Math 2414 is designed to enable students to become proficient in the
differentiation and integration of transcendental functions, techniques of
integration, and applications of the definite integral. Prerequisite: Math 2413.

Text, References, and Supplies:
Calculus with Analytic Geometry, Eighth Edition
Ron Larson, Robert P. Hostetler, Bruce H. Edwards
Houghton Mifflin Company

A scientific calculator is needed. NO
GRAPHING/PROGRAMMABLE CALCULATORS!

Course Goals/ Objectives:
After successful completion of this course students will be able to use
appropriate calculus terminology, and work problems in differentiation,
integration, applications, and techniques of integration.

Student Contributions, and Class Policies:
Students are expected to attend class regularly; they may be dropped if
they have more than six absences in a three-day a week class, or more
than four absences in a two-day a week class, or six total class hours.

Midland College does not tolerate scholastic dishonesty or academic
misconduct in any form. Please read the MC Student Handbook on this
subject.

Evaluation of Student:
Quizzes ....................... 0-10%
Tests ....................... 60-80%
Final .......................... 10-30%
Project/homework ........... 0-10%

The grade scale is in accordance with Midland College Faculty
Handbook.

Course Schedule:
We will cover Chapters 5.6 - 9 at a rate of about three sections per week.
See the attachment for a detailed schedule.
Intellectual Competencies:

1. Reading - Understanding the material incorporated in the text used in this course will require the student to analyze and interpret various mathematical concepts.

2. Listening - The primary teaching methods used in this course are discussion and lecture. Understanding the oral presentation of material will require the student to analyze and interpret various mathematical concepts.

3. Critical Thinking - Critical thinking, as exemplified by problem solving, is inherent in the study of any scientific discipline. Mathematical problems will be considered, discussed, and analyzed in this course.

ADA Statement:

Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact the instructor as soon as possible. These conditions may include documented physical or educational disabilities. Please be aware that services or accommodations are not automatic. Each student must request them and secure the proper authorizations.

Exemplary Objectives:

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<tr>
<th>Competency</th>
<th>Course Number</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>X X X X X X</td>
<td>MATH 2413 &amp; 2414 &amp; 2415</td>
<td>Calculus I &amp; II</td>
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Competencies:

4. To apply arithmetic, algebraic, geometric, higher-order thinking, and statistical methods to modeling and solving real-world situations.

5. To represent and evaluate basic mathematical information verbally, numerically, graphically and symbolically.

6. To expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments.

7. To use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of the results.

8. To interpret mathematical models such as formulas, graphs, tables and schematics and draw inferences from them.

To develop the view that mathematics is an evolving discipline, interrelated with human culture, and understanding its connections to the other disciplines.

Instructor Information:
Name:

Office:

Phone:

E-mail:

Hours:

Division Dean:
  Dr.
Margaret Wade,
125 SF,
685-4615

Division Secretary:
  Norma
Duran, 124 SF,
685-4612

renda Smith,
124 SF,
685-6413
Chapter 5: Logarithmic, Exponential, and Other Transcendental Functions
- 5.6 Inverse Trigonometric Functions: Differentiation
- 5.7 Inverse Trigonometric Functions: Integration
- 5.8 Hyperbolic Functions

Chapter 7 Applications of Integration
- 7.1 Area of a Region Between Two Curves
- 7.2 Volume: The Disk Method
- 7.3 Volume: The Shell Method
- **Section Project: Saturn**
- 7.4 Arc Length and Surfaces of Revolution
- 7.5 Work
- **Section Project: Tidal Energy**
- 7.6 Moments, Centers of Mass, and Centroids
- 7.7 Fluid Pressure and Fluid Force

Chapter 8 Integration Techniques, L'Hôpital's Rule, and Improper Integrals
- 8.1 Basic Integration Rules
- 8.2 Integration by Parts
- 8.3 Trigonometric Integrals
- **Section Project: Power Lines**
- 8.4 Trigonometric Substitution
- 8.5 Partial Fractions
- 8.6 Integration by Tables and Other Integration Techniques
- 8.7 Indeterminate Forms and L'Hôpital's Rule
- 8.8 Improper Integrals

Chapter 9 Infinite Series
- 9.1 Sequences
- 9.2 Series and Convergence
- **Section Project: Cantor's Disappearing Table**
- 9.3 The Integral Test and $p$-Series
- **Section Project: The Harmonic Series**
- 9.4 Comparisons of Series
- **Section Project: Solera Method**
- 9.5 Alternating Series
- 9.6 The Ratio and Root Tests
- 9.7 Taylor Polynomials and Approximations
- 9.8 Power Series
- 9.9 Representation of Functions by Power Series
- 9.10 Taylor and Maclaurin Series