SANTA ROSA JUNIOR COLLEGE

**MATH 16:** *Introduction to Math Analysis (1105)– 4.0 units*

**When:** Monday & Wednesday 9:00 am – 10:30 am & at least 1 hour asynchronous

**Where:** Barnett 1286

**Instructor:** Kat Valenzuela

**Email:** *Kvalenzuela@santarosa.edu*

- Please use proper English and grammar in all emails. Text language, emotions, and emojis are not considered proper English.
- I will reply within 24 hours to emails received Sunday 5:00 pm - Thursday 5:00 pm.
- I will reply by Monday at 5:00 pm to emails received between Thursday (after 5:00 pm) and Sunday (before 5:00 pm).
- I will reply within 24 hours of the next working day if emails were received during holiday.

**Phone:** 707-778-2474

**Office Hours:** Kunde Hall 213. Office hours will be asynchronous meaning via email or by appointment.

**Content:** Presents techniques of calculus with emphasis placed on the application of these concepts to business and management related problems. The applications of derivatives and integrals of functions including polynomials, rational, exponential and logarithmic functions are studied.

**Prerequisite:** Completion of MATH 154 or MATH 156 or MATH 155 or AB705 placement into Math Tier 3 or higher.

**Course Outline of Record:** is available online: go to the SRJC homepage and search for course outline and the type in MATH 16 under the course.

**Required Materials:**

- Textbook: Calculus & Its Applications 14th Edition. Author(s): Goldstein, Larry | Lay, David | Schneider, David | Asmar, Nakhle. Pearson. I will be teaching the course with the 14th edition of our textbook. If you choose an earlier/different version, it is up to you to reconcile the differences between editions.
- A graphing calculator without a computer algebra system (CAS). You can use any technology you choose to complete the homework; however, that is not a substitution for not understanding the mathematics behind the computations. On the Exams the allowable technology will be specified.

**Class Structure:**

- Give yourself the best chance of succeeding by:
  - Meeting the prerequisites
  - Providing a good-faith effort
  - Communicating often and taking the time to formulate good questions
  - Having patience
  - Exhibiting academic integrity
  - Attend class each day, work on the homework, and weekly assignments
  - Read the text before attempting the homework
  - Know when the due dates for assignments are

- Strive to be "impossible to be misunderstood"
- Realizing that your work will be graded in accordance with a college transfer level, math class

- You will be spending at least 1 hour each week working on weekly assignments (asynchronous work). This may come in the form of worksheets, readings, bookwork assignments, exercises, etc. The weekly assignments will be announced each week.

- Our class is a place reserved for learning. Being kind, open-minded, respectful, patient, and tolerant are qualities conducive to learning. It is expected that you will be prepared to learn and exhibit these behaviors.

- It is critical that students work on homework frequently throughout the term.

- The written exams in **our class will be graded according to mathematical standards that accompany a college transfer level math class**.

- When developing a logical argument or asking a question, please make it a goal to be **"impossible to be misunderstood" and take the care and time to formulate good questions**, before asking them.

- Read all the emails, homework, quizzes, exams, assignments and any communications you have from me **carefully**.

- This class will be utilizing technology; however, that is not a substitution for not being able to utilize mathematical notation correctly, appropriately, and efficiently.

**Academic Integrity**

All work is to be original; verifiable plagiarism or academic dishonesty of any kind will result in recording an F for the class or being dropped from the class. Students who plagiarize or cheat may also be referred to the Vice President of Student Services for discipline sanction, in cases of egregious violation.

**Accommodations for Students with Disabilities**

Please contact me privately regarding concerns about accommodations. If you have not received authorization from DRD, it is recommended that you contact them directly. DRD's link: https://drd.santarosa.edu

**Your Responsibility:** A college transfer level math class requires a great amount of discipline and continual self-monitoring. In order to be successful each student is expected to:

1. Attend office hours regularly.
2. Be respectful of your fellow classmates. You will be asked to leave the class if you are not ready to learn.
3. We will listen respectfully when someone else is talking, we will be respectful and polite even when we disagree with another's viewpoint.
4. Be an active participate during class.
5. Quietly listen to lecture and actively take notes.
6. Class is a place reserved for learning. Being kind, open-minded, respectful, patient, and tolerant are

qualities conducive to learning. It is expected that you are prepared to learn and exhibit these behaviors.

7. Read each section in the book before attempting the homework. You will be surprised how much you understand in class, and feels easier when you do this!
8. It is critical that students work on homework frequently during the semester. Students are expected to work on homework exercises out of the text.
9. This class will be utilizing technology; however, that is not a substitution for not being able to utilize mathematical notation correctly, appropriately, and efficiently.
10. The written exams in our class will be graded according to mathematical standards that accompany a college transfer level class. Please keep that in mind when you are writing up your exams.
11. When developing a logical argument or asking a question, please make it a goal to be "impossible to be misunderstood" and take the care and time to formulate good questions, before asking them.
12. Read all the emails, homework, quizzes, exams, assignments, and any communications you have from me carefully.
13. Know how to gain access to the Mathematics & Computer Lab, & office hours are and visit as often as you need or want.
14. Review previous sections. Continual studying is much more rewarding and less stressful than cramming.
15. Study early and study often!
16. Check your email regularly!
17. Be aware of the date of the quizzes, exams, assignments, and final.
18. Problems you got wrong or partial credit on from your exams and quizzes is your responsibility to understand why. Try to work the problem out at home first and if you are still struggling come talk to me if you have questions.
19. Be patience with yourself and keep at it. Persistence, and hard work leads to success. You may need to find your own mental fortitude.

*Fortitude Definition:*

*strength of mind that enables a person to encounter danger or bear pain or adversity with courage, strength.*

20. Come talk to me for any reason! If you are having trouble, problems with something or cannot make class let me know as soon as you can. I am more willing to help you when you let me know early and have an open communication with me. I am less likely to accommodate circumstances when things arise at the last minute.
21. Students are required to have a text for our course. Our text is available nowadays in many different forms; e.g., as a traditional textbook, in electronic format, etc. You are welcome to choose the one that works best for you; you may have a preference or there may be cost savings with one format versus another.
22. I will be teaching the course with the 14th edition of our textbook. If you choose an earlier/different version, it is up to you to reconcile the differences between editions.
23. Preparedness: AB705 eliminates the requirement of taking a prerequisite course, in our case Intermediate Algebra. However; students are responsible for this prerequisite material. You are

responsible for knowing the concepts taught in Intermediate Algebra and Beginning Algebra. In order to be successful, you will need to spend extra time outside of class reviewing the prerequisite material you are missing, on top of the material related to this course.

**Late Work:** Quizzes, exams, assignments, and the final will **NOT** be taken late. NO EXCEPTIONS!

**Attendance:** Attending class regularly greatly increases the likelihood of success in the course; however, I believe that adult college students know this (or, are learning this), and will make their own choice regarding attendance. There are no points associated with attendance. I am required to follow College Policy regarding attendance: A student may be dropped from any course when that student's absences exceed ten percent (10% constitutes an "excessive" number of absences for this course) of the total hours of class time. Students who fail to attend the first day & week of class may be dropped from the course.

MATH 16 GRADE BREAKDOWN

| Activity (NO LATE WORK ACCEPTED; ALLOWED RESOURCES WILL BE DESCRIBED IN THE INSTRUCTIONS FOR EACH ACTIVITY) | Points Possible | Your Points | Your Cumulative Points | Cumulative Points Possible | Your Cumulative Percentage |
|---|---|---|---|---|---|
| Quiz #1 Monday, September 13th | 50 | | | 50 | |
| Exam #1 Monday, September 27th | 100 | | | 150 | |
| Quiz #2 Monday, October 25th | 50 | | | 200 | |
| Exam #2 Monday, November 8th | 100 | | | 300 | |
| Quiz #3 Monday, November 29th | 50 | | | 350 | |
| Take out lowest Quiz Score | -50 | | | 300 | |
| Weekly Assignments | 150 | | | 450 | |
| Final Exam Wednesday, December 15, 7:00 AM - 9:45 AM | 150 | | | 600 | |

Grading Policy

Letter grades will be assigned on a scale no stricter than the following:

| Letter Grade | Percentage |
|---|---|
| A | 90 to 100 |
| B | 80 to 89 |
| C | 70 to 79 |
| D | 60 to 69 |
| F | 0 to 59 |

Activity Details

Weekly Assignments (15 at 10 points each; 150 points total)

You will be spending at least 1 hour each week working on weekly assignments (asynchronous work). This may come in the form of worksheets, readings, bookwork assignments, exercises, etc. The weekly assignments will be announced each week.

Homework Quizzes (Three at 50 points each; only two count toward your grade)

These quizzes will be held in class. You will only be allowed to use completed homework on this quiz. Only your top two quiz scores will be counted toward your grade. No quiz make-ups are available. Quizzes are usually returned, graded, no later than one week of the quiz date. Students are asked to review their graded quizzes and wait at least 48 hours to discuss questions and ask for further feedback on graded quizzes.

Exams (Two at 100 points each)

These will be taken in our classroom on **Monday** of week 7 and week 13. You will be notified of the exam topics and the materials you can use on the exams prior to each exam. These exams may only be taken at a different time with advanced notice and must be taken prior to the original scheduled date. Exams are usually graded and returned no later than one week of the exam date. Students are asked to review their graded exams and wait at least 48 hours to discuss questions and ask for further feedback on graded exams.

Final Exam (150 points)

Be prepared for a mostly cumulative final exam. It will be written to take about 2.75 hours and will be given at the College-designated time. You will be notified of the exam topics and the materials you can use on the final prior to the final. The final can only be taken at a different time with advanced notice and must be taken prior to the original scheduled date. Final exams are not returned to the students; however, you are welcome to come by during the following semester to review your final exam.

Tentative Schedule

(Note that the ideal schedule is just that—ideal. Our actual pace may cause us to run a little behind or ahead of the ideal schedule throughout the semester… hopefully we stay ahead more often than behind!)

| *Week Number* | *Date (Week Beginning…)* | *Section Number and Title from Our Text Read these sections before they are covered* | *Homework Assignment* |
|---|---|---|---|
| 1 | August 16 | 0.1: Functions and Their Graphs<br>0.2: Some Important Functions<br>0.3: The Algebra of Functions<br>0.5: Exponents and Power Functions | 0.1: 1-63 odd<br>0.2: 1-45 odd<br>0.3: 1-43 odd<br>0.5: 1-109 odd |
| 2 | August 23 | 0.6: Functions and Graphs in Applications<br>1.1: The Slope of a Straight Line<br>1.2: The Slope of a Curve at a Point<br>1.3: The Derivative and Limits | 0.6: 1-53 odd<br>1.1: 1-63 odd<br>1.2: 1-41 odd<br>1.3: 1-75 odd |
| 3 | August 30 | 1.4: Limits and the Derivative<br>1.6: Some Rules for Differentiation<br>1.7: More about Derivatives<br>1.8: The Derivative as a Rate of Change | 1.4: 1-69 odd<br>1.6: 1-51 odd, & 55<br>1.7: 1-49 odd<br>1.8: 1-31 odd |
| 4 | September 6 | *Monday: NO CLASS*<br>2.1: Describing Graphs of Functions<br>2.2: The First- and Second-Derivative Rules | 2.1: 1-39 odd<br>2.2: 1-39 odd |
| 5 | September 13 | *Monday: Quiz #1*<br>2.3: The First- and Second-Derivative Tests and Curve Sketching<br>2.4: Curve Sketching (Conclusion) | 2.3: 1-45 odd<br>2.4: 1-37 odd |
| 6 | September 20 | 2.5: Optimization Problems<br>*Wednesday: Review* | 2.5: 1-25 odd |
| 7 | September 27 | *Monday: Exam #1*<br>2.6: Further Optimization Problems | 2.6: 1-21 odd |
| 8 | October 4 | 2.7: Applications of Derivatives to Business and Economics<br>3.1: The Product and Quotient Rules<br>3.2: The Chain Rule and the General Power Rule<br>3.3: Implicit Differentiation and Related Rates | 2.7: 1-21 odd<br>3.1: 1-55 odd<br>3.2: 1-55 odd<br>3.3: 1-41 odd |
| 9 | October 11 | 4.1: Exponential Functions<br>4.2: The Exponential Function $e^x$<br>4.3: Differentiation of Exponential Functions | 4.1: 1-43 odd<br>4.2: 1-45 odd<br>4.3: 1-39 odd |
| 10 | October 18 | 4.4: The Natural Logarithm Function<br>4.5: The Derivative of $ln(x)$<br>4.6: Properties of the Natural Logarithm Function | 4.4: 1-45 odd<br>4.5: 1-33 odd<br>4.6: 1-41 odd |
| 11 | October 25 | *Monday: Quiz #2*<br>5.1: Exponential Growth and Decay<br>5.2: Compound Interest<br>5.3: Applications of the Natural Logarithm Function to Economics | 5.1: 1-37 odd<br>5.2: 1-25 odd<br>5.3: 1-29 odd |
| 12 | November 1 | 6.1: Antidifferentiation | 6.1: 1-65 odd |

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|---|---|---|---|
| | | 6.2: The Definite Integral and Net Change of a Function<br>*Wednesday: Review* | 6.2: 1-41 odd |
| 13 | November 8 | *Monday: Exam #2*<br>*Wednesday: NO CLASS* | |
| 14 | November 15 | 6.3: The Definite Integral and Area under a Graph<br>6.4: Areas in the xy-Plane<br>6.5: Applications of the Definite Integral | 6.3: 1-43 odd<br>6.4: 1-45 odd<br>6.5: 1-25 odd |
| 15 | November 22 | 7.1: Examples of Functions of Several Variables<br>7.2: Partial Derivatives<br>7.3: Maxima and Minima of Functions of Several Variables | 7.1: 1-25 odd<br>7.2: 1-33 odd<br>7.3: 1-51 odd |
| 16 | November 29 | *Monday: Quiz #3*<br>9.1: Integration by Substitution<br>9.3: Evaluation of Definite Integrals<br>9.5: Some Applications of the Integral | 9.1: 1-33 odd<br>9.3: 1-15 odd<br>9.5: 1-11 odd |
| 17 | December 6 | *Review* | |
| Finals | December 13 | *Final Exam Wednesday, December 15, 7:00 AM - 9:45 AM* | |