**USM Catalog Description:** MAT 114 Calculus for the Arts and Engineering 3 hrs. Prerequisite: Math ACT ≥ 24 or a grade of C or better in MAT 101. An introduction to differential and integral calculus, with applications to the arts and life sciences

**Contact Information**
- Name: Anup Raja Lamichhane
- Office: SH 207
- Email: anup.lamichhane@eagles.usm.edu
- webpage: www.math.usm.edu/lamichhane

**Office Hours**
- Mon./Wed. 10:00 - 11:00
- Tues./Thurs. 3:00 - 4:00
  *Email in advance for alternative meeting times.

**Course Requirements**
- Prerequisite: Math ACT ≥ 24 or a grade of C or better in MAT 101.

**Course Details**
- Time: MWF 11:00 - 11:50
- Location: Southern Hall 304
- Credit Hours: 3

**Important Deadlines**
- Last day to add/drop without Academic/Financial Penalty: Tuesday, January 20
- Last day to withdraw from the University and receive a grade of W: Wednesday, April 1

**Course Assessment**
Course assessment for this course will take the following forms:
- Homework assignments: Assignments will be given over all material covered. Assignments can be found at the course webpage http://www.math.usm.edu/lamichhane/MAT114/MAT114.html.
- In-class activities: These consist of either in-class group work, or quizzes.
- There will be four unit tests

**Exam Information**
- The student will be notified of test dates in class.
- Tests will be given during the course of a normal class session (same location and time).
- The final is comprehensive, covering all material
  - Final Exam: Wednesday, May 6 from 10:45 am to 1:15 p.m.

**Course Outline**
The intended course material is the following:
- Chapter 2: 1-3
- Chapter 3: 1-5
- Chapter 4: 1-7
- Chapter 5: 1-6
- Chapter 6: 1-3

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1 This is the last day to receive 100% refund (no tuition credit issued after this date) and drop the classes without instructor permission
2 Between January 21-April 1, all approved drops will result in grade of W
Course Grading

The formula used to calculate your final grade is the following:

\[
\text{Course Percentage} = 0.1(\text{In-class Avg.}) + 0.1(\text{Hwk Avg}) + 0.6(\text{Exam Avg}) + 0.2(\text{Final Exam})
\]

Remember that in calculating the Exam average, the final exam may replace a lower test score.

For a course percentage of \( x \), the final grade assigned will be the following:

\[
\text{Final Grade} = \begin{cases} 
A & \text{ if } x \geq 90 \\
B & \text{ if } 90 > x \geq 80 \\
C & \text{ if } 80 > x \geq 70 \\
D & \text{ if } 70 > x \geq 60 \\
F & \text{ if } x < 60
\end{cases}
\]

Course Policies

- Class attendance and participation are necessary. Most class sessions will cover an entire section from the book. The material in most cases is cumulative, which means early gaps in understanding can cause real difficulties at the end of the class.
- Late work will not be accepted, except in the event of a University approved absence. Please be sure to work all homework, because in many cases, working problems is where the best understanding comes.
- Tests should be taken on or before the prescribed time. In the event that there is a University approved absence for the date in question, the student is responsible for arranging an earlier, alternate testing time. If a test is missed without arrangement, the final automatically replaces this grade.
- Any student engaged in using a cell phone/computer/etc. for activities unrelated to the current class discussion will be asked to continue outside of the classroom.

Academic Honesty

The following is from the USM Undergraduate Bulletin:

“When cheating is discovered, the faculty member may give the student an F on the work involved or in the course. If further disciplinary action is deemed appropriate, the student should be reported to the Dean of Students. In addition to being a violation of academic honesty, cheating violates the Code of Student Conduct and may be grounds for probation, suspension, and/or expulsion.

Students on disciplinary suspension may not enroll in any courses offered by The University of Southern Mississippi.”

ADA Policy

If a student has a disability that qualifies under the American with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:
The University of Southern Mississippi
Office for Disability Accommodations
118 College Drive # 8586
Hattiesburg, MS 39406-0001
Voice Telephone: (601) 266-5024 or (228) 214-3232
Fax: (601) 266-6035

Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.
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Course Level Learning Objectives

This represents the big goals of the course.

(1) Students will compute limits, derivatives, and integrals using basic concepts of calculus and algebra.
(2) Students will analyze functions using limits, derivatives, and integrals.
(3) Students will construct models of situations in the life sciences in which techniques from calculus can be applied.
(4) Students will apply calculus tools to applied problems, and gain real-life insights from the solutions.
(5) Students will communicate mathematics with mathematical precision.

In addition to course level learning objectives, the following represents a detailed list of required prerequisite skills, as well as unit level objectives.

Specific skill sets

Prerequisites (Scaffolded skills)

The following description gives a list of the objectives that you are expected to have achieved prior to enrolling in this course, and will be expected to demonstrate proficiency in.

For the purposes of a shorter list, the fundamental functions are defined to be linear, quadratic, (higher order) polynomials, radical, rational, exponential, and logarithmic functions.

(1) Given a graph or description, the student can discriminate between relations that are functions, and relations that are not.
(2) The student can compare, contrast, identify, and define the fundamental functions.
(3) The student can apply algebraic rules to simplify expressions and solve equations in a single variable involving any of the fundamental functions.
(4) The student can describe the domain and range of a fundamental function.
(5) Given two points, the student can determine the equation of a line.
(6) Given the description of a linear, quadratic or piecewise (with linear/quadratic pieces) function, the student can provide the graph of the function without the use of technology.
(7) The student can translate information about factors of a polynomial to information about its graph.
(8) Given a function description \( f(x) \), the student can determine \( f(a) \) where \( a \) may be an expression.
   (such as \( a = x + h \)).