

San José State University
Department of Mathematics & Statistics
Math 105 CONCEPTS IN MATHEMATICS, PROBABILITY, AND STATISTICS
Section 2, 3 units, Spring 2017

Instructor:	F. D. Rivera, Professor
Office Location:	MacQuarrie Hall 318B
Telephone:	(408) 924-5170
Email:	ferdinand.rivera@sjsu.edu (preferred)
Office Hours:	MW 1:15 AM – 3:30 PM and by appointment
Class Days/Time:	MW 12:00 – 1:15 PM
Classroom:	MH 425
Prerequisites:	Two years of high school algebra, one year of high school geometry, Math 12 with a "C-" or better

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas at <http://sjsu.instructure.com>. You are responsible for regularly checking with the messaging system through [MySJSU](http://my.sjsu.edu) at <http://my.sjsu.edu> (or other communication system as indicated by the instructor) to learn of any updates.

Course Description

Introduction to functions and algebraic reasoning, introduction to probability, data, graphs, statistics, problem solving; technology integrated throughout the course.

Mathematics 105 is the second course in a three-course sequence designed for prospective elementary school teachers. You will develop a deep understanding of mathematical concepts and processes taught at the elementary level. All concepts and processes are aligned to the Common Core State Standards (and the new California Mathematics Framework). In particular you will analyze proportional relationships; develop mathematical arguments about algebraic relationships; apply algebra and use statistics to analyze mathematical situations; represent ratio, proportion, and algebra objects using representational systems such as concrete models, drawings, and coordinate geometry; and use techniques, tools, and formulas for analyzing data, statistics, and probability situations. In general, you will investigate mathematical situations, state conjectures, and provide explanations that support your conjectures. You will use Desmos and Geogebra as tools for visual investigations. Throughout the course, you will experience mathematics learning in the way that we want your future

students to experience mathematics learning. In addition, you will analyze your learning experiences from the perspective of a future teacher.

This course aligns with the following elementary math requirements for multiple subject credential candidates: Domain 2: Algebra and Functions (2.1 and 2.2); and Domain 4: Statistics, Data Analysis, and Probability (4.1, 4.2, and 4.3).

Course Learning Outcomes

Upon successful completion of this course, all students will:

1. use mathematical methods to solve ratio and proportion, algebra, and statistics/data analysis problems;
2. use mathematics to solve real-life problems and arrive at conclusions based on numerical and graphical data;
3. develop the following mathematical habits: (a) make sense of problems and persevere in solving them; (b) reason abstractly and quantitatively; (c) construct viable arguments and critique the reasoning of others; (d) model with mathematics; (e) use appropriate tools strategically; (f) attend to precision; (g) look for and make use of structure; and (h) look for and express regularity in repeated reasoning.

Required Textbook

California Department of Education. (2015). *Mathematics framework for California Public Schools: Kindergarten through grade twelve*. Sacramento, CA: Author. Available online: <http://www.cde.ca.gov/ci/ma/cf/draft2mathfwchapters.asp>.

EngageNY Grades 6-8 and Algebra 1 modules (free download at <https://www.engageny.org/common-core-curriculum>)

Required Technological Tool

Desmos (online graphing calculator)

Geogebra (free download at <https://www.geogebra.org/download>) and

Dropping and Adding

You are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. found at http://sa.sjsu.edu/student_conduct. You should be aware of the new deadlines and penalties for adding and dropping classes.

Course Requirements and Grading Policies

Homework	(10 @ 5 points)	50 points
Lab	(8 @ 5 points)	40 points
Complete Submission of Homework and Lab		10 points
Exams	(3 @ 80 points)	240 points

Final Exam

160 points

TOTAL

500 points

Notes on Exams: You are entitled to one makeup exam. If you miss an exam, I need to know why and you will need to show valid proof. I make the final decision whether the proof is sufficient. A makeup exam is taken in my office on an appointed date and time. If you miss a makeup exam, you get 0 points.

The final exam date - **Tuesday, May 23 9:45 AM – 12:00 PM** - is not negotiable. Do not plan to leave on vacation before this date. The final exam is cumulative.

Note on Homework: Every homework assignment is due by 12 PM of the scheduled submission day (refer to the table on p. 5). Absolutely no extension or makeup allowed on any homework assignment.

Note on Wednesday Labs: Absolutely no extension or makeup allowed on labs. Each lab needs to be completed in class and submitted on or before the session is over. Labs are done in pairs or in groups, and you decide with your partner or group in terms of how to accomplish the tasks. You are expected to submit individual lab reports.

Grading Policy & Standards: Course grades will be determined by adding all points earned on all course requirements and dividing by 1000. This will give a percentage of points earned. You should be able to use this technique to evaluate your course grade to date at any point in the semester.

A: 95 –100

A-: 90-94.99

B+: 87- 89.99

B: 84 – 86.99

B-: 80 – 83.99

C+: 77 – 79.99

C: 74 – 76.99

C-: 70 – 73.99

D+: 66 – 69.99

D: 64 – 66.99

D-: 60 – 63.99

F: Below 60

Course Grade Advisory: (1) A grade of C- or better in Math 105 is required in order for you to be eligible to take Math 106, 101, Math 107A, or Math 107B (these are the remaining courses in the Mathematics Minor for K-8 Teachers). (2) A grade of C or better in Math 105 MAY be required by your major in order for you to graduate and/or for verification of subject matter competency prior to admission to the credential program. Please check with an advisor from your own major regarding minimum grade or grade point average requirements.

Classroom Protocol

Classroom Courtesies: Common courtesy requires you to respect your fellow students' right to a learning experience without needless interruptions. Please help yourself and your fellow students to gain the most from this learning opportunity by arriving on time ready to work with cell phones and pagers turned off. Do not come to class late. If you have an issue, talk to me about it.

Attendance and Participation: You are expected to be in class on Mondays and Wednesdays. I will always be available during office hours, so do show up when you need my assistance. If you are struggling, I need you to see me during my office hours so that you get timely and appropriate support.

Missed Classes: It is not acceptable to miss class due to a vacation. Any time you are unable to come to class, due to illness, accident, or other unavoidable incident, it is *your responsibility* to contact me regarding the missed class to you are able.

Study Load: You should expect to spend *at least* 6 hours per week outside of class to complete assignments, prepare for class sessions, and study the material in this course to have a reasonable expectation of passing the course. Depending on your background and study habits, you may need more time than this. It is almost certain that if you want to earn an A or a B, you should expect to spend significantly more time than this. Please take this into account if you are juggling a full study load as well as work or volunteer responsibilities.

Emergency Procedures: In the event of an emergency or emergency drill, a loud fire alarm will sound. In this event, you should gather up all of your belongings and proceed to the far back stairway of MacQuarrie Hall. Do not attempt to use the elevators. Make sure you take all of your belongings with you. Once you have left the building, you should move onto the lawn area adjacent to the building. If you have a physical condition that prevents you from walking down stairs, please inform me immediately, so I can make special arrangements for your safe exit from the building.

I reserve the right to change classroom and grading protocols and schemes. You have the right to be notified of any changes in a timely manner, but I make all final decisions.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at <http://www.sjsu.edu/gup/syllabusinfo/>.

Week	Dates	Topics	EngageNY Modules	HW Due	Lab Due	Possible MAP/MARS Tasks
1	Jan 30	Standards for Mathematical Practice	CCSSM			Evaluating Statements: Consecutive Sums
1 & 2	Feb 1, 6, 8	Ratios and Unit Rates	Grade 6 M1	1: 02/06	1: 02/08	2015 Hot Chocolate & Basketball Team 2016 On the Bus 2013 Bottled Water 2012 Rate Concentrate & Breakfast of Champions 2011 100 People
3	Feb 13, 15	Ratios and Proportional Relationships	Grade 7 M1	2: 02/13	2: 02/15	2015 Game Cards & Computer Graphics 2016 Rational Measurements & Dia's Watch
4	Feb 20, 22	Percent and Proportional Relationships	Grade 7 M4		3: 02/22	2014 Duplicating Dollars & Is it Proportional? 2012 To Buy or Not to Buy 2010 Percents
5	Feb 27, Mar 1	Review and Exam 1		3: 03/01		
6	Mar 6, 8	Expressions and Equations	Grade 6 M4, Grade 7 M3	4: 03/08		
7	Mar 13	Linear Equations	Grade 8 M4			
7 & 8	Mar 15, 20	Functions	Grade 8 M5 & M6	5: 03/20	4: 03/15	
8	Mar 22	Polynomial and Quadratic Expressions, Equations, and Functions	Algebra 1 M4			
9	Mar 27, 29	SPRING RECESS				

10	Apr 3, 5	Algebra 1 Polynomial and Quadratic Expressions, Equations, and Functions	Algebra 1 M4	6: 04/03	5: 04/05	
11	Apr 10, 12	Review and Exam 2		7: 04/12		
12	Apr 17, 19	Data and Statistics	Grade 3 M6, Grade 6 M6	8: 04/17	6: 04/19	
13	Apr 24, 26	Statistics and Probability	Grade 7 M5	9: 04/24	7: 04/26	
14 & 15	May 1, 3, 8	Statistics and Probability	Algebra 1 M2		8: 05/03	
15 & 16	May 10, 15	Review and Exam 3		10: 05/15		
	May 23	Final Exam <u>9:45 AM – 12:00 PM</u>				