

Note:

Course content may be changed, term to term, without notice. The information below is provided as a guide for course selection and is not binding in any form, and should not be used to purchase course materials.

COURSE SYLLABUS

EDUC 530

TEACHING MATHEMATICS

COURSE DESCRIPTION

An in depth study of the theory and processes of teaching mathematics to students in preschool through eighth grade, the course includes the instructional process in the area of numeration, operations and computations, geometry and logic. Candidates will participate in hands-on, modeled instruction, will construct and demonstrate models and teaching tools, and will complete a research project.

RATIONALE

Mastery of the skills of mathematics is crucial to the education of school age children. The skill area is applied daily in non-school settings and can determine the success or lack thereof in a chosen career. The instructional process encountered in the early years impacts the attitudes toward and proficiency of students in mathematics. Because of the developmental nature of mathematics the elementary and middle school years are most critical in the development of this proficiency with positive affective elements. Professional educators who serve at this level must be proficient in the necessary skills, implement appropriate instructional processes, and present a positive attitude toward the field of mathematics.

I. PREREQUISITES

EDUC 500 or equivalent

II. REQUIRED RESOURCE PURCHASES

Click the following link to view the required resources for the term in which you are registered: <http://bookstore.mbsdirect.net/liberty.htm>

III. ADDITIONAL MATERIALS FOR LEARNING

- A. Computer with basic audio/video output equipment
- B. Internet access (broadband recommended)
- C. Microsoft Word
(Microsoft Office is available at a special discount to Liberty University students.)

IV. MEASURABLE LEARNING OUTCOMES

Upon successful completion of this course, the student will be able to:

- A. Given a diagnostic instrument for mathematics proficiency, compute and solve arithmetic problems appropriate for elementary and middle school.
- B. Given mathematics tools, apply metacognitive principles to the process of teaching mathematics to an elementary student or middle school student.

- C. Given current research data, analyze current practices in the teaching of mathematics and prescribe the alterations needed to correct the gaps and duplications contained therein.
- D. In an essay format, compare and contrast the methods of instruction observed in the classroom setting with the metacognitive approach to mathematics instruction.
- E. In an essay format, evaluate the approach to mathematics proposed by a self-selected text series.
- F. Using mathematics teaching tools, describe the application of the tool in the instructional setting.
- G. In terms of mathematics instruction, compare the metacognitive processes necessary for learning by a primary student, and intermediate student, and a middle school student.
- H. Discuss how mathematics relates to the Biblical Worldview perspective.

V. COURSE REQUIREMENTS AND ASSIGNMENTS

- A. Textbook readings and presentations
- B. Discussion Board Forums (7)

The student will post a response to the discussion question in the appropriate Discussion Board forum. The threads should be 250 words and must be completed no later than Wednesday evening of each module. The student will then post a 100-word reply to two other students' threads no later than Sunday night of that same module.
- C. Class Introductions

The student will post an introduction to the class in the Discussion Board. In a thread, the student will provide general introductory information along with his or her attitude toward teaching mathematics and a description of his or her math skills. In addition, students will post a reply to at least two students in the class. The initial thread is due by the end of Wednesday of Module/Week 1.
- D. Math Attitudes Survey

Students will take a 14-question survey that will assist the instructor in assessing the students' attitudes toward mathematics. There are no right or wrong answers. There is no timer, but the assignment must be complete by the end of Module/Week 1.
- E. Reading Journals (7)

The student will post a summary of each week's reading assignment in the appropriate Discussion Board forum. The summaries are to be 500–800 words and must be completed no later than Wednesday evening of each module. The student will reply to two other student's threads no later than Sunday night of that same module.

F. Online Field Trips (7)

The student will complete seven online field trips using the links provided and will write about his or her experience in the corresponding Discussion Board forum no later than Wednesday night of the module assigned. The student will reply to two other students' threads no later than Sunday night of that same module.

G. Field Experience Requirements

The completion of at least 10 hours of field experience in a classroom setting for math instruction is a required component of this course. Consequently, the student will submit two field experience assignments: 1) the Field Experience Plan (due in Module/Week 1), and 2) the Field Experience Report (due in Module/Week 8).

H. Assessment Project

The student will be required to write an essay discussing the results from the assessments administered to the students taught during the three required lessons for the course. They will also need to interpret the results and be a reflective practitioner, determining if remediation is needed if given the opportunity to teach the lesson again. The essay should be 5–7 pages in length. It is due by the end of Module/Week 8.

I. IPPR: Instructional Planning, Performance, and Reflection (3)

Students will create and implement lesson plans for three instructional tools. One tool should be selected or created for each of the following:

1. Place value and computation: This will be completed and used as a part of the class session. The mat is to be made to the exact specifications given.
2. Multi-step word problem solving using formulas or algebraic equations: Create a tool that could be used to teach and to rehearse these problems.
3. Three dimensional geometry at the primary, intermediate, or middle school level: Create a tool that could be used to teach or to rehearse the properties of geometry.

Use the following guidelines to create your instructional tool:

- The tools may be copied or adapted from those used in the instructional process during class sessions.
- The tools may be designed for use in teacher demonstrations. The tool must be large enough to be seen by a group of twenty students in a regular classroom setting. The tool should be durable, neatly constructed, and visually appealing. The tool must be packaged in a manner which is practical for use and storage in the classroom.
- The tools may be designed for use as individual student tools in a classroom of 25. The tools must be durable, neatly constructed, and visually appealing. The tool must be safe for use by the age of the student for which is intended.

The tools must be packaged in a manner that minimizes difficulties in distribution and is functional in a classroom.

- Student will generate a reflective essay that describes how the tool was used during the teaching of the lessons, discuss the effectiveness of the tool, the student’s response to the tool, and any changes they would make if they were to reconstruct the tool again.
- Following the construction of the tool, use the tool to work with a learner of an appropriate age for the tool. At the end of the session, have the student produce evidence that he or she has learned from using the tool. Generate a reflective essay that describes your thoughts about the effectiveness of the tool, the student’s response to the tool, and any changes you would recommend in the construction or use of the tool. Again, retain evidence of the student’s work for the developmental portfolio.

VI. COURSE GRADING AND POLICIES

A. Points

Discussion Board Forums (7 at 20 pts ea)	140
Class Introductions	30
Math Attitudes Survey	40
Online Field Trips (7 at 10 pts ea)	70
Reading Journals (7 at 30 pts ea)	210
Field Experience Requirements	
Field Experience Plan	15
Field Experience Report	135
Assessment Project	60
IPPR (3 at 100 pts ea)	300
Total	1000

B. Scale

A = 960–1000 A- = 940–959 B+ = 920–939 B = 890–919 B- = 870–889
 C+ = 850–869 C = 820–849 C- = 800–819 D+ = 780–799 D = 750–779
 D- = 730–749 F = 729 and below

C. Late Assignment Policy

The nature of this course requires that the candidate interact with the material, professor and other students on a weekly basis. Because of this, it is difficult to achieve the fullest experience in this learning environment when assignments are late. If unable to complete an assignment on time, the candidate must contact the instructor immediately by email to make arrangements for the completion of that assignment. Assignments that are submitted after the due date without appropriate excuse and pre-approval will receive the following deductions:

1. Assignments submitted after the due date will receive a 10% deduction.

2. Assignments submitted more than one week late receives a 20% deduction.
3. Assignments submitted after two weeks late or after the final due date of the class will not be accepted without documentation or extenuating circumstances.

D. Instructor Availability and Feedback

Instructors will answer most emails within 24–48 hours. Instructors will comment on some but not all discussion board posts. Written feedback will be provided on the IPPR Lesson Plans.

E. Disability Assistance

Students with a documented disability may contact Liberty University Online's Office of Disability Academic Support (ODAS) at LUOODAS@liberty.edu to make arrangements for academic accommodations.

COURSE SCHEDULE

EDUC 530

Textbooks: Loop, *Revealing Arithmetic* (2010).

Van de Walle, *Elementary and Middle School Mathematics* (2011).

WEEK/ MODULE	READING & STUDY	ASSIGNMENTS	POINTS
1	Van de Walle: chs. 1–2 Loop: pgs. viii-xii Online Field Trip Websites 3 Presentations	Course Requirements Checklist	0
		DB Forum 1	20
		Class Introductions	30
		Math Attitudes Survey	40
		Reading Journal 1	30
		Online Field Trip 1	10
		Field Experience Plan	15
		2	Van de Walle: chs. 3–5 Loop: appendix D & pgs. 180–191 Online Field Trip Websites 3 Presentations
3	Van de Walle: chs. 6–8 Loop: pgs. 1–8 Online Field Trip Websites 2 Presentations	DB Forum 3 Reading Journal 3 Online Field Trip 3 IPPR 1	20 30 10 100
4	Van de Walle: chs. 9–11 Loop: pgs. 14–46 Online Field Trip Websites 3 Presentations	DB Forum 4 Reading Journal 4 Online Field Trip 4	20 30 10
5	Van de Walle: chs. 12–14 Online Field Trip Websites	DB Forum 5 Reading Journal 5 Online Field Trip 5 IPPR 2	20 30 10 100
6	Van de Walle: chs. 15–17 Loop: pgs. 79–129 Online Field Trip Websites 4 Presentations	DB Forum 6 Reading Journal 6 Online Field Trip 6 IPPR 3	20 30 10 100
7	Van de Walle: chs. 18-20 Loop: pgs. 113-137 Online Field Trip Websites 4 Presentations	DB Forum 7 Reading Journal 7 Online Field Trip 7	20 30 10
8	Van de Walle: 21-23 Loop: pgs. 138-140	Assessment Project Field Experience Report	60 135
TOTAL			1000

DB = Discussion Board

NOTE: Each course week begins on Monday morning at 12:00 a.m. (ET) and ends on Sunday night at 11:59 p.m. (ET). The final week ends at 11:59 p.m. (ET) on Friday.