**San José State University
Department of Mathematics & Statistics**

**Math 105 CONCEPTS IN MATHEMATICS, PROBABILITY,**

**AND STATISTICS**

**Section 2, 3 units, Fall 2020**

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| Instructor: | F. D. Rivera, Professor |
| Office Location: | Ducan Hall 239 |
| Telephone: | (408) 924-5170 |
| Email: | ferdinand.rivera@sjsu.edu (preferred) |
| Office Hours: | MW 5:45 AM – 6:45 PM and by appointment |
| Class Days/Time: | MW 3:00 – 4:15 PM |
| Classroom: |  https://sjsu.zoom.us/j/4190545191  |
| Prerequisites: | Two years of high school algebra, one year of high school geometry, Math 12 with a "C-" or better |

## Course Format

### This is a synchronous online course.

## 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](file:///Users/../../Downloads/2015/Acc%20Outreach/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**

Rivera, F. D. (in preparation). *Proportions, Algebra and Functions, and Statistics, Probability, and Data Analysis for Future Elementary Teachers*. Available for download via Canvas.

**Required Technological Tool**

Desmos (online graphing calculator)

Geogebra (*free download* at https://www.geogebra.org/download)

You need a webcam, microphone, and a scanner for the meeting sessions and exams.

**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.](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 @ 8 points) 64 points

Exams (3 @ 80 points) 240 points

Final Exam 146 points

 **TOTAL 500 points**

**Notes on Exams**: There will be 3 *tests and a final exam*. All exams consist of free-response questions similar to the homework problems. All tests are closed notes/closed book/closed internet assessments. The exam will be proctored on Canvas using Proctorio (or Respondus lockdown browser). You will need your student ID, webcam, Google Chrome browser, Proctorio extension, etc.) to take each exam. Review sheets will be posted on the course website one week prior the test dates. Please know that there is no guarantee of any level of similarity with those problems. Thus, it is in your best interest to review for each exam thoroughly.

You are entitled to one make up 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 make up exam is taken in my office on an appointed date and time. If you miss a make up exam, you get 0 points.

The final exam date - ***Thursday, December 10, 12:15 – 2:30 PM*** - is not negotiable. Do not plan to leave on vacation before this date. The final exam is cumulative.

**Note on Homework:** Each homework assignment is due by 3 PM of the scheduled submission day (refer to the table on p. 7 specific dates). Absolutely no extension or makeup allowed on any homework. Please note that you are expected to develop your solutions independently. You are expected to upload solutions accompanied by detailed explanations - comment on all steps of the problem. Do not copy anything from anywhere without understanding how and why it works.

**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, multiplying by 2, and then dividing by 1000. This will give you 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+: 67 – 69.99

 D: 64 – 66.99 D-: 60 – 63.99 F: Below 60

**Course Grade Advisory:**A grade of C or better in Math 106 MAY be requiredby 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 gradepoint 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.

**Zoom Recording and Use of Cameras:** Please turn on your cameras during all Zoom sessions. If you have special needs or requests for any individual accommodations related to appearing on camera, let me know. Also, if you prefer to use an avatar instead of your actual face, that is acceptable. Results of the Spring 2020 Student Success Survey indicate that having recordings of class lectures is helpful for studying and reviewing material, or catching up on portions missed due to internet connectivity issues or other disruptions. I intend to record our class sessions and post them on Canvas. University policy (S12-7) requires consent from all of you will appear in all class recordings. If you do not wish to be identified in a class recording, you may do the “anonymous” option (e.g., temporarily turning off any identifying information from the Zoom session, including name and picture, prior to recording).

Please note that I will disable the download option of Zoom recordings on Canvas. You are permitted to only view the recordings but not download the videos. You must obtain permission in advance to record any course materials. Such permission allows the recordings to be used for a student’s private, study purposes only. You are not be permitted to share any class recordings with someone who is not enrolled in the class or without permission. The recordings are protected by instructor’s copyright. If you need accommodations or assistive technology due to a disability, please work with the Accessible Education Center (AEC), and the instructor. Note that all federal, state, CSU system, and campus regulations on conduct including harassment and discrimination against other students or faculty apply to the online environment, just as in face-to-face instruction.

**Cheating Policy:** Unfortunately, since courses at SJSU have moved online during the Spring 2020 semester, the department has observed an increase in the number of infractions. That is unfortunate. I am assuming that you are in this course to learn. I will do my best to give you any opportunity to do that. To keep grading fair for all students, all instances of use of prohibited resources on a quiz or exam (such as books, notes, the internet, Chegg, your phones) will be reported. Students who utilize websites such as Chegg that provides “help” with finding solutions to homework and/or exam problems should expect Chegg to pass on their login information to the institutions, whose materials are illegally being published on these sites. This allows institutions to identify students who cheat on assignments using such sites. If you are suspected of cheating in an exam, I will investigate it first and consult and confirm my decision with the department Chair. If you have been found cheating, expect to receive a 0. You will also be referred to the Division of Student Affairs for an official action.

**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**

**General Expectations, Rights and Responsibilities of the Student**

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU’s policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See University Policy S90–5 at http://www.sjsu.edu/senate/docs/S90-5.pdf. More detailed information on a variety of related topics is available in the SJSU catalog, at <http://info.sjsu.edu/web-dbgen/narr/catalog> rec-12234.12506.html. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

**Dropping and Adding**

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic year calendars document on the Academic Calendars webpage at http://www.sjsu.edu/provost/services/academic\_calendars/. The Late Drop Policy is available at

http://www.sjsu.edu/aars/policies/latedrops/policy/. ​Students should be aware of the current deadlines and penalties for dropping classes. Information about the latest changes and news is available at the Advising Hub at <http://www.sjsu.edu/advising/>.

**Academic integrity**

Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The University Academic Integrity Policy S07-2 at http://www.sjsu.edu/senate/docs/S07-2.pdf requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at <http://www.sjsu.edu/studentconduct/>.

**Campus Policy in Compliance with the American Disabilities Act**

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 at http://www.sjsu.edu/president/docs/directives/PD\_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at http://www.sjsu.edu/aec to establish a record of their disability.

**Accessible Education Center (AEC)**

If you need course adaptations or accommodations because of a disability, please register with AEC. The main office is located in ADM building, room 110. The website is http://www.sjsu.edu/aec/

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| **Week** | **Dates** | **Topics** | **Chapter** | **Lab Due** | **HW Due** |
| **1** | **Aug 19** | **NO CLASS CANCELLED** |  |  |  |
| **2** | **Aug 24, 26** | Standards for Mathematical Practice and Desmos Algebra |  | 1: 08/26 |  |
| **3** | **Aug 31, Sep 2** | Ratio and Unit Rate Relationships | 1 |  | 1: 08/31  |
| **4** | **Sep 7** | **NO CLASS LABOR DAY** |  |  |  |
| **Sep 9** | Proportional Relationships |  |   |  |
| **5** | **Sep 14, 16** | Percent Relationships |  | 2: 09/16 | 2: 09/14 |
| **6** | **Sep 21, 23** | **Review (09/21) and Exam 1 (09/23)** |  |   | 3: 09/23 |
| **7** | **Sep 28, 30** | * Linear Function Relationships
 |  | 3: 09/30 |   |
| **8**  | **Oct 5, 7** | * Quadratic Function Relationships
 |  | 4: 10/07 | 4: 10/05 |
| **9** | **Oct 12, 14** | Quadratic Function Relationships |  | 5: 10/14 | 5: 10/12 |
| **10** | **Oct 19, 21** | * **Review (10/19) and Exam 2 (10/21)**
 |  |   | 6: 10/21 |
| **11** | **Oct 26, 28** | * Linear and Quadratic Discrete Relationships
 |  | 6: 10/28 |   |
| **12** | **Nov 2, 4** | * Data Relationships
 |  | 7: 11/04 | 7: 11/02 |
| **13** | **Nov 9** | * Linear Regression Relationships
 |  |   | 8: 11/09 |
| **Nov 11** | * NO CLASS VETERANS DAY
 |  |  |  |
| **14** | **Nov 16, 18** | * Probability Relationships
 |  | 8: 11/18 | 9: 11/16 |
| **15** | **Nov 23, 27** | * **NO CLASS THANKSGIVING WEEK**
 |  |  |  |
| **16** | **Nov 30, Dec 2** | * **Review (11/30) and Exam 3 (12/02)**
 |  |   | 10:12/02 |
| **17** | **Dec 7** | * **Review for Finals**
 |  |  |  |
| **Dec 10 Thursday** | **12:15 - 2:30 PM** |