EDUC 102: *Teaching Elementary Math

Location:	Evening
Address:	1001 Rogers Street Columbia, MO 65216
Section:	19FALL2/EDUC/102/AEV
Semester Credit Hours:	3
Class Day(s) and Time(s):	Thursday 5:30 PM - 9:30 PM from October 21, 2019 to December 14, 2019

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❶ Course Information

Catalog Description

This course is designed to help preservice elementary school teachers develop a conceptual framework for mathematics, especially for those aspects normally experienced in elementary school. Through their work in the course the students study the main themes of mathematics throughout the curriculum, considering both mathematical and pedagogical content issues in teaching mathematics. Topics include sets, logic, informal geometry, numeration systems, properties of real numbers and an introduction to probability and statistics. Crosslisted with MATH 102.

Prerequisite: Grade of C or higher in MATH 104, or higher MATH course; or a score of 19 or above on the math portion of the ACT; or 460 or above SAT score; or a passing score on the Columbia College math placement exam.

Additional Notes

Thanksgiving Holiday: Class will not meet on Thursday, November 28. The make-up day will be Friday, December 6.

▣ Textbooks

As part of Truition[SM], students will receive their course materials automatically as described below.

⬇ Bennett. (2016). *Mathematics for Elementary Teachers: A Conceptual Approach* (10th). McGraw-Hill. *eText*

Bookstore Information

Visit https://www.ccis.edu/bookstore.aspx for details.

    eText Information

If a course uses an eText, (see textbook information above) the book will be available directly in Desire2Learn (D2L) seven days before the session begins, if registered for courses prior to that date. Upon first login to VitalSource, students should use their CougarMail email address; alternate email addresses cannot be used. More information about how to use the VitalSource platform, including offline access to eTexts, can be found in D2L.

Physical Course Materials Information

Students enrolled in courses that require physical materials will receive these materials automatically at the shipping address on file with Columbia College. Delivery date of physical materials is dependent on registration date and shipping location. Please refer to confirmation emails sent from Columbia College for more details on shipping status.

Returns: Students who drop a class are responsible for returning any physical course materials that were shipped. To initiate a return, visit Ingram Returns to generate a pre-paid return label. Materials from dropped courses must be returned within 30-days of receipt. **Failure to return physical items from a dropped course will result in a charge to the student account for all unreturned items.**

Note: Students who opt-out of having their books provided as part of Truition^{SM} are responsible for purchasing their own course materials.

⬇ Technology Requirements

THIS IS A TECHNOLOGY-ENRICHED COURSE WHICH COMBINES IN-SEAT INSTRUCTION WITH ONLINE LEARNING.

Participation in this course will require the basic technology for all classes at Columbia College:

- A computer with reliable internet access
- A web browser
- Acrobat Reader
- Microsoft Office or another word processor such as Open Office

For more information, see technical requirements.

👍 Course Learning Outcomes

1. Explain the concepts of whole numbers, integers, fractions, real numbers, ratio, proportion and percent.
2. Demonstrate the usual and some alternative algorithms for operations on whole numbers, fractions, decimals, integers and real numbers.
3. Justify and use estimation procedures.
4. Illustrate the relations of equality and inequality with whole numbers, integers, rational numbers and real numbers.
5. Apply basic number theory concepts to problem situations.
6. Organize and interpret data.
7. Calculate measures of central tendency and dispersion.
8. Solve problems involving probability.
9. Apply basic counting techniques to problem situations.
10. Identify and analyze 2- and 3-dimensional geometric figures.
11. Calculate 2- and 3-dimensional measurements of geometric figures.
12. Measure in the metric and customary units.
13. Demonstrate knowledge of the skills required for problem solving.
14. Use a variety of manipulatives to develop number and concepts, geometric concepts, spatial relationships and probability.
15. Use technology (calculator and computer) as a learning and teaching tool for mathematics.
16. Demonstrates knowledge of the academic language of the appropriate discipline applicable to the certification area(s) sought as defined by the Subject Competencies for Beginning Teachers in Missouri. (1.1)
17. Demonstrates content knowledge and ability to use multiple subject specific methodologies for specific instructional purposes to engage students. (1.2)
18. Demonstrates understanding of how to engage students in the methods of inquiry and research in his or her respective discipline. (1.3)
19. Understands how to select appropriate strategies for addressing individual student needs in meeting curriculum objectives. (3.2)
20. Demonstrates knowledge of current instructional resources to support complex thinking and technological skills. (4.2)
21. Develops skills in using a variety of technology media communication tools. (6.4)

🎓 Grading

Grading Scale

Grade	Points	Percent
A	900 - 1000	90-100%
B	800 - 899	80-89%
C	700 - 799	70-79%
D	600 - 699	60-69%
F	0 - 599	0-59%

Grade Weights

Assignment Category	Points	Percent
quizzes	150	15%
midterm	250	25%
final	250	25%
survey project	200	20%
STEM/STEAM Lesson	150	15%
Total	**1000**	**100%**

📅 Schedule of Due Dates

Week 1

Assignment	Points	Due
Lecture and Problems: Sections 1.1-1.2, 2.1	0	29-Apr-19
Quiz 1: Sections 1.1-1.2, 2.1	25	05-May-19

Week 2

Assignment	Points	Due
Lecture and Problems: Sections 7.1-7.2	0	6-May-19
Quiz 2: Sections 7.1-7.2	25	12-May-19

Week 3

Assignment	Points	Due
Lecture and Problems: Sections 3.1-3.3	0	13-May-19
Quiz 3: Sections 3.1-3.3	25	19-May-19

Week 4

Assignment	Points	Due
Lecture and Problems: Sections 4.1-4.2	0	20-May-19
Survey Projects and Presentations	200	20-May-19
Midterm	250	26-May-19

Week 5

Assignment	Points	Due
Lecture and Problems: Sections 5.1-5.3	0	27-May-19
Quiz 4: Sections 5.1-5.3	25	02-Jun-19

Week 6

Assignment	Points	Due
Lecture and Problems: Sections 6.1-6.3	0	27-May-19
Quiz 5: Sections 6.1-6.3	25	09-Jun-19

Week 7		
Assignment	**Points**	**Due**
Lecture and Problems: Sections 8.1-8.2	0	10-Jun-19
Quiz 6: Sections 10.1, 10.3	25	16-Jun-19

Week 8		
Assignment	**Points**	**Due**
Lecture and Problems: Sections 10.1 and 10.3	0	17-Jun-19
STEM/STEAM Lesson	150	17-Jun-19
Final	250	23-Jun-19

Total Points: 1000

✍ Assignment Overview

Assignments

Quizzes: There will be 6 quizzes throughout the semester each worth 25 points. Students will be allowed to use graphing calculators for all quizzes. In some cases, you will need to use manipulatives for the quizzes. All quizzes will be taken online in D2L.

Survey Project: Students will work in pairs (possibly a group of 3 if there is an odd number of students) to write a survey, distribute their survey to at least 50 people (or possibly 75 people for a group of 3). They will analyze and report on the results of their surveys to the class. More information about this project is found in D2L. This project and presentation is worth 200 points.

STEM/STEAM Lesson Plan: Students will be required write a lesson plan that incorporates Science, Technology, and Engineering (optional Art) with Math. Math should be the main focus. You will use the CC lesson plan format and will be graded using the lesson plan rubric. We will have a day to go over a draft of these lessons in class. Each student must do a different lesson so students must have their lesson idea approved by Dr. Schlemper. Each student will briefly discuss their lesson during class. This lesson and presentation is worth 150 points. More information for this is provided in D2L.

Examinations

Exams: There will be a midterm and a final. These exams are each worth 250 points. Students will be allowed to use graphing calculators for all exams. Again, you may need to use manipulatives for these exams. All exams will be taken online in D2L (they are not proctored).

☰ Course Outline

Click on each week to view details about the activities scheduled for that week.

Week 1: Introduction to the Course and Problem Solving

Lecture and Problems: Sections 1.1-1.2, 2.1
Lecture Topics:

Introduction to the Course, Problem Solving, Sets and Venn Diagrams

Textbook problems:

Section 1.1 pg. 14-15 #1-9 odd, 13, 14, 18, 19, 21, 22, 25, 27, 29

Section 1.2 pg. 31-36 #1-12 all, 19-23 all, 26-32 all, 37, 38, 46, 51

Section 2.1 pg. 56-58 #15-42 all

Quiz 1: Sections 1.1-1.2, 2.1
Online Quiz over the Sections 1.1-1.2, 2.1

Week 2: Data Collection and Analysis

Lecture and Problems: Sections 7.1-7.2
Lecture Topics:

Collecting and Graphing Data, Describing and Analyzing Data

Textbook Problems:

Section 7.1: pg. 422 #1-35

Section 7.2: pg. 452 #1-19

Quiz 2: Sections 7.1-7.2
Quiz over Sections 7.1-7.2 in D2L.

Week 3: Number and Operation

Lecture and Problems: Sections 3.1-3.3
Lecture Topics:

Numerations Systems, Addition and Subtraction,Multiplication and Division

Problems:

Section 3.1 pg. 96-97 #3, 4, 6, 15-19

Section 3.2 pg. 115-119 #3-28, 31-34, 51

Section 3.3 pg. 138-139 #5-30

Quiz 3: Sections 3.1-3.3
Quiz 3 over Sections 3.1-3.3 is posted in D2L.

Week 4: Factors, GCDs and LCMs

Lecture and Problems: Sections 4.1-4.2
Lecture Topics:

Factors and Multiples, Greatest Common Divisor and Least Common Multiple, Survey Project Presentations, Closure and Review for Midterm

Textbook Problems:

Section 4.1 pg. 187-189 #3-20, 25-28, 31

Section 4.2 pg. 207- 209 #1-21, 24, 25, 26, 30, 33, 34

Survey Projects and Presentations
Partners/groups will present their survey projects.

Midterm
The midterm covers sections 1.1-1.2, 2.1, 7.1-7.2, 3.1-3.3, 4.1-4.2 and will be posted in D2L.

Week 5: Fractions

Lecture and Problems: Sections 5.1-5.3

Lecture Topics:

Integers, Introduction to Fractions, and Operations with Fractions

Textbook Problems:

Section 5.1 pg. 235 #1-30 all, 37, 38

Section 5.2 pg. 263 #1-31 odd, pg. 268 #4

 Section 5.3 pg. 291 #5-8 all, 9-17 odd, 23-29 odd, 35-40 all, 45-47, 50-55

Quiz 4: Sections 5.1-5.3
Quiz 4 over Sections 5.1-5.3 is posted in D2L.

Week 6: Decimals, Ratio and Percent

Lecture and Problems: Sections 6.1-6.3
Lecture Topics

Decimals and Rational Numbers, Operations with Decimals, Ratio, and Percent

Textbook Problems

Section 6.1: pg. 321 #7, 8, 13, 17-19, 21, 23, 25, 27, 28, 39, 41, 51, 52

Section 6.2: pg. 346 #3, 4, 7-18, 27, 28

Section 6.3: pg. 372 #1-17, 28-33

Quiz 5: Sections 6.1-6.3
Quiz 5 over sections 6.1-6.3 is on D2L.

Week 7: Probability

Lecture and Problems: Sections 8.1-8.2
Lecture Topics

Probability, Multi-Stage Experiments, Survey Project Presentations

Textbook Problems

Section 8.1: pg. 503 #1-25

Section 8.2: pg. 523 #1-15

Quiz 6: Sections 10.1, 10.3
Quiz 6 over sections 10.1, 10.3 is on D2L.

Week 8: 2D and 3D Geometry

Lecture and Problems: Sections 10.1 and 10.3
Lecture Topics

Plane Figures, Space Figures, STEAM Lesson Explanations and Closure and Review for Final

Textbook Problems

Section 10.1: pg. 636 - 638 #1, 4-11, 14, 17-20, pg. 640 #2, 3

Section 10.3: pg. 673-678 #2-13, 16, 21, 22, 27-30, 35, 36

STEM/STEAM Lesson

STEM/STEAM Lesson explanations will occur in class. You will have only a few minutes to share what your lessons are about. You will submit your lessons in the dropbox online.

Final

The final exam is posted in D2L and covers sections 5.1, 5.3, 6.1-6.3, 8.1-8.2, 10.1, 10.3.

⊕ Additional Resources

Online databases are available at library.ccis.edu. You may access them using your CougarTrack login and password when prompted.

Technical Support

If you have problems accessing the course or posting your assignments, contact your instructor, the Columbia College Technology Solutions Center, or the D2L Helpdesk for assistance. If you have technical problems with the VitalSource eText reader, please contact VitalSource. Contact information is also available within the online course environment.

- Columbia College Technology Solutions Center: CCHelpDesk@ccis.edu, 800-231-2391 ex. 4357
- D2L Helpdesk: helpdesk@d2l.com, 877-325-7778
- VitalSource: support@vitalsource.com, 1-855-200-4146

Online Tutoring

Smarthinking is a free online tutoring service available to all Columbia College students. Smarthinking provides real-time online tutoring and homework help for Math, English, and Writing. Smarthinking also provides access to live tutorials in writing and math, as well as a full range of study resources, including writing manuals, sample problems, and study skills manuals. You can access the service from wherever you have a connection to the Internet. I encourage you to take advantage of this free service provided by the college.

Access Smarthinking through CougarTrack at Students -> Academics -> Resources.

❶ Columbia College Policies and Procedures

The policies set forth in the **Policy Library** are the current official versions of College policies and supersede and replace any other existing or conflicting policies covering the same subject matter. For more information on policies applicable to students, see **Student Policies**. For more information on policies applicable to the entire Columbia College community, see **College-Wide Policies**.

Students are expected to read and abide by the College policies. Policies of particular interest to students include, but not limited to the following:

- Graduate Grading Policy
- Undergraduate Grading Policy
- Registration Policy and Procedures
- Withdrawal Policy
- Alcohol and Other Drugs Policy
- Family Educational Rights and Privacy Act (FERPA)

Additional Policies:

Academic Integrity and Plagiarism

Academic integrity is a cumulative process that begins with the first college learning opportunity. Students are responsible for knowing and abiding by the **Academic Integrity Policy and Procedures** and may not use ignorance of either as an excuse for academic misconduct. Additionally, all required papers may be submitted for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers may be included in the Turnitin.com reference database for the purpose of detecting plagiarism. This service is subject to the Terms and Conditions of Use posted on the Turnitin.com site.

Disability Resources

If you have a disability that requires an accommodation, please speak with the instructor and consult the **Student Accessibility Resources** office. Student Accessibility Resources staff will determine appropriate accommodations and will work with your

instructor to make sure these are available to you. To find additional information, see our **ADA and Section 504 Policy for Students**.

Notice of Non-Discrimination and Equal Opportunity:

The College has a process through which students, faculty, staff and community members who have experienced or witnessed incidents of discrimination, harassment, or retaliation on the basis of protected status, can report their experiences to a College official. For more information, see our **Non-Discrimination and Equal Opportunity Policy and Complaint Resolution Procedure**.

Title IX and Sexual Misconduct

The College is committed to addressing the issues of discrimination, harassment and sexual misconduct in the educational and workplace landscape and will continue to modify policies, procedures and prevention efforts as needed. For more information, see the College's **Title IX and Sexual Misconduct Policy**.

Course Policies and Procedures:

Attendance Policy

Columbia College students are expected to attend all classes and laboratory periods for which they are enrolled.

For classes with an online component, attendance for a week includes submitting any assigned online activity. Assigned activities are scheduled prior to the course commencing. Assigned activity due dates are subject to change based on actual course progression and will be adjusted as necessary. Attendance for the week is based upon the date work is submitted. A class week is defined as the period of time between Monday and Sunday (except for week 8, when the work and the course will end at 11:59 PM Central Time on Saturday.) The course and system deadlines are based on the Central Time Zone.

Students are directly responsible to instructors for class attendance and work missed during an absence for any cause. If absences jeopardize progress in a course, the College reserves the right to drop or withdraw students from classes. For additional information, see the Administrative Withdrawal for Non-Attendance heading in the **Withdrawal Policy**.

CougarMail

All students are provided a CougarMail account when they enroll in classes at Columbia College. You are responsible for monitoring email from that account for important messages from the College and from your instructor.

Students should use email for private messages to the instructor and other students. The class discussions are for public messages so the class members can each see what others have to say about any given topic and respond.

Late Assignment Policy

All classes rely on participation and a commitment to your instructor and your classmates to regularly engage in the reading, discussion and writing assignments. You must keep up with the schedule of reading and writing to successfully complete the class.

No late assignments will be accepted without the prior approval of the instructor.

Acceptance of a late assignment is at the discretion of the instructor.

Make-up examinations may be authorized for students who miss regularly-scheduled examinations due to circumstances beyond their control. Make-up examinations must be administered as soon as possible after the regularly scheduled examination period and must be administered in a controlled environment.

Student Conduct

All Columbia College students, whether enrolled in a land-based or online course, are responsible for behaving in a manner consistent with Columbia College's **Student Conduct Code** and **Acceptable Computing Use Policy**. Students violating these policies or any other College policy will be referred to the office of Student Affairs and/or the office of Academic Affairs for possible disciplinary action. The Student Code of Conduct, the **Student Behavioral Misconduct Policy and Procedures**, and the Acceptable Computing Use Policy can be found in the Policy Library at **ccis.edu/policies**. The adjunct faculty member maintains the right to manage a positive learning environment all students must adhere to the conventions of online etiquette when enrolled in a course with an online component.