

Elements of Mathematics

MATH-117

CG Section 16WK 11/10/2019 to 04/18/2020 Modified 05/20/2022

Course Description

A development of basic concepts of elementary mathematics, including problem solving, logic, sets and binary operations, the natural numbers and their properties, deductive reasoning and the nature of proof, the integers, rational numbers, real numbers and their properties, relations, functions, and graphs.

Requisites

For information regarding prerequisites for this course, please refer to the [Academic Course Catalog \(https://catalog.liberty.edu/\)](https://catalog.liberty.edu/).

Rationale

Geometry, probability, and statistics along with arithmetic skills have long been recognized as important ingredients in determining how well an individual functions in society. In today's highly complex world, mathematical understanding is more important than ever and is a prerequisite to successful study in many fields. The primary purpose of this course is to provide students with a grounding in the rudiments of mathematics that will enable them to successfully cope with the content taught in modern elementary school mathematics.

Course Learning Outcomes

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

- A. State and apply definitions, postulates, and theorems related to the various concepts listed in the course description above.
- B. Demonstrate the use of the necessary mathematical skills required in order to be proficient in elementary mathematical concepts.
- C. Explain the importance of the relationship between understanding the fundamentals of the elements of mathematics and teaching mathematics to elementary school students.
- D. Demonstrate arithmetic skills both with and without the use of a calculator.

General Education Foundational Skill Learning Outcomes (FSLO): Technological Solutions and Quantitative Reasoning, Critical Thinking (CT)

The student will be able to:

1. TSQR 1: Analyze data and inform action through a structured method.
2. TSQR 2: Predict the output based on an input in practical scenarios using technological solutions and/or quantitative reasoning.
3. TSQR 3: Apply the skills needed for successful financial stewardship in various contexts.
4. CT 1: Determine the validity and logical consistency of claims and/or positions, using reading comprehension strategies when relevant.
5. CT 2: Structure an argument or position using credible evidence and valid reasoning.
6. CT 4: Plan evidence-based courses of action to resolve problems.

Course Resources

Click on the following link to view the required resource(s) for the term in which you are registered: [Liberty University Online Bookstore \(https://bncvirtual.com/liberty\)](https://bncvirtual.com/liberty).

Additional Materials for Learning

- A. Computer with basic audio/video output equipment
- B. Internet access (broadband recommended)
- C. Canvas [recommended browsers \(https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-computer-requirements-for-Canvas/ta-p/66\)](https://community.canvaslms.com/t5/Canvas-Basics-Guide/What-are-the-browser-and-computer-requirements-for-Canvas/ta-p/66)
- D. Microsoft Word

☰ Course Assignments

Textbook readings with embedded videos.

Course Requirements Checklist

After reading the Course Syllabus and [Student Expectations \(https://www.liberty.edu/institutional-effectiveness/student-expectations/\)](https://www.liberty.edu/institutional-effectiveness/student-expectations/), the student will complete the related checklist found in the Course Overview.

Discussions (2)

Discussions are collaborative learning experiences. Therefore, the student will create a thread in response to the provided prompt for each Discussion. Each thread must be at least 200 words and demonstrate course-related knowledge. In addition to the thread, the student is required to reply to 2 classmates' threads. Each reply must be at least 50 words.

Homework Assignments (17)

The student will complete homework assignments within WebAssign. The student will be allowed multiple attempts to answer each question. For modules with quizzes or exams, the student must score at least 70% on the homework before taking the exam or quiz.

Quizzes (3)

Each quiz will cover the Learn material for the assigned modules. Each quiz will be open-book/open-notes and will be completed in WebAssign. The student will be allowed 3 attempts at each quiz.

Exams (4)

Each exam will cover the Learn material for the assigned modules. Each exam will be open-book/open-notes, and have a 1-hour and 30-minute time limit (2 hours for the final exam). Each exam will contain multiple-choice and short answer questions. The exams will be completed in WebAssign.

All written work for exams must be uploaded to Canvas. Exams submitted with out the accompanying written work will not be accepted.

✓ Course Grading

Course Requirements Checklist	10
Discussions (2 at 25 pts ea plus intro)	50
Homework Assignments (1 at 1 pt and 16 at 15 pts ea)	241
Quizzes (3 at 15 pts ea)	45

Exams (3 at 150 pts ea; 1 at 214 pts)	664
Total	1010

Policies

Mathematical Late Assignment Policy

Mathematical assignments that are submitted after the due date without prior approval from the instructor will receive the following deductions

1. Late *mathematical* assignments submitted within one week after the due date will receive a 10% deduction.
2. *Mathematical* assignments submitted more than one week late or after the final date of the course will not be accepted.
3. Discussion board assignments submitted within one week after the due date will receive a 10% deduction.
4. Discussion board submitted more than one week and less than 2 weeks late will receive a 20% deduction.
5. Discussion board submitted more than 2 weeks late will not be accepted.
6. Group projects, including group discussion board threads and/or replies, and assignments will not be accepted after the due date.

Special circumstances (e.g. death in the family, personal health issues) will be reviewed by the instructor on a case-by-case basis.

For other assignments, please refer to the standard Late Assignment Policy, below.

Late Assignment Policy

Course Assignments, including discussions, exams, and other graded assignments, should be submitted on time.

If the student is unable to complete an assignment on time, then he or she must contact the instructor immediately by email.

Assignments that are submitted after the due date without prior approval from the instructor will receive the following deductions:

1. Late assignments submitted within one week after the due date will receive up to a 10% deduction.
2. Assignments submitted more than one week and less than 2 weeks late will receive up to a 20% deduction.
3. Assignments submitted two weeks late or after the final date of the course will not be accepted outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.
4. Group projects, including group discussion threads and/or replies, and assignments will not be accepted after the due date outside of special circumstances (e.g. death in the family, significant personal health issues), which will be reviewed on a case-by-case basis by the instructor.

Disability Assistance

Students with a disability and those with medical conditions associated with pregnancy may contact Liberty University's Online Office of Disability Accommodation Support (ODAS) at LUOODAS@liberty.edu for accommodations. Such accommodations require appropriate documentation of your condition. For more information about ODAS and the accommodations process, including how to request an accommodation, please visit <https://www.liberty.edu/online/online-disability-accommodation-support/> (<https://www.liberty.edu/online/online-disability-accommodation-support/>). Requests for accommodations not related to disabilities or pregnancy must be directed to the Registrar's Office, which generally handles medical needs support.

If you have a complaint related to disability discrimination or an accommodation that was not provided, you may contact ODAS or the Office of Equity and Compliance by phone at (434) 592-4999 or by email at equityandcompliance@liberty.edu. Click to see a full copy of Liberty's [Discrimination, Harassment, and Sexual Misconduct Policy](https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf) (https://www.liberty.edu/media/1226/Liberty_University_Discrimination_Harassment_and_Sexual_Misconduct_Policy.pdf) or the [Student Disability Grievance Policy and Procedures](http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf) (http://www.liberty.edu/media/8021/Disability_Grievance_Procedures.pdf).

Course Attendance

In an effort to comply with U.S. Department of Education policies, attendance is measured by physical class attendance or any submission of a required assignment within the enrollment dates of the course (such as examinations, written papers or projects, any discussion posts, etc.) or initiating any communication with one's professor regarding an academic subject. More information regarding the [attendance policy \(https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2BAnd%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0\)](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FOnline%2BAttendance%2BAnd%2BNon-Attendance&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613719138&sdata=%2BNBTsPOoXuHAPLfISQRugK7cRSuV6UyC7qD3agf3l2k%3D&reserved=0) can be found in the [Academic Course Catalogs \(https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0\)](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.liberty.edu%2Findex.cfm%3FPID%3D791&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=DjjhMiRBFnF%2B2ZJUC8eBd1OdNb26S9ADukODYsilXIA%3D&reserved=0). Regular attendance in online courses is expected throughout the length of the term. Students who do not attend within the first week of a sub-term by submitting a required academic assignment (such as the Course Requirements Checklist, an examination, written paper or project, discussion post, or other academic activity) will be dropped from the course. Students who wish to re-engage in the course are encouraged to contact Academic Advising to discuss their enrollment options. Students who begin an online course, but at some point in the semester cease attending, and do not provide official notification to withdraw, will be assigned a grade of "FN" ([Failure for Non-Attendance \(https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=MoMvZdPfa69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0\)](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwiki.os.liberty.edu%2Fdisplay%2FIE%2FUnofficial%2BWithdrawals&data=02%7C01%7Caccollins2%40liberty.edu%7Cd91431fa6ac547056b5408d833029e1a%7Cbf8218eb3024465a9934a39c97251b2%7C0%7C0%7C637315433613729132&sdata=MoMvZdPfa69InuhVHMHAVgu59ZP0Fw45xJTU9PIBrU%3D&reserved=0)). Students wishing to withdraw from courses after the official start date should familiarize themselves with the [withdrawal policy](#).

Grading Scale

A	B	C	D	F
900-1010	800-899	700-799	600-699	0-599

For courses with a Pass/NP final grade, please refer to the Course Grading section of this syllabus for the assignment requirements and/or point value required to earn a Passing final grade.

Add/Drop Policy

The full policy statement and procedures are published in the [Policy Directory \(https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes\)](https://wiki.os.liberty.edu/display/IE/Dropping+and+Adding+Online+Classes).

Honor Code

Liberty University comprises a network of students, Alumni, faculty, staff and supporters that together form a Christian community based upon the truth of the Bible. This truth defines our foundational principles, from our Doctrinal Statement to the Code of Honor. These principles irrevocably align Liberty University's operational procedures with the long tradition of university culture, which remains distinctively Christian, designed to preserve and advance truth. Our desire is to create a safe, comfortable environment within our community of learning, and we extend our academic and spiritual resources to all of our students with the goal of fostering academic maturity, spiritual growth and character development.

Communities are predicated on shared values and goals. The Code of Honor, an expression of the values from which our Doctrinal Statement was born, defines the fundamental principles by which our community exists. At the core of this code lie two essential concepts: a belief in the significance of all individuals, and a reliance on the existence of objective truth.

While we acknowledge that some may disagree with various elements of the Code of Honor, we maintain the expectation that our students will commit to respect and uphold the Code while enrolled at Liberty University.

Adherence to the principles and concepts established within facilitates the success of our students and strengthens the Liberty community.

The Code of Honor can be viewed in its entirety at <http://www.liberty.edu/index.cfm?PID=19155>
<http://www.liberty.edu/index.cfm?PID=19155>.

Schedule

When	Topic	Notes
Course Overview	Student Acknowledgements	Course Requirements Checklist
Module 1	Learn	Read: 1 item Watch: 2 items Interact: 1 item
	Apply	HW: Getting Started with WebAssign Assignment HW: 1.1-1.3 Problem Solving Assignment
Module 2	Learn	Read: 1 item Watch: 1 item
	Apply	HW: 2.1-2.3 Set Theory and Numeral Sys Assignment Quiz: Sections 1.1-2.3
Module 3	Learn	Read: 1 item Watch: 1 item
	Apply	HW: 3.1-3.2 Add/Sub Whole Numbers Assignment
Module 4	Learn	Read: 1 item Watch: 2 items Review: 1 item
	Apply	HW: 1.1 & 3.2 Exam 1 Review Assignment Written Work: Problem Solving – Whole Numbers Exam Assignment Quiz: Problem Solving & Whole Numbers Exam
Module 5	Learn	Read: 1 item Watch: 1 item
	Apply	Discussion: Math Anxiety HW: 3.3-3.4 Mult/Divide Whole Numbers Assignment
Module 6	Learn	Read: 2 items Watch: 2 items
	Apply	HW: 4.1-4.2 Mental Math and Exponents Assignment HW: 4.3-5.2 Order and Number Theory Assignment Quiz: Sections 3.3-5.2
Module 7	Learn	Read: 1 item Watch: 1 item

When	Topic	Notes
	Apply	HW: 6.1-6.2 Add/Sub Fractions Assignment
Module 8	Learn	Read: 1 item Watch: 2 items Review: 2 items
	Apply	HW: 3.3-6.2 Exam 2 Review Assignment Written Work: Whole Numbers – Fractions Exam Assignment Quiz: Whole Numbers & Fractions Exam
Module 9	Learn	Read: 1 item Watch: 1 item
	Apply	HW: 6.3-6.4 Fractions and Proportions Assignment
Module 10	Learn	Read: 1 item Watch: 1 item
	Apply	Discussion: Classroom Treat HW: 7.1-7.2 Decimals Assignment
Module 11	Learn	Read: 1 item Watch: 1 item
	Apply	HW: 7.3-7.4 Decimals and Percents Assignment Quiz: Sections 6.3-7.4
Module 12	Learn	Read: 2 items Watch: 2 items
	Apply	HW: 8.1-8.3 Integers Assignment HW: 9.1-9.3 Rational and Real Numbers Assignment
Module 13	Learn	Read: 1 item Watch: 2 items Review: 1 item
	Apply	HW: 6.3-9.3 Exam 3 Review Assignment Written Work: Fractions – Real Numbers Assignment Quiz: Fractions & Real Numbers Exam
Module 14	Learn	Read: 1 item Watch: 2 items Review: 1 item

When	Topic	Notes
	Apply	HW: 1.1-9.3 Final Exam Review Assignment Written Work: Final Exam Assignment Quiz: Final Exam