On-Campus Course Syllabus
EDU 315
Math Instructional Methods
Fall 2019

Class Information

Day and Time: Mondays 7:00-9:30 p.m.
Room Number: E 202

Contact Information

Instructor Name: Dawna Duke
Instructor Email: dduke@criswell.org
Instructor Phone: 214.532.4889
Instructor Office Hours: n/a

Course Description and Prerequisites

This course is designed to prepare teachers to evaluate, plan, and deliver math lessons that are appropriate for learners from early childhood to 6th grade as well as assess student math knowledge and skills through a student-centered, inquiry approach. Students will be introduced to methods for teaching all children developmentally appropriate topics in Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability (the five NCTM content Standards & TEKS). *(9 clock hours of field experience are required for this course.)*

Course Objectives

1. Be familiar with the NCTM *Principles and Standards for School Mathematics,* the Texas Essential Knowledge and Skills, and apply them to mathematics planning and instruction.
2. Be familiar with the *Professional Standards for Teaching Mathematics* and how they influence teaching methods.
3. Discuss the current influences on and reform movements aimed at mathematics instruction in American schools.
4. Plan lessons that Incorporate "Doing" mathematics in the elementary classroom.
5. Teach in a developmentally appropriate way which reflects a constructivist view of learning.
6. Use problem-solving as a principle instructional strategy while designing and selecting effective learning tasks.
7. Use a variety of assessment skills to evaluate student progress in mathematics.

Required Textbooks

TD: Van de Walle, J. A., K.S.K & Bay-Williams, J. M. (2019), *Elementary and middle school mathematics: Teaching Developmentally (10th* ed.). Massachusetts: Allyn and Bacon.

ISBN: 978-0134802084

TCM: Carpenter, T., Fennema, E., Franke, M., Levi, L., Empson, S. (2015). *Children's Mathematics; Cognitively Guided Instruction*. (2nd ed.). Heinemann.
ISBN: 978-0325052878

Course Requirements and Assignments

1. Final Exam: Assessment, Analysis, and Planning based on Student Work Samples (20% of grade)

For the final examination, you will be given six samples of student work from the concepts we have covered throughout the semester. For each student sample, you will conduct analysis of each piece of student work in order to determine the student's misconception, articulate the next step for teaching and learning (based on the TD & TCM readings), and plan a 5-10 minute individualized intervention and strategy for the student using a math manipulative (concrete to abstract).

2. Midterm: Assessment, Analysis, and Planning based on Student Work Samples (15% of grade)

For the midterm examination, you will be given four samples of student work from the concepts we have already covered in class. For each student sample, you will conduct analysis of each piece of student work in order to determine the student's misconception, articulate the next step for teaching and learning (based on the TD & TCM readings), and plan a 5-10 minute individualized intervention and strategy for the student using a math manipulative (concrete to abstract). Concepts may include: Whole-number place-value, addition, subtraction, multiplication, division, algebraic thinking, equations, and functions.

3. Mini-Lessons: Number Talks/Problem of the Day/Fluency (10% of grade)

a. Each student will facilitate 2 mini-lessons. Sign-Ups will be given during the first class meeting.

4. Homework Assignments (25% of grade):

a. TD Reading Activities: When you read sections from your TD textbook on topics like fractions or Base-10, you will be asked to design your own unique mini-activity on each topic for elementary students in your desired grade level. These activities should be based on the principles and research covered in the reading, but should be original to you and your future classroom. You will present your activity to the class each week.

Due by 8:00 a.m. the Monday of each meeting class session in Canvas.

b. Discussion Board Reflections: We will also be reading chapters from TCM, as well as research articles, for homework. You will be asked to write a reflection on each of these weekly reading assignments and post it on the discussion board. You will also be asked to respond to the reflections of two other class members. A rubric for your discussion board posts will be provided to you in Canvas.

Original post: Due by 8:00 a.m. Thursday after class session in Canvas.

Peer responses (2): Due by 8:00 a.m. the Monday of each meeting class session in Canvas.

c. Content Problem Sets: You will choose 2 grade levels for the semester (K-2 & 3-5) and complete a weekly problem set for each grade level. You will solve each problem using three different strategies or manipulatives. You will submit your problem solutions and strategy work weekly in canvas. A rubric will be provided for you in Canvas.

Due by 8:00 a.m. the Monday of each meeting class session in Canvas.

5. Children's Literature Lesson Plan & Presentation (5% of grade): Research has shown that children learn mathematical concepts best through language and manipulation of concrete objects. Combining literature, storytelling, and manipulatives provides students with exciting learning opportunities. Each student, working individually, will prepare a lesson using a children's literature book, appropriate for the selected grade level.

a. Lesson Plan: Should include, at a minimum the following: title, concept/topic to be taught, TEKS standard, materials/resources. It must contain the step by step procedures – including the before, during, and after phases of the lesson as described in the lesson plan format in TD. A rubric will be provided in Canvas.

Lesson Plan due by 8:00 a.m. September 30, 2019.

b. Oral Presentation: Give a model presentation (role-play) of the lesson you designed. Alternately, students can actually teach the lesson during their concurrent field experience and submit a video of the lesson and short reflection of the lesson rather than an oral presentation. A rubric will be provided in Canvas.

Presentations during class September 30, 2019.

6. Teaching Experiences: Problem-Based Lesson Plan & Presentation (15% of grade):

Individual students will develop an ORIGINAL (otherwise it will not be graded) problem-based investigation that will be taught during our class. This must be a task that matches the "Doing Mathematics" level in the Level of Cognitive Demand Framework (Table 3.1, pg. 37). Each individual will sign up for a mathematical topic on which the activity will be developed. This problem-solving activity should cover a topic from elementary mathematics, but should be complex/difficult enough to keep students in our class engaged. Examples will be provided that strike this balance. This project has the following elements (see rubric in Canvas):

a. Lesson Plan: Should include, at minimum the following: title, concept, topic to be taught, TEKS, materials/resources. It must contain the step by step procedures – including the before, during, and after phases of the lesson as described in the lesson plan format in TD. The lesson plan must be written in Google Docs. (Feedback will be provided in Google Docs). **Draft 1 Due by 8:00 a.m. on November 11, 2019. Final Draft Due by 8:00 a.m. on December 2, 2019.**
b. Revised Lesson plan: The individual must revise their lesson plan based on instructor feedback.
c. Presentation: The individual will teach their lesson to the class on **12/2/2019**. The lesson should last approximately 30 minutes. Alternately, students can submit a video recording of their lesson being conducted during their field experience for the class to watch in lieu of presenting to the class.
d. Reflection: Each student will individually submit a reflection on how the lesson went (see rubric in Canvas).
e. Students will conduct 9 clock hours of field experience during which you will present this lesson and the other lessons in this syllabus in the classroom you are assigned to.
f. <u>Failure to complete the entire 9 hours of Field Experience/Teaching Assignments will result in an "F" in this course.</u>

7. Classwork (10% of grade): Various classwork assignments will be given during class. There is no makeup for these activities. If you have a college-excused absence, you will simply be given credit for them.

Assignment	**Due Date**	**Point Value**
Final Exam	12/9/2019	20%
Midterm Exam	10/14/2019	15%
Mini-Lessons (2)	Sign-Up	10%
Homework Assignments	Weekly	25%
Children's Literature Plan & Pres.	9/30/2019	5%
Problem-Based Lesson Plan & Pres.	11/11/2019 (draft 1) 12/2/2019 (final)	15%
Classwork	Weekly	10%
	TOTAL	**100%**

Course/Classroom Policies and Information

(Delete section if not needed or enter policies and/or information applicable to your course or classroom. Create relevant subheadings as desired.)

Class Attendance

Students are responsible for enrolling in courses for which they anticipate being able to attend every class session on the day and time appearing on course schedules, and then making every effort to do so. When unavoidable situations result in absence or tardiness, students are responsible for acquiring any information missed. Professors are not obliged to allow students to make up missed work. Per their independent discretion, individual professors may determine how attendance affects students' ability to meet course learning objectives and whether attendance affects course grades.

Grading Scale

A	93-100	4.0 grade points per semester hour
A-	90-92	3.7 grade points per semester hour
B+	87-89	3.3 grade points per semester hour
B	83-86	3.0 grade points per semester hour
B-	80-82	2.7 grade points per semester hour
C+	77-79	2.3 grade points per semester hour
C	73-76	2.0 grade points per semester hour
C-	70-72	1.7 grade points per semester hour
D+	67-69	1.3 grade points per semester hour
D	63-66	1.0 grade point per semester hour
D-	60-62	0.7 grade points per semester hour
F	0-59	0.0 grade points per semester hour

Incomplete Grades

Students requesting a grade of Incomplete (I) must understand that incomplete grades may be given only upon approval of the faculty member involved. An "I" may be assigned only when a student is currently passing a course and in situations involving extended illness, serious injury, death in the family, or employment or government reassignment, not student neglect.

Students are responsible for contacting their professors prior to the end of the semester, plus filing the appropriate completed and approved academic request form with the Registrar's Office. The "I" must be removed (by completing the remaining course requirements) no later than 60 calendar days after the grade was assigned, or the "I" will become an "F."

Academic Honesty

Absolute truth is an essential belief and basis of behavior for those who believe in a God who cannot lie and forbids falsehood. Academic honesty is the application of the principle of truth in the classroom setting. Academic honesty includes the basic premise that all work submitted by students must be their own and any ideas derived or copied from elsewhere must be carefully documented.

Academic dishonesty includes, but is not limited to:

- cheating of any kind,
- submitting, without proper approval, work originally prepared by the student for another course,
- plagiarism, which is the submitting of work prepared by someone else as if it were his own, and
- failing to credit sources properly in written work.

Institutional Email Policy

All official college email communications to students enrolled in this course will be sent exclusively to students' institutional email accounts. Students are expected to check their student email accounts regularly and to respond in an appropriate and timely manner to all communications from faculty and administrative departments.

Students are permitted to setup automatic forwarding of emails from their student email accounts to one or more personal email accounts. The student is responsible to setup and maintain email forwarding without assistance from college staff. If a student chooses to use this forwarding option, he/she will continue to be responsible for responding appropriately to all communications from faculty and administrative departments of the college. Criswell College bears no responsibility for the use of emails that have been forwarded from student email accounts to other email accounts.

Disabilities

Criswell College recognizes and supports the standards set forth in Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and similar state laws, which are designed to eliminate discrimination against qualified individuals with disabilities. Criswell College is committed to making reasonable accommodations for qualifying students, faculty, and employees with disabilities as required by applicable laws. For more information, please contact the Student Services Office.

Intellectual Property Rights

Unless otherwise specifically instructed in writing by the professor, students must neither materially nor digitally reproduce materials from any course offered by Criswell College for or with the significant possibility of distribution.

Resources and Support

Canvas and SONIS: Criswell College uses Canvas as its web-based learning tool and SONIS for student data. Students needing assistance with Canvas should contact the Canvas Help Support line at (844) 358-6140. Tech support is available at this number, twenty-four hours a day. Students needing help with SONIS should contact the Campus Software Manager at studenttechsupport@criswell.edu.

Student Services: The Student Services Office exists to foster and encourage success in all areas of life—physical, intellectual, spiritual, social, and emotional. Students are encouraged to reach out for assistance by contacting the office at 214.818.1332 or studentservices@criswell.edu. Pastoral and certified counseling services are also available to Criswell students. Appointments are scheduled through the Dean of Students, at deanofstudents@criswell.edu.

Wallace Library: Students can access academic resources and obtain research assistance by visiting the Wallace Library, which is located on campus. For more information, go to the library website, or email the Wallace Library at library@criswell.edu.

Writing Center: Students are encouraged to consult with writing tutors to improve and enhance their skills and confidence by practicing techniques of clear and effective writing. To consult with a tutor, students can visit the Writing Center located on the first floor near the Computer Lab, or they can schedule an appointment by emailing writingcenter@criswell.edu or calling 214.818.1373.

Course Outline/Calendar

Tentative Calendar

Date	Discussion Topics	Assignments Due
Mon 8/19	*Topic: Problem-Solving* TD Chapter 1: Teaching Mathematics in the 21st Century TD Chapter 3: Teaching Through Problem Solving	Select 2 Grade Levels for Semester
Mon 8/26	*Topic: Intro to Cognitively-Guided Instruction* TCM Chapter 1-3	Reflection on TCM Ch. 1-3 2 Peer Responses
Mon 9/2	**Labor Day – No class!**	**Labor Day No Class!**
Mon 9/9	*Topic: Intro to Cognitively-Guided Instruction* TCM Chapter 4-6 *Q&A: Children's Literature Lesson Plans & Presentations	Reflection on TCM Ch. 4-6 2 Peer Responses
Mon 9/16	*Topic: Intro to Cognitively-Guided Instruction* TCM Chapter 7-8 *Topic: Intro to Number Talks* TD Chapter 11: Developing Whole-Number Place-Value Concepts	Reflection on TCM Ch. 7-8 & TD Ch. 11 2 Peer Responses Place Value Problem Set TD Ch. 11 Reading Activity Presentation
Mon 9/23	*Topic: Intro to Number Talks* TD Chapter 12: Developing Strategies for Addition and Subtraction TD Chapter 13: Developing Strategies for Multiplication and Division	Reflection on TD Ch. 12-13 2 Peer Responses Addition & Subtraction Problem Set Multiplication & Division Problem Set TD Ch. 12 Reading Activity Presentation TD Ch. 13 Reading Activity Presentation Sign-Up for Number Talks
Mon 9/30	TD Chapter 2: Exploring What it Means to Know	Reflection on TD Ch. 2

	and Do Mathematics ***Children's Literature Presentations**	2 Peer Responses Children's Literature Lesson Plans & Presentations Due
Mon 10/7	*Topic: Connecting Arithmetic and Algebra* TD Chapter 14: Algebraic Thinking, Equations, and Functions TD Chapter 4: Planning in the Problem-Based Classroom *Q&A: Planning your Problem-Based Lesson	Reflection on TD Ch. 14 & 4 2 Peer Responses TD Ch. 14 Problem Set TD Ch. 14 Reading Activity Presentation
Mon 10/14	**Midterm Exam (in class)** *Topic: Facilitating a class discussion around student work* TD Chapter 15: Developing Fraction Concepts	**Midterm Exam (in class)** Reflection on TD Ch. 15 2 Peer Responses TD Ch. 15 Problem Set TD Ch. 15 Reading Activity Presentations
Mon 10/21	*Topic: Transitions from whole numbers to fractions* TD Chapter: 16 Developing Fraction Operations	Reflection on TD Ch. 16 2 Peer Responses TD Ch. 16 Problem Set TD Ch. 16 Reading Activity Presentation
Mon 10/28	*Topic: Guided Discovery – Facilitating Student Invention* TD Chapter 17: Developing Concepts of Decimals and Percents TD Chapter 18: Rations, Proportions, and Proportional Reasoning	Reflection on TD Ch. 17-18 2 Peer Responses TD Ch. 17-18 Problem Set TD Ch. 17-18 Reading Activity Presentation
Mon 11/4	*Topic: Assessing & Acting Upon Mathematical Knowledge* TD Chapter 19: Developing Measurement Concepts TD Chapter 20: Geometric Thinking and Geometric Concepts	Reflection on TD Ch. 19-20 2 Peer Responses TD Ch. 19-20 Problem Set TD Ch. 19-20 Reading Activity Presentation
Mon 11/11	*Topic: Assessing & Acting Upon Mathematical Knowledge Cont'd* TD Chapter 21: Developing Concepts of Data Analysis TD Chapter 22: Exploring Concepts of Probability	**Problem-Based Lesson Plan Due** Reflection on TD Ch. 21&22 2 Peer Responses TD Ch. 21-22 Problem Set TD Ch. 21-22 Reading Activity Presentation
Mon 11/18	*Topic: Assessing & Acting Upon Mathematical Knowledge Cont'd* TD Chapter 5: Creating Assessments for Learning	Problem-Based Lesson Plan Feedback Given (By professor) Reflection on TD Ch. 5 2 Peer Responses
Mon	**Fall Break – No class!**	**Fall Break – No class!**

11/25		
Mon 12/2	**Problem-Based Lesson Presentations** *Topic: Equity and Diversity in Elementary Mathematics* TD Chapter 6: Teaching Mathematics Equitably to All Children *Topic: Technology for Teaching Elementary Mathematics* TD Chapter 7: Using Technological Tools to Teach Mathematics *Q&A: Final Exam	**Problem-Based Lesson Presentations** Reflection on TD Ch. 6-7 2 Peer Responses Problem Set – Final Exam Study Guide
Mon 12/9	**Final Exam**	Course Reflection & Teaching Philosophy (Discussion in Canvas) 2 Peer Responses **Final Exam**