

Trinity Western University
Undergraduate Course Syllabus
MATH 190 IS
Mathematics for Elementary School Teachers
Summer 2017

Pre-requisite: At least a C in B.C. Principles of Mathematics 11, Foundations of Math 11, Pre-Calculus 11 or equivalent, or permission of the instructor.

Semester Hours: 3

Instructor: Stephen Benecke
Contact Information: email: stephen.benecke@gmail.com
Office Hours: by appointment

Academic Calendar Course Description:

Mathematical concepts and topics that underlie the school mathematics curriculum. The principles and applications of number systems, sets, equations, linear programming, geometry, and mathematical proof within a historical and societal context. It may not be used to meet a mathematics requirement in any other program. NB: Credit is granted for only one of MATH 101, 102, 108, or 190. Open to declared Elementary Education majors only. Education students may meet their requirement for a Mathematics course by substituting another course for MATH 190 unless transferring for their professional year to a school requiring this specific course. Students planning to transfer to University of Victoria (and some other universities) for their professional year are required to take two Mathematics courses rather than one.

Course Objectives:

This course gives prospective elementary school teachers insight into a range of mathematical concepts. Logical reasoning and problem solving will be an integral part of the course, in an attempt to equip students with the necessary skills and understanding required to effectively teach mathematics. Course content includes an introduction to problem solving, different number systems, techniques in arithmetic, elementary number theory and probability theory. Although methods may be discussed from time to time, this is not a methods course in the teaching of mathematics. Instead, it aims to provide a foundation for critical thinking crucial for being an effective mathematics teacher.

Required/optional Texts and Materials:

The course material used will consist of lecture videos and supplemental exercises that will be provided on the course website.

Instructor:

Stephen Benecke
Office Hours: by appointment
Email: stephen.benecke@gmail.com

Students are encouraged to approach the instructor if they wish to discuss any aspect of the course, either during office hours by appointment, Skype chat or by email.

Course Web page:

Students are encouraged to visit the course web page <http://stephen.ministryofconstructions.com/math/> on a regular basis. Besides the fact that the homework assignments will be posted here, it is also a useful tool to convey important information regarding the course.

Proposed Course Outline:

The topics discussed in this course include the following:

- Problem Solving
- Patterns and Sequences
- Number Systems (Roman, Babylonian, Binary)
- Elementary Number Theory
- Logical Reasoning
- Sets and Set Operations
- Basic Principles of Counting and Permutations
- Basic Principles of Counting and Combinations
- Elementary Probability Theory

There will be Homework Assignments presented periodically throughout the course. These assignments test the student's understanding of the various mathematical concepts and his/her ability to answer various questions based on the course material.

Course Evaluation:

For each section, tutorial questions are provided with solutions to serve as additional examples. The Homework Assignments contribute 20% to the final grade.

There will be one midterm, taken after the completion of Section 5 (Logical Reasoning). The date and venue will be scheduled by the TWU Extension Office upon request. This test contributes 40% to the final grade. In addition, the final examination contributes 40% to the final grade, and will mainly cover the second half of the course (Section 5 and on). This will also be scheduled upon request.

Assessment Opportunity	Percentage
Homework Assignments	20%
Midterm	40%
Final Exam	40%

The nature of what students will be expected to do on the tests and the final examination is largely defined by the examples, tutorial and homework assignment questions.

The University Standard Grading System used in the Department of Mathematical Sciences is:

Letter Grade	Percentage	Grade Point
A+	95-100%	4.3
A	85-94%	4.0
A-	80-84%	3.7
B+	77-79%	3.3
B	73-76%	3.0
B-	70-72%	2.7
C+	67-69%	2.3
C	63-66%	2.0
C-	60-62%	1.7
D+	57-59%	1.3
D	53-56%	1.0
D-	50-52%	0.7
F	Below 50%	0

Policies:

Once marked, homework assignments and tests will be returned via the course website.

Questions or concerns regarding graded test or assignment papers should be brought to the attention of the instructor within 7 calendar days of the date when it was returned. After this time, the grade will not be changed.

Academic Integrity and Avoiding Plagiarism at TWU

As Christian scholars pursuing higher education, academic integrity is a core value of the entire TWU community. Students are invited into this scholarly culture and required to abide by the principles of sound academic scholarship at TWU. This includes, but is not limited to, avoiding all forms of plagiarism and cheating in scholarly work. TWU has a strict policy on plagiarism (see academic calendar). Learning what constitutes plagiarism and avoiding it is the student's responsibility. An excellent resource describing plagiarism and how to avoid it has been prepared by TWU Librarian William Badke and is freely available for download (PPT file) or used as flash (self running) tutorials of varying lengths from:

<http://acts.twu.ca/library/plagiarism.ppt>

<http://acts.twu.ca/library/Plagiarism.swf> (14 minute flash tutorial)

http://acts.twu.ca/library/Plagiarism_Short.swf (8 minute flash tutorial)

Campus Closure and Class Cancellation Policy

In the event of extreme weather conditions or other emergency situations, please consider the website the primary source of information, along with the TWU bulletin line 604.513.2147. The University will communicate information regarding the cancellation of classes to the following radio stations: CKNW (980 AM), CKWX (1130 AM), STAR FM (107.1 FM), PRAISE (106.5 FM) and KARI (550 AM). Should there be conflicting reports regarding campus closures, the TWU website and bulletin line are to be considered correct.

The first announcement regarding status of campus is made at 6:30 am and covers the period up to 1:00 p.m. The second announcement will be made at 11 am and will cover afternoon classes. Students and faculty should assume that all night classes will continue to operate. If the emergency continues into the evening, students and faculty may check for a class cancellation notice on the University's weather bulletin line or the website after 3:00 p.m. that day.

If this specific class must be cancelled for any other reason, the instructor will communicate this in advance. In the case of an unexpected cancellation, a sign will be posted on the classroom door.

This document is prepared before the beginning of the course. It is possible that some of the information in it will have to be modified before the course ends. Any such changes will be announced on the course web page. It is the student's responsibility to be aware of any such changes.