| COURSE OUTLINE | | |
|---|---|---|
| **TERM: Fall 2026** | **COURSE NO: MATH 190** | |
| **INSTRUCTOR:** | **COURSE TITLE: Mathematics for Elementary Teachers** | |
| **OFFICE: LOCAL:**<br>**E-MAIL:** @capilanou.ca | **SECTION NO(S):** | **CREDITS: 4.0** |
| **OFFICE HOURS:** | | |
| **COURSE WEBSITE:** | | |

Capilano University respectfully acknowledges that our campuses are located on the unceded territories of the səlilwətaɬ (Tsleil-Waututh), Sḵwx̱wú7mesh (Squamish) and xʷməθkʷəy̓əm (Musqueam) Nations.

**COURSE FORMAT**
4.5 hours of class time (which includes 1.5 hours of workshop/lab activities), plus an additional hour of supplemental activity delivered through on-line or other activities for a 15-week semester, which includes two weeks for final exams.

**COURSE PREREQUISITES**
One of the following: Math Placement Test (MPT), MATH 097, MATH 091 (B), BMTH 043 (B), MATH 096 (C-), BMTH 044 (C+), MATH 123 (C), BMTH 048 (C), Pre-calculus 11 (C), Principles of Math 11 (C), Foundations of Math 11 (C), or Applications of Math 11 (C)

**CALENDAR DESCRIPTION**
Designed for future elementary school teachers, this course engages students in the study of higher mathematics with an emphasis on the conceptual foundations of the discipline. Topics include problem solving, set theory, numeration systems, mathematical operations, number theory, and geometry. Students will also develop mathematical reasoning and communication skills while exploring the power, beauty, and significance of mathematics.

**COURSE NOTE**
MATH 190 is an approved Numeracy course for Cap Core requirements.
MATH 190 is an approved Science and Technology course for Cap Core requirements.
MATH 190 is an approved Science course.
MATH 190 is an approved Quantitative/Analytical course for baccalaureate degrees.
MATH 190 is intended for future elementary school teachers. Students in science programs may need permission of the Department of Mathematics and Statistics to take this course.
MATH 190 requires preparation for, and participation in, a SNAP Math Fair to be held at the university outside of regularly scheduled class time. Attendance at the Math Fair is mandatory.

## REQUIRED TEXTS AND/OR RESOURCES

**Textbooks:** Available on eLearn. Custom textbook adapted from: Finan, Marcel B., A First Course in Mathematics Concepts for Elementary School Teachers: Theory, Problems, and Solutions 2006, used with permission.

Mathematics Between Friends by Dr. Lily Yen, May 2022 (Free eBook). https://yen-hansen.ca/MBF/

**Calculator:** A basic calculator may be used.

**Booklet:** The Math Fair booklet.

**Class Notes:** Some instructors will have class notes available for purchase in the Bookstore.

## COURSE STUDENT LEARNING OUTCOMES

**On successful completion of this course, students will be able to do the following:**

- Use a variety of strategies to solve mathematical problems.
- Describe the basic concepts of sets, use set notation and solve problems using Venn diagrams.
- Convert numerals from any base to base 10 and vice versa, as well as numeration systems from a variety of historical cultures.
- Explain mathematical operations using a variety of models.
- Apply and explain a variety of algorithms for addition, subtraction, multiplication and division.
- Define basic number theory terms including prime and composite numbers, divisibility, prime factorization, greatest common divisor and least common multiple and use them to solve a variety of related problems.
- Identify the natural, integer, rational, irrational and real numbers and their properties.
- Identify common geometric figures and properties and be able to use arithmetic and algebraic methods to compute geometrical quantities.
- Perform measurement conversions in the Metric system.

**Students who complete this Numeracy course will be able to do the following:**

- Apply both analytical and numerical skills to solve problems.
- Summarize and analyze data in quantitative forms.
- Interpret and draw conclusions from an analysis of quantitative data.
- Represent quantitative information in a variety of forms (e.g. symbolically, visually, numerically, and verbally).
- Incorporate quantitative evidence in support of an argument.

**Students who complete this Science and Technology course will be able to do the following:**

- Apply numerical and computational strategies to solve problems.
- Evaluate scientific information (e.g. distinguish primary and secondary sources, assess credibility and validity of information).

- Demonstrate how a problem, concept or process can be modelled numerically, graphically or algorithmically.
- Participate in scientific inquiry and communicate the elements of the process, including making careful and systematic observations, developing and testing a hypothesis, analyzing evidence, and interpreting results.

**COURSE CONTENT**

| Topics | # of Weeks (Approx.) |
|---|---|
| Problem Solving and Reasoning about Quantities | 2.0 |
| Numeration Systems, Whole Number Operations, Mental Calculation | 2.0 |
| Fractions, Ratios, Rates, Proportion, Percent | 2.0 |
| Number Theory | 1.5 |
| Geometry, Measurement, Transformation Geometry | 4.0 |
| Review | 0.5 |
| Term Test and/or Quizzes | 1.0 |
| Final Exam Period | 2.0 |

**EVALUATION PROFILE**

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|---|---|
| Term Work | *55% |
| Final Exam | *35% |
| Personal Evaluation | 10% |
| **TOTAL** | **100%** |

* If the percentage achieved on the Final Exam is higher than the percentage achieved on the Term Work component, then the Final Exam weight will be increased to 55% and the Term Work will be decreased to 35%.

Note: MATH 190 students are required to participate in a Math Fair on date from 8:30 am to 12:30 pm. Term work will consist of the Math Fair worth 10-15% and a combination of tests, quizzes and/ or assignments. While the weighting of individual tests, etc. is at the discretion of the instructor, no single test will exceed 25% of the final total. The weight of tests, quizzes and assignments will be announced in class in advance.

Specific dates and details regarding the Evaluation Component will be provided by the instructor.

**Personal Evaluation**
In the absence of exceptional circumstances, which are determined at the instructor's discretion, the personal evaluation component of the final grade will be pro-rated to the rest of the grade. For example, a 10% personal evaluation component would be determined by dividing the remaining mark out of 90 by 9. The most common circumstance justifying an increased personal evaluation mark is a student's improved performance in the final examination relative to the term work, which the instructor feels justifies an elevated letter grade.

**GRADING PROFILE**

| | | | |
|---|---|---|---|
| A+ = 90-100 | B+ = 77-79 | C+ = 67-69 | D = 50-59 |
| A = 85-89 | B = 73-76 | C = 63-66 | F = 0-49 |
| A- = 80-84 | B- = 70-72 | C- = 60-62 | |

**Incomplete Grades**
Grades of Incomplete "I" are assigned only in exceptional circumstances when a student requests extra time to complete their coursework. Such agreements are made only at the request of the student, who is responsible to determine from the instructor the outstanding requirements of the course.

**Late Assignments**
Assignments are due at the beginning of the class on the due date listed. If you anticipate handing in an assignment late, please consult with your instructor beforehand.

**Missed Exams/Quizzes/Labs etc.**

A score of zero will be assigned unless the student meets all of the following conditions:

1. Circumstances clearly beyond the control of the student caused the exam, test, quiz, lab, etc. to be missed. Such circumstances include serious illness or injury, or death of close family member. They do not include forgetting about the test, lack of preparation for the test, work-related or social obligations.

2. The student has notified the instructor (or the School of STEM office staff, if the instructor is not available) that they will miss the exam, test, quiz, lab, etc. Such notification must occur in advance, if possible, or at the latest, on the day of the exam, test, quiz, lab, etc.

3. Proof of the circumstances may be required.

4. The student has been fully participating in the course up until the circumstances that prevented the writing of the exam, test, quiz, lab, etc. Fully participating means attending almost all of the classes and turning in almost all assignments in the course.

The options for making up any missed grades offered to the student who meets the four conditions are decided by the instructor. They will not necessarily meet the convenience of the student.

Make-up exams, quizzes and/or tests are given at the discretion of the instructor. They are generally given only in medical emergencies or severe personal crises. Some missed labs or other activities may not be able to be accommodated. Accommodations can be made to honour community needs and traditional practices. Please consult with your instructor.

**Attendance**
Students are expected to attend all classes and associated activities.

**English Usage**
Students are expected to proofread all written work for any grammatical, spelling and stylistic errors. Instructors may deduct marks for incorrect grammar and spelling in written assignments.

**Electronic Devices**
Students may use electronic devices during class for notetaking, calculations and in-class research.

**On-line Communication**
Outside of the classroom, instructors will (if necessary) communicate with students using either their official Capilano University email or eLearn; please check both regularly. Official communication between Capilano University and students is delivered to students' Capilano University email addresses only.

**UNIVERSITY OPERATIONAL DETAILS**

**Tools for Success**
Many services are available to support student success for Capilano University students. A central navigation point for all services can be found at: https://www.capilanou.ca/student-services/

**Capilano University Security: download the CapU Safe Alert App**

**Policy Statement (S2009-06)**
Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Academic Integrity, Academic Probation and other educational issues. These and other policies are available on the University website.

**Academic Integrity (S2017-05)**

Any instance of academic dishonesty or breach of the standards of academic integrity is serious and students will be held accountable for their actions, whether acting alone or in a group. See policy and procedures S2017-05 Academic Integrity for more information:
https://www.capilanou.ca/about-capu/governance/policies/

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances, are prohibited and will be handled in accordance with the Student Academic Integrity Procedures.

**Academic dishonesty** is any act that breaches one or more of the principles of academic integrity. Acts of academic dishonesty may include but are not limited to the following types:

**Cheating**: Using or providing unauthorized aids, assistance or materials while preparing or completing assessments, or when completing practical work (in clinical, practicum, or lab settings), including but not limited to the following:

- Copying or attempting to copy the work of another during an assessment;
- Communicating work to another student during an examination;
- Using unauthorized aids, notes, or electronic devices or means during an examination;
- Unauthorized possession of an assessment or answer key; and/or,
- Submitting of a substantially similar assessment by two or more students, except in the case where such submission is specifically authorized by the instructor.

**Fraud**: Creation or use of falsified documents.

**Misuse or misrepresentation of sources**: Presenting source material in such a way as to distort its original purpose or implication(s); misattributing words, ideas, etc. to someone other than the original source; misrepresenting or manipulating research findings or data; and/or suppressing aspects of findings or data in order to present conclusions in a light other than the research, taken as a whole, would support.

**Plagiarism**: Presenting or submitting, as one's own work, the research, words, ideas, artistic imagery, arguments, calculations, illustrations, or diagrams of another person or persons without explicit or accurate citation or credit.

**Self-Plagiarism**: Submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already been granted without permission of the instructors.

**Prohibited Conduct**: The following are examples of other conduct specifically prohibited:

- Taking unauthorized possession of the work of another student (for example, intercepting and removing such work from a photocopier or printer, or collecting the graded work of another student from a stack of papers);
- Falsifying one's own and/or other students' attendance in a course;
- Impersonating or allowing the impersonation of an individual;
- Modifying a graded assessment then submitting it for re-grading; or,
- Assisting or attempting to assist another person to commit any breach of academic integrity.

**Sexual Violence and Misconduct**
All Members of the University Community have the right to work, teach and study in an environment that is free from all forms of sexual violence and misconduct. Policy B401 defines sexual assault as follows:

> Sexual assault is any form of sexual contact that occurs without ongoing and freely given consent, including the threat of sexual contact without consent. Sexual assault can be committed by a stranger, someone known to the survivor or an intimate partner.

Safety and security at the University are a priority and any form of sexual violence and misconduct will not be tolerated or condoned. The University expects all Students and Members of the University Community to abide by all laws and University policies, including B.401 Sexual Violence Policy and B.401.1 Sexual Violence Procedure (found on Policy page https://www.capilanou.ca/about-capu/governance/policies/)

**Emergencies:** Students are expected to familiarise themselves with the emergency policies where appropriate and the emergency procedures posted on the wall of the classroom.

**DEPARTMENT OR PROGRAM OPERATIONAL DETAILS**

**MATHEMATICAL LANGUAGE**
Use of proper Mathematical terminology and notation is an important component of Mathematics. Marks may be deducted for improper usage. For full details, please refer to your instructor.

**MATHEMATICS LEARNING CENTRE (MLC)**
Instructional help and reference texts are available to students in the Learning Commons located in the Library in LB126. Please see https://www.capilanou.ca/mlc for more information.

**USE OF GENERATIVE AI (ARTIFICIAL INTELLIGENCE) TOOLS**
While permissible for study purposes, use of Generative AI tools (e.g., ChatGPT, GPT-4, Bard, Bing, Scribe, Claude, Dall-e, Midjourney, etc.) for production of written and other assignments – whether directly or through paraphrasing – is prohibited in this course. It undermines the pedagogical goals of this course and constitutes gaining a dishonest and unfair advantage in assessments. As such, its use will be regarded as a breach of academic integrity policy (see policy S2017-05). The instructor reserves the right to request to meet with students to have them explain how they produced the submitted work before assigning grades. Ask the instructor if you have any questions about this course policy.