and guiding principles. Our students are proud of the work they do here and are committed to doing the best for their communities. Their grades, certificates, and degrees are their record of that work. These are used by prospective employers to make hiring decisions, by transfer colleges and universities to make admissions decisions, by funding organizations to determine eligibility for scholarships and other financial aid, and, most importantly, by family and other community members to express their pride in our students accomplishments. Therefore, College of Menominee Nation will not tolerate any form of academic dishonesty. See the Student Handbook for more information on "Academic Misconduct."

**Academic Alerts:**

The academic alert form is used as a student retention tool at the College of Menominee Nation. Instructors fill out forms to identify students at risk of not completing a course or identify problems. This type of early intervention increases the opportunity for student success. Academic alerts can be submitted at any time during the semester to the Dean of Student Services. The forms are given to the student's advisor for follow-up. Follow-up comments are returned to the instructor.

**Computer Labs:**

Students using the computer lab must adhere to the College of Menominee Nation policy. Orientation for the computer lab is given during the first few weeks of each semester to help students get familiar with the lab equipment. These sessions are held regularly at posted times. All students are strongly recommended to attend. See the Student Handbook for more information on "Computer Lab Policy."

**Incomplete Policy:**

Requests for a grade of "incomplete" must be initiated by the student to the instructor. Students may only request if at least 75% of course requirements have been met.

**Cell Phones, Pagers, Electronic Devices, etc.:**

Students are forbidden from using cell phones, pagers, electronic devices, etc., in the classroom. All devices must be turned off before class begins.

**Important Dates to Remember:**

<b>Item/Activity</b>	<b>Date</b>	<b>Action Needed</b>
Last day to add/drop	August 25	Paperwork due to Registrar
Last day to charge books	September 1	Student CMN accounts
Labor Day	September 4	No classes
Midterm evaluations	Distributed October 2 Due October 18	Student complete on Empower
Midterm grades	October 18	Instructor post on Empower
Last day to withdraw (16 week courses)	November 9	Paperwork due to Registrar
Veterans Day (observed)	November 10	No classes
Thanksgiving Holiday	November 23 & 24	No classes
Final evaluations	Distributed November 27 Due December 11	Student complete on Empower
Final grades	December 11	Instructor post on Empower

The above information and calendar in this course are subject to change. If change is required, the change will be in writing and provided to each student.