

Math 320, Section 02, CRN 11064
Winter Quarter 2014
Course Syllabus

Instructor: Dr. F. Javier Trigos-Arrieta

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Office hours: M 1-4:30pm; T 10-11 & 1-3; W 1-2pm; Th 10-11 & 1-3pm; F 10-12 & 1-3pm, or by appointment.

MATH 320 Number Systems, Statistics and Probability (5) Continuation of the development of the real numbers including applications and models of rational numbers, irrational numbers, percent, and proportional reasoning. Introduction to the basic notions of chance and probability. Introduction to data analysis and statistics. This course involves substantial use of 2- and 3-dimensional concrete materials in a cooperative learning setting. Prerequisites: A grade of C- or better in MATH 221. (4 units lecture and 1 unit activity).

Objectives: Mathematics 320 is the second of a sequence of three courses designed to help students gain the mathematical knowledge, skills, and understanding that are essential for those pursuing a Multiple Subject Credential as prescribed by the California Commission on Teacher Credentialing. Students will identify and prioritize relevant and missing information in mathematical problems. They will analyze complex problems to identify similar simple problems that might suggest solution strategies. They will explain their mathematical reasoning through a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and concrete models. They will use appropriate mathematical notation with clear and accurate language. They will explain how to derive a result based on previously developed ideas and explain how a result is related to other ideas.

Students passing this class will be able to do the following:

1. Simplify algebraic expressions, solving equations and word problems, emphasizing algebraic skills.
2. Demonstrate an understanding of the concept of division.
3. Demonstrate an understanding of functions with domain the rational numbers.
4. Demonstrate an understanding of decimals and operations on decimals.
5. Demonstrate an understanding of nonterminating decimals.
6. Demonstrate an understanding of real numbers.
7. Demonstrate an understanding of ratios, proportions and proportional reasoning.
8. Demonstrate an understanding of percents.
9. Demonstrate an understanding of probabilities.

10. Perform experiments with tree diagrams and geometric probabilities.
11. Using simulations in probability.
12. Demonstrate an understanding of odds, conditional probability and expected value.
13. Draw sensible conclusions from displayed data.
14. Demonstrate an understanding of measures of central tendency and variation.
15. Demonstrate an understanding when statistics is abused.

Note: Although some attention will be given to how to teach mathematics effectively to children, this is a content course, not a methods course. Methodology is the primary focus of the Credential Program.

MW: 5:10 -7:30 pm, Science III 212.

Textbook (required): *A Problem Solving Approach to Mathematics for Elementary Teachers*, 11th ed, by Billstein, Libeskind, and Lott. Sections of the text being covered in lecture should be read prior to coming to class. Lectures will not cover all topics from each section, but students will be responsible for all topics in the section.

Supplies: In addition to the textbook, each student must have a scientific calculator, several colored pencils, and 1/4-inch graph paper. These should be brought to class.

Material to be covered: Chapters 6, 7, Sections 8.1, 8.4, 8.5, Chapters 9 and 10.

Homework: Mathematics is not a spectator sport. You learn by doing. Although homework assignments will not be collected, it is assumed that you will do the homework necessary for success in this class. We will spend considerable time at the beginning of each lecture working out homework problems. Answers to most of the assigned problems are in the back of the book. **If you are not able to solve a particular problem, do not hesitate to ask!** Your classmates will be grateful.

Readings: The student is responsible for reading at least twice each section of the book covered in class: Before and after the lecture. The student will be told in advance what sections of the book are to read. **If you are not able to understand something in the book, do not hesitate to ask!** Your classmates will be grateful.

Quizzes: There will be five quizzes, already scheduled and to be administered promptly at 5:15 pm (see class schedule in last page); the student will be able to drop the lowest score. **Quizzes may not be made-up. If you miss a quiz you will get a score of “0” (zero) recorded.** You may take any quiz early with the

instructor's permission. Problems will be similar to those in the homework. The primary purpose of these quizzes is to provide you with frequent evaluation of your content acquisition and to help you to reduce math anxiety. Quiz work is individual, see Note 2 below.

Activities: Five activity assignments will be collected; the student will be able to drop the lowest score. The student should work in groups of at least 3 people and 4 at most. During activity sessions the student will work on an activity sheet and each member of his/her group should hand in a report as already scheduled at the latest. Late reports and reports from students not contributing substantially will not be accepted. A report should be neat and readable; solutions should follow an increasing numerical sequence. Each member of a group will receive the same number of points, so it is your responsibility to write down in each report only the names of those who substantially contributed to the activity. **NO INDIVIDUAL REPORTS WILL BE ACCEPTED.**

Exams: There will be two Midterm exams and a cumulative final. Questions and problems will deal with concepts discussed in lectures, homework, textbook, and activities. Exchange of information, calculators, and supplies is absolutely prohibited during exams! To clarify a particular situation, the instructor reserves the right to a further examination, written or oral. Exam work is individual, see Note 2 below. **Midterm exams may not be made-up. If you miss an exam you will get a score of "0" (zero) recorded.** You may take any exam early with the instructor's permission.

Partial Credit: Only substantial contributions to the solution of a problem will count for partial credit. Mere restating of a problem or the quoting of an incorrect fact, for example, will not make you eligible for it. Students must watch out for logical mistakes, and must make sure that all the hypotheses are met before recalling a particular theorem.

Points Distribution: [4 quizzes x (each worth 50 pts.)] + [4 activities x (each worth 50 pts.)] + [2 in-class exams x (each worth 200 pts.)] Final exam (worth 200 pts.) = 1000 points.

Grades: Your final grade is a function of the total of points awarded on the activities indicated above. Group homework is very helpful and greatly promoted in this course. However, it is necessary for college graduates to demonstrate individual competency on the subject. *Therefore, regardless of your total of points, in order to get a D- or better in this course all of the following should be fulfilled at least:*

- (a) To have scored at least 200 points in the 2 Midterm exams combined.
- (b) To have scored at least 100 points in the final exam.

Generally, the following guidelines for grades apply:

| | | |
|--------------|--------------|--------------|
| 870 - 899 B+ | 960 - 1000 A | 900 - 959 A- |
| 770 - 799 C+ | 840 - 869 B | 800 - 839 B- |
| 670 - 699 D+ | 740 - 769 C | 700 - 739 C- |
| | 640 - 669 D | 600 - 639 D- |
| | 0 - 599 F | |

If you entered the liberal studies program on Fall 2011, you are required to get a C or better in all classes that you are taking for your major - this includes Math 320.

Notes:

- 1) It is the student's responsibility to find out what (s)he missed if (s)he did not attend class. Office hours are not meant for tutorial courses, but rather to clarify particular situations or problems occurring during lectures, homework, activities or readings. Students are encouraged to make use of the Office Hours.
- 2) Academic dishonesty will not be tolerated. More information can be found in page 90 of the 2011-2013 University Catalog (**STUDENT CONDUCT, Title 5, California Code of Regulations, § 41301. Standards for Student Conduct, (b) Grounds for Student Discipline**, at http://www.csub.edu/catalog/2011-2013_regularlyUpdated/pages/012.pdf).
- 3) The instructor will hold graded papers for one week at most. After this period, he will trash old papers. Contact him as soon as you foresee a problem picking up your paper(s).
- 4) All handouts (with solutions) will be in the internet (follow the link **Math 320** in <http://www.csub.edu/~jtrigos/>)
- 5) Beepers, cell phones, i-pods, laptops and similar electronic devices must be turned off at all times during class or lab time. If not, the student will have to leave the room without being allowed to return.
- 6) Students can be at most 10 minutes late. Students cannot leave the room, unless it is for medical reasons.
- 7) Additional Resources: The Math Tutoring Center is the best source for free help on campus: For hours, check <http://www.csub.edu/~clam/mtc.html>

| Week | M | W |
|-------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------|
| 1. January 6-8 | Introduction. 6.1-6.2 | 6.2-6.3 |
| 2. January 13-15 | 6.3-6.4 | Q1. 7.1-7.2. <u>A1 due.</u> |
| 3. January 22. | Martin Luther King Jr. Day. No Class. | 7.2-7.3 |
| 4. January 27-29 | Last Day to Withdraw from Classes without a "W" being recorded. 7.3-7.4 | Q2, 7.4. <u>A2 due.</u> |
| 5. February 3-5 | 8.1-8.4 | 8.4-8.5 |
| 6. February 10-12 | 9.1 | Q3, 9.2. <u>A3 due.</u> |
| 7. February 17-19 | <u>Exam 1 Chapters 6, 7, and 8.</u> | <u>9.3</u> |
| 8. February 24-26 | Last Day to Withdraw from classes for a Serious and Compelling Reason. 9.4 | Q4, 9.5. <u>A4 due</u> |
| 9. March 3-5 | 10.1-10.2 | 10.2-10.3 |
| 10. March 10-12 | 10.3-10.4. | Q5, 10.4-10.5. <u>A5 due</u> |
| 11. March 17-21 | <u>Exam 2. Chapters 9 and sections 10.1, 10.2 and 10.3. Last Day of Classes.</u> | FINAL EXAM: FRIDAY! FRIDAY! FRIDAY! MARCH 21, 5-7:30pm |

Aj:= Activity j

Qj:= Quiz j