Math 251 – Fall 2018

Sec 1 - T/TH 9:10 – 10:50 & Sec 2 - T/TH 11:10 – 12:50

(Information below is subject to change)

Instructor: Susan Harrington
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Web page: Log into Blackboard at: http://learn.wsu.edu/
Credits: 3 / **Prerequisites:** Math 101 with a C or better, Math 103 with a C or better, Math 106 with a C or better, or score of 45% on MPA.

REQUIRED MATERIALS:
Text: *Mathematical Reasoning for Elementary Teachers*, Seventh Edition – C. T. Long, D. W. DeTemple, and R.S. Millman (no need to purchase; free eBook is available in MyMathLab).

Activities Booklet: *Problem Solving and Mathematical Reasoning, Part I: Math 251 Activities for the Classroom by* V. Adams, S. Cooper, D. DeTemple, and K. Vincent (**purchase at Cougar Copies in the basement of the CUB**).

MyMathLab Access: Your MyMathLab access code will be good for two years, so you will be able to use it during that time for Math 252 (**purchase online or at the Bookie**).

Alternative options: Alternative options whether or not you want a hardcopy version of the text: 1) Looseleaf book plus MML ISBN: 9780321914743 ~$120; 2) Bound Book plus MML ISBN: 9780321923240 ~$170; and 3) MML Standalone ISBN: 9780321527509 ~$80 (this third option is most economical and is all you really need). More information will be available in class.

COURSE OVERVIEW: This course utilizes an inquiry-based approach to study fundamental concepts in thinking critically, sets and whole numbers, numeration and computation, number theory, integers fractions and rational numbers, and decimals, real numbers, and proportional reasoning . Learning outcomes addressed in this course will be evaluated by a combination of in class group activities, homework assignments, and exam questions.

COURSE ASSIGNMENTS AND GRADING:
Your course grade for the semester will be determined using the following percentages.

21 In Class Topics/Activities	*Drop 2	20%
14 MyMathLab Online Homework Assignments	*Drop 2	15%
3 Exams @ 15% each		45%
Comprehensive Final		20%
TOTAL		100%

The lowest two scores during the semester will be dropped

Your final grade for the course will be determined by the following scale:

93 – 100% A	87 – 89.9% B+	77 – 79.9% C+	67 – 69.9% D+
90 – 92.9% A-	83 – 86.9% B	73 – 76.9% C	60 – 66.9% D
	80 – 82.9% B-	70 – 72.9% C-	0 – 59.9% F

IN-CLASS GROUP TOPICS/ACTIVITIES: These are in-class, hands-on, problem-solving activities designed to increase understanding of course content through group collaboration. You will work in small groups; working alone is not an option. You will be assigned to a group and are expected to sit with your group whether or not we work on a group activity on any given day. These assignments will be turned in and graded as a group effort. Each group member is required to bring their activity booklet with them to each class period. Failure to bring your activity booklet could result in a loss of points on the daily activity. In-class activities cannot be made up. The two lowest in-class activities scores will be dropped at the end of the semester.

MYMATHLAB ONLINE HOMEWORK: Homework is done in MyMathLab. Due dates for each online assignment are shown in MyMathLab and on the syllabus course schedule. You have unlimited attempts for each homework problem and will get immediate feedback on whether your answer is correct. Any homework questions that are done after the assignment's deadline will be assessed a 25% penalty. Your two lowest scores will be dropped at the end of the semester.

EXAMS: Exams will be given on the dates shown on the course schedule, tentatively:
Exam 1 – Thurs, Sept 20th; Exam 2 – Thurs, Oct 18th ; Exam 3 – Thurs, Nov 15th

Exams will be closed book, closed notes. No calculators are allowed during exams. **No make-ups are allowed for exams except for prearranged absences with appropriate documentation.**

FINAL EXAM: There will be a comprehensive final exam. The final exam date/time are as follows: **Section 1: Thurs, Dec 13 from 10:10am-12:10pm** and **Section 2: Tues, Dec 11 from 10:10am-12:10pm**. **Early finals will not be given for any reason.** Please make your travel plans accordingly.

ATTENDANCE: It is strongly recommended that you do not miss class. You are responsible for all material covered in this course and for turning in all assignments, regardless of attendance. If you do find that you must miss class, there are two ways to arrange excused absences.

1. If you have an emergency situation resulting in an extended absence (longer illness, family emergency), contact the Office of Student Affairs (335-4531) **immediately**. They will issue letters to all of your instructors excusing you from the necessary class days and assignments.
2. Appropriate letters documenting excused university absences (such as participation in athletic events) will be accepted if arranged **before** missing class.

LATE WORK: Any questions from an online assignment that are done after the assignment's deadline will be assessed a 25% penalty. No other late work will be accepted.

Make-up work from excused absences must be arranged in advance. No work of any kind will be assigned after the last day of class and no work of any kind will be accepted after the final exam.

TECHNOLOGY: A calculator might be helpful to assist you on the homework and a few of our in-class activities, but I encourage you NOT to rely too strongly on a calculator. Keep in mind that these *will not* be available to you during the exams. Other electronic devices such as cell phones, tablets, etc. may not be used during class.

Much of the learning experience in this course will involve the use of the internet. If you do not have internet access, consider arranging an account at one of the campus labs. Information is available from Student Computing Services at the Information Technology Building (ITB), room 2091 (509-335-0534). Please see me if you are not able to arrange internet access.

A NOTE ABOUT E-MAIL: E-mail can be a great communication tool – but it has limitations. If you have a need to reach me, email me at my WSU e-mail: susan.harrington@wsu.edu. Unless you receive a reply from me you should NOT assume I received your message. Also note that e-mail is not always an immediate communication method. If possible, I will get back to you as quickly as I can...usually within 24 hours Monday-Thursday. If you have an emergency, it is safer to email me at my personal email account: harrington1000@gmail.com.

CLASS CANCELLATIONS: If a class meeting is ever canceled for any reason, whatever was scheduled for the canceled day will be done the next time we meet. If a cancellation occurs, I will have a note posted on my office door and/or the classroom door and I will try to email everyone in advance.

KEEPING TRACK: All graded work will be returned to you with the exception of the final exam. Keep all of your returned work for reference and for the resolution of grade discrepancies. The Gradebook in MyMathLab will be updated every week so that you may periodically check your percentages. However, you are expected to keep track of scores for your own information; the Gradebook should only serve as a quick reference and as a check for accuracy.

READING EXPECTATIONS: Learning is an active process and is not accomplished by sitting and observing. Thus I expect you to work hard to accomplish our objectives. I expect you to take responsibility for your own learning by studying the textbook (MML eBook) sections in advance. You should come to class prepared with questions about the reading, and ready to work problems from the topic covered by the reading. You are not alone in this venture -- please get help if you are having trouble with the material, rather than giving up!

STUDENTS WITH DISABILITIES: Reasonable accommodations are available for students with documented disabilities or chronic medical conditions. If you have a disability and need accommodations to fully participate in this class, please visit the Access Center website to follow published procedures to request accommodations: http://www.accesscenter.wsu.edu. Students may also either call or visit the Access Center in person to schedule an appointment with an Access Advisor. Location: Washington Building 217; Phone: 509-3Other electronic devices such as cell phones, tablets, etc. may not be used during class.35-3417. All disability related accommodations MUST be approved through the Access Center. Students with approved accommodations are strongly encouraged to visit with instructors early in the semester during office hours to discuss logistics.

WSU SAFETY MEASURES: Classroom and campus safety are of paramount importance at Washington State University, and are the shared responsibility of the entire campus population. WSU urges students to follow the "Alert, Assess, Act," protocol for all types of emergencies and the "Run, Hide, Fight" response for an active shooter incident. Remain ALERT (through direct observation or emergency notification), ASSESS your specific situation, and ACT in the most appropriate way to assure your own safety (and the safety of others if you are able). Please sign up for emergency alerts on your account at MyWSU. For more information on this subject, campus safety, and related topics, please view the FBI's Run, Hide, Fight video and visit the WSU safety portal. Other electronic devices such as cell phones, tablets, etc. may not be used during class. Please visit http://safetyplan.wsu.edu and http://oem.wsu.edu/emergencies to access the Campus Safety Plan and emergency information. You should also become familiar with the WSU Alert Site (http://alert.wsu.edu) where information about emergencies and other issues affecting WSU will be found.

ACADEMIC INTEGRITY: You are encouraged to work together and to discuss homework assignments by asking questions such as, "How do you do this type of problem again?" or "What is the idea here?" But you should not sit down with someone else's work in front of you and refer

to it to get your work done. This will not benefit you. Complicity (providing answers for another student) is also a form of cheating.

Academic integrity is the cornerstone of higher education. As such, all members of the university community share responsibility for maintaining and promoting the principles of integrity in all activities, including academic integrity and honest scholarship. Academic integrity will be strongly enforced in this course. Students who violate WSU's Academic Integrity Policy (identified in Washington Administrative Code (WAC) 504-26-010(3) and -404) will receive a zero on the assignment is question, will not have the option to withdraw from the course pending an appeal, and will be reported to the Office of Student Conduct.

Cheating includes, but is not limited to, plagiarism and unauthorized collaboration as defined in the Standards of Conduct for Students, WAC 504-26-010(3). You need to read and understand all of the Standards of Conduct for Students: http://conduct.wsu.edu/academic-integrity/. If you have any questions about what is and is not allowed in this course, you should ask the course instructor before proceeding. If you wish to appeal a faculty member's decision relating to academic integrity, please use the form available at conduct.wsu.edu.

GETTING HELP: Why struggle? Successful students make use of available resources, so don't struggle when help is just a few steps away! We want you to succeed, we're here for you, and we have FREE tutoring available in the Math Learning Center (Cleveland 130) and the computing lab in Thompson Hall (Room 1). Check it out! Tutoring begins the first week of classes:

Cleveland 130 is open Sunday 4-9pm, Monday-Thursday 10am-9pm, Friday 10am-5pm
Thompson 1 is open Monday-Thursday 12pm- 9pm

For more information please go to: http://www.math.wsu.edu/studyhalls/welcome.php

LEARNING OUTCOMES: In this course, you will develop learning skills that are important for your success in this course and other courses you will be taking during your undergraduate studies as well as contribute to your future success as an educator.

In particular, at the end of this course you will be able to:

1. Understand and use a variety of problem solving strategies and types of mathematical reasoning.
2. Use sets and operations on sets to explain the transitive property, communicative property, the associate property, and the distributive property of unions and intersections.
3. Understand the differences between types of numerals and number sets.
4. Understand and use properties of whole numbers to perform operations on whole numbers.
5. Understand and use a variety of place value models to explain arithmetic operations in base ten and non base ten numbers.
6. Understand and use divisibility of Natural Numbers to determine prime factors, common divisors, and least common multiples of whole numbers.
7. Understand and use the Euclidean Algorithm to determine a greatest common divisor and a least common multiple.
8. Understand and use a variety of models to represent integers and to perform integer operations.
9. Understand and use basic properties of fractions to perform operations on fractions and rational numbers.
10. Understand and use decimal arithmetic to solve problems.
11. Understand and use proportional reasoning to solve problems.
12. Understand and use percents to solve problems.

Each of the above learning outcomes will be evaluated by homework assignments, in-class assignments, and exam questions.

CONTENT: We will cover the following sections of the text:

1.1 An Introduction to Problem Solving
1.2 Pólya's Problem-Solving Principles
1.3 More Problem-Solving Strategies
1.4 Algebra as a Problem-Solving Strategy
1.5 Additional Problem-Solving Strategies

2.1 Sets and Operations on Sets
2.2 Sets, Counting,and the Whole Numbers
2.3 Addition and Subtraction of Whole Numbers
2.4 Multiplication and Division of Whole Numbers
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3.1 Numerations Systems Past and Present
3.2 Algorithms for Adding and Subtracting Whole Numbers
3.3 Algorithms for Multiplication and Division of Whole Numbers
3.5 Nondecimal Positional Systems

4.1 Divisibility of Natural Numbers
4.2 Tests for Divisibility
4.3 Greatest Common Divisors and Least Common Multiples

5.1 Representation of Integers
5.2 Addition and Subtraction of Integers
5.3 Multiplication and Division of Integers

6.1 The Basic Concepts of Fractions and Rational Numbers
6.2 Addition and Subtraction of Fractions
6.3 Multiplication and Division of Fractions
6.4 The Rational Number System

7.1 Decimals and Real Numbers
7.2 Computations with Decimals
7.3 Proportional Reasoning
7.4 Percent

Math 251 - Fall 2018 Schedule (subject to change)		
	TUESDAY	**THURSDAY**
Week 1 **Aug 20-24**	Syllabus Ice Breakers 1.1Thinking Critically	1.2 Polya's Problem-Solving Principals 1.3 More Problem-Solving Strategies T1: Polya
Week 2 **Aug 27-31**	1.4 Algebra as a Problem-Solving Strategy 1.5 Additional Problem Solving Strategies HW 1 due (1.1-1.3) T2: Sequences	2.1 Sets and Operations on Sets T3: What is the Set?
Week 3 **Sept 3-7**	2.2 Sets, Counting, and the Whole Numbers 2.3 Whole Number Addition and Subtraction HW 2 due (1.4-1.5) T4: Venn Diagrams	2.4 Whole Number Multiplication and Division T5: Division in a Situational Context
Week 4 **Sept 10-14**	3.1 Numeration Systems Past and Present 3.2 Algorithms: Whole Number Add/Subtract HW 3 due (2.1-2.2) T6: The Addition Algorithm	3.3 Algorithms: Whole Number Multiplication/Division ASC II (extra credit)
Week 5 **Sept 17-21**	Review HW 4 due (2.3-2.4)	**Exam 1 (1.1-2.4)**
Week 6 **Sept 24-28**	3.4 Mental Arithmetic and Estimation HW 5 due (3.1-3.3) T7: Mucking About in Base 3	3.5 Nondecimal Positional Systems T8: Base Six
Week 7 **Oct 1-5**	4.1 Divisibility of Natural Numbers HW 6 due (3.5) T9: Sieve of Eratosthenes	4.2 Tests for Divisibility T10: Check Sums with Credit Cards and ISBNs
Week 8 **Oct 8-12**	4.3 GCDs (or GCFs) and LCMs HW 7 due (4.1-4.2) T11: Chip Models I	4.3 cont'd T12: Chip Models II
Week 9 **Oct 15-19**	Review HW 8 due (4.3)	**Exam 2 (3.1-4.3)**
Week 10 **Oct 22-26**	5.1 Representations of Integers 5.2 Addition and Subtraction of Integers HW 9 due (5.1-5.2) T13 Number Line I	5.3 Multiplication and Division of Integers T14: Number Line II
Week 11 **Oct 29-Nov 2**	6.1 Basic Concepts Fractions/Rational Nos. HW 10 due (5.3) T15 Fractions I	6.2 Addition and Subtraction of Fractions T16: Fractions II
Week 12 **Nov 5-9**	6.3 Multiplication and Division of Fractions HW 11 due (6.1-6.2) T17: Fractions III	6.4 The Rational Number System T18: Equivalent Fractions
Week 13 **Nov 12-16**	Review HW 12 due (6.3-6.4)	**Exam 3 (5.1-6.4)**
Nov 19-23	**Thanksgiving Break – no classes**	
Week 14 **Nov 26-30**	7.1 Decimals and Real Numbers T19: Decimals and Place Value	7.2 Computations with Decimals HW 13 due (7.1) T20: Decimals Addition/Subtraction
Week 15 **Dec 3-7**	7.3 Proportional Reasoning/7.4 Percent HW 14 due (7.2) T21: Percents, Fractions, and Decimals	Review
FINALS WEEK **Dec 10-14**	**FINAL EXAM** **Section 1: Thurs, Dec 13/Section 2: Tues, Dec 11 (both at 10:10am-12:10pm)**	