# **Syllabus/Course Outline**

# ***RCC Mathematics Department***

# ***MTH251- Calculus I (Differential Calculus), 5 credits***

# ***2023/2024***

**Instructor:** Your name

**Email:** Your email

**Phone:** Your phone number

**High School:** Your high school name

**Length of RCC Course:**

**LECTURE PORTION**: A required State minimum of (40) and a standard RCC delivery of

(44) lecture hours

**LECTURE/LAB PORTION**: A required state minimum of (20) and a standard RCC delivery of (22) lecture/lab hours

**Length of HS Course:**Length of your course (ie. Semesters, trimesters, etc.) If it takes 1 or

2 semesters to earn the RCC credit, please explain that here

**Prerequisites:** [MTH111](http://www.roguecc.edu/Schedule/?coursenumber=MTH111) and [MTH112](http://www.roguecc.edu/Schedule/?coursenumber=MTH112) or designated placement scores

# **Course Description**

First course in the calculus sequence for science, mathematics, and engineering students. Topics include limits, differentiation, extrema, related rates, optimization problems, and other basic applications of differentiation.

# **Required texts**

List required textbooks here

# **Other materials/supplies**

List any other required materials or supplies

# **Institutional Learning Outcomes**

Institutional Learning Outcomes (ILOs) are skills that will contribute to your success in life beyond RCC. Rogue’s ILOs are: Communication, Critical Thinking, Equity, Diversity, Inclusion, and Global Consciousness, Information Literacy, and Quantitative Literacy and Reasoning. Why are they important? Employers call these soft skills or employability skills. They may help you get and keep a job. These are skills that will help you complete a 4-year degree. They are skills for success in your life as a family member, worker, citizen, life-long learner, and more.

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| **Communication (COM)** | Students will engage in effective communication using active reading and listening skills and expressing ideas appropriately in oral, written, and visual work. |
| **Critical Thinking (CT)** | Students will explore, reach, and support appropriate conclusions through the analysis, synthesis, and evaluation of information and varying opinions. |
| **Equity, Diversity, Inclusion and Global Consciousness (EDI & GC)** | Students will recognize and identify equity, diversity, inclusion and global consciousness as it applies to people and the world today. |
| **Information Literacy (IL)** | Students will identify an information need and locate, evaluate, and use information effectively and ethically. |
| **Quantitative Literacy and Reasoning (QL & R)** | Students will reason through and solve quantitative problems by collecting and interpreting data, and applying mathematical/statistical techniques. |

# **Course Learning Outcomes**

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| **Course Learning Outcomes** | **ILO Key Indicators** |
| 1. Demonstrate how to find an equation from a function that determines slope using the definition of a derivative. |  |
| 2. Find a derivative for a function using the power, product, quotient, chain, and implicit differentiation rules. |  |
| 3. Apply the concept of rate of change in application problems. | Quantitative Literacy & Reasoning |
| 4. Apply derivatives to create and understand graphs. |  |
| 5. Demonstrate an understanding of the concept of a limit. |  |

# **Learning Experiences**

*Describe what activities the students will engage in during class and outside of class to contribute to their learning; some examples: lecture, small-group work, reading, research, role play, etc.*

# **Grading Information**

*Include a description of the criteria for grading and the assessments that will comprise the grade for the course. Also include a statement about when students can expect to receive feedback on assignments, papers, tests, etc.*

# **RCC Math Department Grading Policies for College Now**

1. All students receiving College Now credit for a math class must take the RCC final exam for that class.
2. RCC Grade Weighting: The RCC grade students receive for any of the College Now math courses must be weighted as 60% for the grade in the high school course and 40% for the corresponding RCC final exam.
3. Classes are graded A, B, C, D, F.
4. No tests can be retaken for the RCC grade that you receive for this class.
5. Courses taken for college credit will appear on a student’s permanent college transcript and will show the grade earned.

# **EXPECTATIONS FOR STUDENTS**

*Include any statements of expectations regarding homework, late work, etc.*

# **Attendance**

*Describe your policy on attendance and the consequences of missing class.*

* **Withdrawal from class:** A student may withdraw from a College Now class according to the schedule found on the College Now website:  <https://www.roguecc.edu/collegeNow/dualCredit_AcaCalendar.asp>. A grade of W will be assigned.  Students should be aware that withdrawing from a course may impact financial aid when they attend college after high school. To read about the impact withdrawing may have, please visit: <https://www.roguecc.edu/enrollmentServices/sap.asp>

# **Academic Integrity**

Academic Integrity is expected for all students at RCC. Learning is built on the qualities of honesty, fairness, respect, and trust. At RCC, academic integrity is a shared endeavor characterized by truth, personal responsibility, and high academic standards. An important aspect of academic integrity is academic honesty. Violations of academic honesty include, but are not limited to: plagiarism, collusion, inappropriate assistance, cheating, fabrication, falsification, alteration, unauthorized multiple submission, sabotage, tampering*, and sharing classroom documents, including test items, with other students or with online platforms*. All acts of academic dishonesty are regarded as serious offenses. Students who violate academic honesty or academic integrity will be subject to disciplinary action. Instructors have the right to act on any suspected acts of academic dishonesty. Depending on the nature of the offense, serious penalties may be imposed, ranging for loss of points to expulsion from the class or college.

# **Classroom Behavior**

Expectations for classroom behavior are outlined in the Standards of Student Conduct, available in the catalog, schedule, and online. Students may not engage in any activity which the instructor deems disruptive or counterproductive to the goals of the class. Instructors have the right to remove students from class for not following the Standards of Student Conduct or other specified classroom rules. Expectations for behavior in online classes are similar to what is required in the classroom.

**Student Evaluations of this Course**  
Students enrolled in College Now courses will receive a course evaluation to complete towards the end of the term for the courses they are enrolled in. The course evaluations are anonymous and will provide valuable feedback to RCC about your experiences in, and your impressions of, the course.

# **Access and Disability Resources**

High schools and colleges operate under different guidelines for students with disabilities. Students enrolled in RCC’s various dual credit programs must meet the college requirements to be eligible for the college credit. Reasonable adjustments in teaching methods and/or assessment delivery that do not alter the essential content of a course may be possible, but all students must meet the student learning outcomes and the assessment rigor of the course to be eligible for college credit.

Services for students who experience disabilities:

* High school students taking College Now classes taught by high school teachers at the high school are to work with their high school for accommodations or adjustments.
* High school students who also take RCC courses at an RCC campus should contact RCC’s Access Office.

Redwood Campus

Phone: 541-956-7337; Oregon Relay Service: 7-1-1

Riverside and Table Rock Campuses

Phone: 541-956-7337; Oregon Relay Service: 7-1-1

For more information, go to Access and Disability Resources: <https://web.roguecc.edu/disability-services> or email [AccessOffice@roguecc.edu](mailto:AccessOffice@roguecc.edu).

# **Discrimination, Harassment and Sexual Violence Policies**

Rogue Community College does not discriminate in any programs, activities, or employment practices on the basis of race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, gender identity, marital status, veteran status, disability, age, pregnancy, or any other status protected under applicable federal, state, or local laws.

RCC is committed to providing an academic and work environment free from all forms of discrimination and harassment. In accordance with federal and state law, RCC prohibits illegal discrimination and harassment, works to inform individuals of their right to be free from such behaviors, and promotes the safety of all at College sites and activities. RCC’s prohibition includes all forms of sex discrimination--including instances of sexual harassment such as sexual assault, domestic violence, gender-based stalking, and sexual violence--which are also prohibited by Title IX of the Education Amendments of 1972.

For further policy information and for a full list of regulatory specific contact persons visit the following webpage: <http://www.roguecc.edu/nondiscrimination>

For further information regarding Title IX at RCC, go to <https://www.roguecc.edu/titleIX>/

# **Student Handbook**

Students should read and understand the Dual Credit Handbook for Students. There is important information covering many topics and most questions will be answered by reviewing this handbook. <https://www.roguecc.edu/HS/Handbooks/StudentHandbook.pdf>

# **Important RCC College Now Dates and Times**

The deadline to add a class, withdraw from a class, term end/start dates, and the dates grades are available are listed at <https://www.roguecc.edu/collegeNow/dualCredit_AcaCalendar.asp>

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| **Tutoring Center** Tutoring Centers provide free tutoring service if you are registered in credit courses at Rogue Community College. The primary areas of tutoring are math, writing and science; however, tutors are prepared to cover most subjects. There is also online tutoring available. Please visit the tutoring center webpage for more details:  <https://www.roguecc.edu/dept/academicSuccess/tutor.asp> |

# **Course Outline**

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| **Week** | ***Chapter(s)*** | ***Assignment*** |
| Week 1 |  |  |
| Week 2 |  |  |
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**\*\*Additionally, all students must complete a Rogue Community College Course Evaluation for the class. \*\***

# **TYPICAL COURSE OUTLINE:**

# **Computer Usage**

Fundamentals of computer operation

Basic mathematical functions using a computer algebra system

# **Functions and Models**

Four Ways to Represent a Function

Mathematical Models: A Catalog of Essential Functions

New Functions from Old Functions

Graphing Calculators and Computers

Exponential Functions

Inverse Functions and Logarithms

# **Limits and Derivatives**

The Tangent and Velocity Problems

The Limit of a Function

Calculating Limits Using the Limit Laws

The Precise Definition of a Limit

Continuity

Limits at Infinity; Horizontal Asymptotes

Tangents, Velocities, and other Rates of Change

Derivatives

The Derivative as a Function

# **Differentiation Rules**

Derivatives of Polynomials Exponential Functions

The Product and Quotient Rules

Rates of Change in the Natural and Social Sciences

Derivatives of Trigonometric Functions

The Chain Rule

Implicit Differentiation

Higher Derivatives

Derivatives of Logarithmic Functions

Hyperbolic Functions

Related Rates

Linear Approximations and Differentials

# **Applications of Differentiation**

Maximum and Minimum Values

The Mean Value Theorem

How Derivatives Affect the Shape of a Graph

Indeterminate Forms and L’Hospital’s Rule

Summary of Curve Sketching

Graphing with Calculus and Calculators

Optimization Problems

Applications to Business and Economics

Newton’s Method

Antiderivatives