King Fahd University of Petroleum and Minerals  
Department of Mathematics and Statistics

SYLLABUS  
Semester I, 2010-2011 (101)  
Coordinator: Dr. Assane Lo

Course #: Math 201  
Title: Calculus III  
Course Description: Math 201 is a continuation of Math 101 (Calculus I) and Math 102 (Calculus II). These courses are designed as an introduction to the fundamental concepts of calculus and analytic geometry. The concepts studied in Math 201 include solid analytic geometry, vectors and surfaces, differentiation of functions of several variables and multiple integrals.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Sec. #</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sep. 25-29</td>
<td>10.1</td>
<td>Curves Defined by Parametric Equations</td>
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<td>10.2</td>
<td>Calculus with Parametric Curves</td>
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<tr>
<td>2</td>
<td>Oct 02-06</td>
<td>10.3</td>
<td>Polar Coordinates</td>
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<td>10.4</td>
<td>Areas and Lengths in Polar Coordinates</td>
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<td>3</td>
<td>Oct. 09-13</td>
<td>12.1</td>
<td>Three-Dimensional Coordinate Systems</td>
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<td>12.2</td>
<td>Vectors</td>
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<td></td>
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<td>12.3</td>
<td>The Dot Product</td>
</tr>
<tr>
<td>4</td>
<td>Oct. 16-20</td>
<td>12.4</td>
<td>The Cross Product + Exer. 43 p.793(End of Exam I Material)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.5</td>
<td>Equations of Lines and Planes</td>
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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Sec. #</th>
<th>Topics</th>
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<tbody>
<tr>
<td>5</td>
<td>Oct. 23-27</td>
<td>12.6</td>
<td>Cylinders and Quadric Surfaces</td>
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<td>14.1</td>
<td>Functions of Several Variables</td>
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<td>6</td>
<td>Oct. 30-Nov.3</td>
<td>14.1</td>
<td>Functions of Several Variable(Contd.)</td>
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<td>14.2</td>
<td>Limits and Continuity</td>
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<td>7</td>
<td>Nov. 06-10</td>
<td>14.3</td>
<td>Partial Derivatives</td>
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<td>14.4</td>
<td>Tangent Planes &amp; Linear Approximation</td>
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Nov. 11-Nov 21: Id al-Adha Vacation

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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Sec. #</th>
<th>Topics</th>
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<tr>
<td>8</td>
<td>Nov. 22-24</td>
<td>14.5</td>
<td>The Chain Rule</td>
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<td>14.6</td>
<td>Directional Derivatives and the Gradient Vector</td>
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<td>9</td>
<td>Nov. 27-Dec. 1st</td>
<td>14.7</td>
<td>Maximum and Minimum Values</td>
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<td>10</td>
<td>Dec. 04-08</td>
<td>14.8</td>
<td>Lagrange Multipliers (End of Exam II Material)</td>
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<td>15.1</td>
<td>Double Integrals over Rectangles</td>
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Exam II (25% / 100pts): Material [12.5-14.8] (Date will be announced later)

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<thead>
<tr>
<th>Week</th>
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<tr>
<td>11</td>
<td>Dec. 11-15</td>
<td>15.2</td>
<td>Iterated Integrals</td>
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<td>12</td>
<td>Dec. 18-22</td>
<td>15.3</td>
<td>Double Integrals over General Regions</td>
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<td>13</td>
<td>Dec. 25-29</td>
<td>15.4</td>
<td>Double Integrals in Polar Coordinates</td>
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<td>14</td>
<td>Jan. 01-05 (2011)</td>
<td>15.6</td>
<td>Triple Integrals</td>
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<td>Triple Integrals in Cylindrical Coordinates</td>
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<td>15</td>
<td>Jan. 08-12</td>
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<td>Triple Integrals in Spherical Coordinates</td>
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<td>16</td>
<td>Jan. 15-16</td>
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<td>Review/ Catch up</td>
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Final Exam (35% / 140pts): (Comprehensive MCQ) is scheduled on Saturday January 22, 2011 at 7:00 PM. The location will be announced later.

Class Work: (15% / 60pts). It is based on quizzes, homework, or other class activities determined by the instructor. All quizzes must be of written type and not of multiple choice type. The class-work average (x out of 60) of the sections taught by the same instructor should be in the interval [36, 45].
• KFUPM policy with respect to attendance (**lectures and recitations**) will be strictly enforced.
• The students are strongly urged to solve much more problems than the homework listed above.

Math 201, Semester 101

**Suggested Homework Problems**

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<tr>
<th>Sec. #</th>
<th>Suggested Homework Problems</th>
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