**Course Purpose**
This course is designed to assist students to become informed, critical, and creative thinkers who communicate effectively. Students who successfully complete MAT 261 will meet general education goals and objectives as well as the course objectives.

**Catalogue Description**
Prerequisite: MAT 107 with a minimum grade of “C-” or a minimum score of 23 on the mathematics portion of the ACT or a minimum score of 550 on the mathematics portion of the SAT. Functions and graphs, differentiation, marginal costs, revenue and profit, integration, exponential and logarithmic functions, other applications. Credit will not be awarded to students who have credit for MAT 124 or MAT 124H or MAT 261. 3 credit hours. Gen. Ed. Blocks II, VII

**Required Textbook**

**General Education Goals and the Course**
This course contributes to the following EKU General Education goals.

Students will be able to
- Use appropriate methods of critical thinking and quantitative reasoning to examine issues and to identify solutions. (Goal two)
- Distinguish the methods that underlie the search for knowledge in the arts, humanities, natural sciences, history, and social and behavioral sciences. (Goal seven)
- Integrate knowledge that will deepen their understanding of, and will inform their own choices about, issues of personal and public importance. (Goal eight)

In particular, the General Education Objectives for achieving Goal two include the following:
1. Using mathematical methods to state and solve quantitative problems, including those stated in verbal form.
2. Using numerical and graphical data to make reasonable and valid conclusions.
3. Applying mathematical methods to real-life problems.

**Student Learning Outcomes**
Upon successfully completing MAT 261, the student will be able to:

I. Identify, evaluate, graph, and find roots of polynomial, piecewise, greatest integer, rational, exponential and logarithmic functions.

II. Select an appropriate function to model a situation.

III. Compute limits and discuss the continuity of polynomial, piecewise, greatest integer, rational, exponential and logarithmic functions.

IV. Differentiate polynomial, piecewise, rational, exponential, and logarithmic functions
   A. Use techniques of differentiation.
   B. Use differentiation to solve optimization problems.
   C. Apply differentiation to rates of change such as velocity, acceleration and population growth and other real-world situations.

V. Integrate polynomial, piecewise, rational, exponential and logarithmic functions.
   A. Use techniques of integration.
   B. Use integration to find the area under a curve and the area between two curves.
   C. Apply integration to motion problems, learning curves, and other real-world situations.

**Course Outline**
This course will cover Chapters 1 through 5 (5.5 may be omitted) of the required textbook. Selected topics from Chapter 6 may also be covered. Your instructor will provide a more detailed course outline in the syllabus addendum.
<table>
<thead>
<tr>
<th>Homework</th>
<th>Homework should be completed before the next class meeting unless otherwise specified by the instructor. <em>Students should expect to spend a minimum of two hours outside of class studying for each hour in class.</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance Policy</td>
<td>Students are expected to attend every class meeting and will be held responsible for announcements made in class. Absences in excess of 10% of the scheduled class meetings (either excused or unexcused) may result in a lower course grade.</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>The last day to drop this class is Friday, August 28, 2009. The last day to withdraw from this class is Friday, October 30, 2009.</td>
</tr>
<tr>
<td>Make-Up Test Policy</td>
<td>Students who miss a test will be allowed to make up the test, if the absence is excused. An acceptable excuse is a doctor’s excuse, a university excuse, or a catastrophic emergency resulting in unavoidable absence. There will be a single general comprehensive make-up exam given at the end of the term for those students missing an exam with an approved excuse.</td>
</tr>
<tr>
<td>Help Available</td>
<td>The Mathematics and Statistics Tutoring Center is located in Wallace 342, (859) 622-6508 V/TTY. This service includes tutoring, computer assisted instruction, videotape instruction, and instructional materials and is provided free of charge by the Department of Mathematics and Statistics. The staff will assist with homework completion, improving study skills, decreasing mathematics anxiety, and test preparation. Students are encouraged to take advantage of this facility. Current hours, locations, and phone numbers for the tutoring facilities on campus are found at <a href="http://www.advising.eku.edu/tutoring/hours/">http://www.advising.eku.edu/tutoring/hours/</a></td>
</tr>
<tr>
<td>Official E-mail</td>
<td>An official EKU e-mail is established for each registered student, each faculty member, and each staff member. All university communications sent via e-mail will be sent to this EKU e-mail address.</td>
</tr>
<tr>
<td>Services for Individuals with Disabilities</td>
<td>If you are registered with the Office of Services for Individuals with Disabilities, please obtain your accommodation letters from the OSID and present them to the course instructor to discuss any academic accommodations you need. If you believe you need accommodation and are not registered with the OSID, please contact the Office in the Student Services Building, Room 361, by email at <a href="mailto:disserv@eku.edu">disserv@eku.edu</a>, or by telephone at (859) 622-2933 V/TDD. Upon individual request, this syllabus can be made available in an alternative format.</td>
</tr>
</tbody>
</table>
| Grading Policy | In accordance with department policy, grades will not be posted nor given out over the telephone. Mid-term grades will be viewable online (EKUDirect/Student Services/Midterm Grades) on October 17, 2009. There will be three unit exams given over the term (tentative dates below) each worth 100 points each. There will be approximately six quizzes worth a total of 50 points. There will be a comprehensive final exam worth 150 points. Course grades will based on the percentage correct from the 500 total points using the grading shown below.  

| %  |  |  |  |  |  |  |
|---|---|---|---|---|---|
| Grade | F | D | C | B | A |
| < 60 | 60 - 69 | 70 - 79 | 80 - 89 | 90 - 100 |

| Academic Honesty and Responsibility | 1. Anyone violating the usual standards for academic honesty, for example, anyone attempting to obtain or exchange information regarding any quiz or test, or anyone using a fraudulent excuse to qualify for a make-up, may receive a course grade of 'F'.  
2. Anyone behaving in a disruptive manner or refusing to follow the usual standards for academic behavior may be barred from attending class and may receive a course grade of 'F'.  
3. Students are advised that EKU’s Academic Integrity policy will be strictly enforced in this course. The Academic Integrity policy is available at www.academicintegrity.eku.edu. Questions regarding the policy may be directed to the Office of Academic Integrity. |
Department Policies

• During class, cell phones and pagers must be turned off or set to a silent mode.
• During resource-limited activities, such as in-class exams, students may not use the calculator function of a wireless communication device such as a cell phone or PDA.
• Any student enrolling in a multiple section course for which s/he has already received a grade of "D", "F", or "W" from the instructor who is teaching the section may change to a section taught by a different instructor by seeing the Chair of the Department of Mathematics and Statistics. This change must be completed by the end of the drop/add period.

If you need further information concerning this course, please contact your instructor or the MAT 261 Coordinator, Dr. Margaret Yoder (Wallace 306 or margaret.yoder@eku.edu).

Tentative Schedule – Fall 2009

Chapter 1 – Functions, Graphs, and Limits: Aug 24th -> Sep 8th
Chapter 2 -- Differentiation: Basic Concepts Sep 10th -> Oct 6th
Chapter 3 – Additional Applications of the Derivative: Oct 8th -> Oct 27th
Chapter 4 – Exponential and Logarithmic Functions: Nov 3rd -> Nov 10th
Chapter 5 – Integration: Nov 12th -> Dec 1st
Chapter 6 – Additional Topics in Integration: Dec 8th -> Dec 10th

Unit Exams: Sept 24th, Oct 29th, Dec 3rd (100 points each)

Comprehensive Final Exam : Tuesday, December 15, 2009 // 10:30 am - 12:30 pm (150 points)

Homework

Chapter 1 – Functions, Graphs, and Limits
pp 91-95: 1-18 all, 60, 61, 62, 64
pp 86-89: 1-9 odd, 17-37 odd
pp 73-77: 1-35 odd, 42, 43, 44

Chapter 2 -- Differentiation: Basic Concepts
pp 112-116: 1-31 odd, 35, 37
pp 138-142: 1-47 odd
pp 175-179: 1,5,9,13, ..., 33
pp 125-129: 1-49 odd
pp 151-156: 1-43 odd, 47, 50, 56, 59-64 all

Chapter 3 – Additional Applications of the Derivative
pp 202-207: 3, 5-8 all, 9-33 odd, 42, 45-48 all
pp 234-239: 9, 13, 33-42 all
pp 220-224: 5-33 odd, 39, 43, 45, 47
pp 270-276: 7, 16, 17, 23, 26, 34, 37, 41

Chapter 4 – Exponential and Logarithmic Functions
pp 303-308: 9-27 odd, 29-34 all
pp 335-339: 1-55 odd
pp 320-325: 9-27 odd,
pp 350-356: 5-20 all

Chapter 5 – Integration
pp 381-384: 1-29 odd, 33-39 odd
pp 410-414: 5-41 odd
pp 394-397: 3-39 odd
Additional Application Problems

Chapter 6 – Additional Topics in Integration
pp 486 – 490: 1-37 odd
pp 534-540: 1-13 odd