Methods of Calculus (MAC 2233)  
Course Syllabus  
CRN: 51443  
Summer 2015—1st part of term 5/11/15 to 6/22/15

<table>
<thead>
<tr>
<th>Instructor: Bal K. Khadka</th>
<th>Contact: 561-297-1344</th>
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</thead>
<tbody>
<tr>
<td>Email: <a href="mailto:bkhadka@fau.edu">bkhadka@fau.edu</a></td>
<td>Office: Math Learning Center, GS 211</td>
</tr>
<tr>
<td>Class Time: M &amp; W 10:30 am to 12:40 pm in GS 115</td>
<td>Office Hour: W 1 - 5 pm and F 1 - 3 pm at GS 211</td>
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<tr>
<td>Lab: Friday 10:30 am to 12:40 pm in SO 200</td>
<td>MLC Hour: R 1-5 pm at GS 211</td>
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Credits: 3 credit hours

Course Description: A descriptive and intuitive introduction to the methods and applications of differentiation and integration. This course is primarily for social science and business administration majors. This is a General Education course and counts toward the Gordon Rule computational requirement.

Prerequisite: College Algebra (MAC 1105) or equivalent, with a minimum grade of C, or a minimum score of 40 on the ALEKS placement test. Exam 1 essentially covers College Algebra material. Doing well here indicates you should be prepared for the course. HW 0.1 to 0.6 are review assignments. If you do not do well on Exam 1, consider dropping and enrolling in a preparatory course.

Textbook: Brief Calculus and its Applications, 13th Edition, by L.J. Goldstein, D.C. Lay, D.I. Schneider, and N.H. Asmar. Only the online version is required and is available on MyMathLab (abbreviated MML) (also listed under Multimedia Library), although some students may prefer to buy the hard copy anyway. Online access to the text and other information is via MML (and access to MML is via BlackBoard). Please see INFORMATION ABOUT MML before buying the textbook in order to explore the different options available to you.

Course Objectives: Students will be introduced to a description of the basic methods of differential and integral calculus, together with illustrations and applications to business and the life and social sciences. Upon successful completion of the course, the students will:

- Define the equation of the tangent line to the curve at a point
- Calculate limits
- Distinguish between continuity and differentiability
- Calculate derivatives
- Identify relative and absolute extremum
- Identify where a function is increasing/decreasing
- Identify where a function is concave up/concave down and has an inflection point(s)
- Sketch graphs
- Solve optimization problems
- Interpret and validate results for optimization problems
- Demonstrate implicit differentiation techniques
- Solve problems in related rates
- Interpret and validate results in related rates
- Discover the exponential and natural logarithm properties
- Solve problems in exponential growth and decay
- Interpret and validate problems in exponential growth and decay
- Calculate Riemann sums
- Interpret results of Riemann sums
- Calculate antiderivatives
- Calculate the area between curves in the xy-plane
- Calculate the average value of a function
- Evaluate functions of several variables
- Calculate partial derivatives

**Modules Objectives/Evaluation:**

*Chapter 0 (Review).* Functions: By the end of the module on Functions, students will be able to do the following:
  1. Apply the quadratic formula
  2. Factor polynomials
  3. Evaluate functions including exponents
  4. Construct functions and graphs for applications
Assessment by homework, weekly quizzes, and end-of-module proctored examination.

*Chapter 1. The Derivative.* By the end of the module on The Derivative, students will be able to do the following:
  1. Compute limits
  2. Compute derivatives
  3. Apply the derivative to evaluate rate of change
Assessment by homework, weekly quizzes, and end-of-module proctored examination.

*Chapter 2. Applications of the Derivative.* By the end of the module on Applications of the Derivative, students will be able to do the following:
  1. Sketch/Graph curves and identify important properties about them
  2. Determine the relative and absolute extreme values of a function
  3. Solve applied optimization word problems
Assessment by homework, weekly quizzes, and end-of-module proctored examination.

*Chapter 3. Techniques of Differentiation.* By the end of the module on Techniques of Differentiation, students will be able to do the following:
  1. Apply multiple differentiation techniques
  2. Solve problems in related rates and interpret results
Assessment by homework, weekly quizzes, and end-of-module proctored examination.

*Chapter 4. The Exponential and Natural Logarithm Functions.* By the end of the module on The Exponential and Natural Logarithm Functions, students will be able to do the following:
  1. Differentiate exponential functions
  2. Differentiate natural logarithm functions
Assessment by homework, weekly quizzes, and end-of-module proctored examination.

*Chapter 5. Applications of the Exponential and Natural Logarithm Functions.* By the end of the module on Applications of the Exponential and Natural Logarithm Functions, students will be able to do the following:
  1. Solving problems in exponential growth and decay
  2. Solving problems involving compound interest
Assessment by homework, weekly quizzes, and end-of-module proctored examination.

*Chapter 6. The Definite Integral.* By the end of the module on The Definite Integral, students will be able to do the following:
  1. Determine antiderivatives
2. Find areas under curves
3. Use the fundamental theorem of calculus

Assessment by homework, weekly quizzes, and end-of-module proctored examination.

Chapter 7. Functions of Several Variables: By the end of the module on Functions of Several Variables, students will be able to do the following:
1. Evaluate functions of several variables
2. Evaluate partial derivatives of such functions and applications

Assessment by homework, weekly quizzes, and end-of-module proctored examination.

You are responsible for all the material assigned in homework and in the text – even if this material is not covered in the lecture videos. I assume students will read and study the text and the examples in the text, complete all homework assignments as soon as possible, ask for help when needed, and study for exams. Reading and understanding the material before viewing the lecture videos indeed helps as you will be more familiar with the terminology being used and have some idea of what is coming and locate the hard spots.

FREE MATH TUTORING for FAU students!!

The Math Learning Center (MLC), located in GS211, is staffed by graduate students (and instructors) in mathematics and undergraduate students. The MLC provides the following FREE academic support services for FAU students:

1) Drop-in tutoring during all hours of operation
   Monday – Thursday: 10am – 5pm
   Friday: 10am – 4pm

2) Small group tutoring by appointment
   Email mlc@sci.fau.edu OR see the Assistant Director in GS211E

3) eTutoring (remote online tutoring)
   Find the schedule at www.math.fau.edu/MLC/remote/

4) Review sessions
   Find announcements at www.math.fau.edu/MLC for face to face reviews
   Find announcements at www.math.fau.edu/MLC/remote/ for online reviews

5) Succeed At Methods: See your SAM Specialist at the MLC
   Additional homework help for Methods of Calculus is available in computer lab GS207
   Monday – Friday: 1pm – 5pm

IFP General Education Outcomes:
1. Knowledge in several different disciplines
2. Ability to think critically
3. Ability to communicate effectively
4. Appreciation for how knowledge is discovered, challenged, and transformed as it advances
5. Understanding of ethics and ethical behavior

**General Education:** This course satisfies, in part, the general education requirements for Foundations of Mathematics and Quantitative Reasoning. See http://science.fau.edu/student_services/student_info_gen_edu.php

**Required Technical Skills:** Student should be familiar with BlackBoard and use of browsers and installing downloads. Issues with the use of systems can be handled by the FAU Office of Information Technology at www.fau.edu/helpdesk or for MML at http://fau.mylabsplus.com/index.learn?action=support.

**Technical Resolution Policy:** In the online environment, there is always a possibility of technical issues (i.e., lost connection, hardware or software failure). Many of these can be resolved relatively quickly, but if you wait until the last minute before due dates, the chances of these glitches affecting your success are greatly increased. Please plan appropriately. If a problem occurs, it is essential you take immediate action to document the issue so your instructor can verify and take appropriate action to resolve the problem. Please take the following steps when a problem occurs:

1. If you can, make a Print Screen of the monitor when the problem occurs. Save the Print Screen as a .jpg file. If you are unfamiliar with creating a Print Screen file, visit http://en.kioskea.net/faq/141-print-screen-screen-capture-windows-mac-os-x-and-unix-linux.
2. Complete a Help Desk ticket at http://www.fau.edu/helpdesk. Make sure you complete the form entirely and give a full description of your problem so the Help Desk staff will have the pertinent information in order to assist you properly. This includes:
   a. Select “BlackBoard” for the Ticket Type.
   b. Input the Course ID.
   c. In the Summary/Additional Details section, include your operating system, Internet browser, and Internet service provider (ISP).
   d. Attach the Print Screen file, if available.
3. Send a message within BlackBoard to your instructor to notify her of the problem. Include all pertinent information of the incident (2b-d above).
4. If you do not have access to BlackBoard, send an email to your instructor with all pertinent information of the incident (2b-d above).
5. If you do not hear back from the Help Desk or your instructor within a timely manner (48 hours), it is your responsibility to follow up with the appropriate person until a resolution is obtained.

**My MathLabs:** Access to the text and other information is under MML – see Information about MML and Temporary Access to MML before buying the textbook. Once you buy the “code” or select temporary access you will automatically be added to the MML list. You will access MML through BlackBoard (http://bb.fau.edu). The first time you do this, you should see the license agreement. Once you are registered, you will continue to access MML through BlackBoard. If you experience any technical difficulty with MML, please address your inquiry to “technical support” (not to me) and always ask for (and write down) the “incident number” as that is the best way to track the status of the problem. Please be informed that students will NOT be able to access MML until the start of the semester. However, you should access your course and the Home Page of it on BlackBoard, which shows the link to MML. Instructions are available when the schedule is activated.

**Computer Labs:** Many rooms on campus have software installed to run MML. See http://www.fau.edu/oit/labs/open_labs/.

**Attendance Policy:** Attendance is required. It is understood that you have chosen this section because the exams and final exam do not interfere with your other activities. All lectures and assignments and HW and the dates of all exams
and final are posted at the start of this term. There will be no makeups or extensions. When you login to Bb or MLP or Adobe Connect or Bb Collaborate, you need to use your FAU email id. **I will check for attendance.**

**Make-up Exams/Quizzes:** There will be NO make-up exams or quizzes. Exams cannot be taken either earlier or later than the scheduled dates. Any missed exam or quiz will be graded as a zero.

**Homework:** Exercises will be assigned and graded in MML. Homework assignments have a due date and time, so students should pay close attention to both date and time. **No extensions due for any reason.** Schedule changes will be announced in class. It is the student’s responsibility to be aware of any schedule changes announced by the instructor. As mentioned above, please use “Ask My Instructor” to receive personalized help any problem giving you trouble. Send a copy of your work. I do not just send answers. You have 3 tries on each HW problem. There is no HELP ME SOLVE this or VIEW AN EXAMPLE for the HW. I have found that these functions do not promote learning but rather memorizing. **If this is not acceptable to you, this course is not the one you should take.** Read the book, see the recorded lecture videos, and look at the study plan in MLP where there are some VIEW AN EXAMPLE.

**Calculators:** Are required for some calculations, so make sure you know how to use your calculator’s functions correctly. **However, neither graphing calculators nor programmable calculators are allowed in the exams. You may not use a cell phone or any other electronic device as a calculator during the exams, nor is the sharing of calculators permitted.**

**Exams:** There will be 5 midterm exams and a comprehensive final exam

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Chapter Details</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>May 15</td>
<td>Chapter 0 all sections and HW 0.1 to 0.6</td>
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<tr>
<td>Exam 2</td>
<td>May 22</td>
<td>Chapters 1 all sections and HW 1.1 to 1.8</td>
</tr>
<tr>
<td>Exam 3</td>
<td>May 29</td>
<td>Chapters 2 and 3 all sections and HW 2.1 to 2.7 and HW 3.1 to 3.3</td>
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<tr>
<td>Exam 4</td>
<td>June 5</td>
<td>Chapter 4 all sections and Chapter 5 sections 5.1 and 5.2 and HW 4.1 to 4.6 and HW 5.1 and 5.2</td>
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<tr>
<td>Exam 5</td>
<td>June 12</td>
<td>Chapter 6 all sections and Chapter 7 sections 7.1 to 7.3 and HW 6.1 to 6.5 and HW 7.1-7.3</td>
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<tr>
<td>Final Exam</td>
<td>June 19</td>
<td>Comprehensive—All covered chapter and all HW</td>
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**Course Grade:** No homework, exam, or quiz grades will be dropped. Grades will be maintained in MLP. Please check your grades regularly and notify me immediately should there be a discrepancy. Grades are weighted as follows:

<table>
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<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>10%</td>
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<tr>
<td>Exam 2</td>
<td>10%</td>
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<tr>
<td>Exam 3</td>
<td>10%</td>
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<tr>
<td>Exam 4</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 5</td>
<td>10%</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
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Remember: **If you do not take the final, you will receive an F in the course.**

**Grading Scale:** Numerical grades will translate to the following letter grades:

<table>
<thead>
<tr>
<th>Percent Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>87-89</td>
<td>A-</td>
</tr>
<tr>
<td>83-86</td>
<td>B+</td>
</tr>
<tr>
<td>80-82</td>
<td>B</td>
</tr>
<tr>
<td>77-79</td>
<td>B-</td>
</tr>
<tr>
<td>73-76</td>
<td>C+</td>
</tr>
<tr>
<td>67-72</td>
<td>C</td>
</tr>
<tr>
<td>60-66</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
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**Academic Honesty:** Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic
dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001 at http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf.

**Students with Disabilities:** In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) and follow all OSD procedures. In Boca Raton, SU 133 (561.297.3880); in Davie, LA 240 (954.236.1222); or in Jupiter, SR 139 (561.779.8698). OSD website: [http://osd.fau.edu/](http://osd.fau.edu/).

**Important Notes—This May Help:**

- Sometimes the system may “lock” or “freeze” in MML or BlackBoard when attempting to access MML. The first thing to try is a different browser. While Chrome, Firefox, Internet Explorer, and Safari should all work, occasionally a recent update to a service will give what are apparently system error messages. If problems persist, then use the link for MML support or try the FAU Help Desk.
- Watch your email and postings on Bb or MLP for announcements including additional on-line material and reviews.
- Please use the “Ask My Instructor” button if you have questions. I expect that you have already put some thought into the problem you are asking about. Just saying I don’t know how to work it, or I don’t understand, or just help does not enable me to help you. Show or tell me what you have tried and where you are stuck. I want to help you.
- Some problems request an exact answer, e.g. PI. This is not 3.14 which is an approximation or 22/7. Some ask for a fraction which might mean 1/3 and not 0.33 which is an approximation. Remember a point in the plane has an x and a y coordinate; written (x, y). Ask if you have any questions.

This syllabus is subject to change at the discretion of the instructor. 
If the arrangements for this course are not suitable for your schedule, please select a section of the course that might meet your needs.