Basic Information

Course Title: Introduction to Calculus and Analytic Geometry II
Code: Math 111
Lecture: 3 Hours
3 Credits
Academic Level: Foundation Program
Term: Fall 2015-2016

Course description

This course will cover extreme values of a function, the mean value theorem, Rolle’s theorem and intermediate value theorem, curve sketching, linearization and differentials, Riemann sums and definite integrals with application to areas between curves, volume by slicing, lengths of plane curves, analytic geometry in space, parametric equations, vectors in the plane and in space, vector functions and their derivatives, dot and cross products.

Course Objectives

This course provides a continuation in calculus and analytic geometry for students with a weak background, and reinforces traditional calculus and analytic geometry approaches to give the student a better understanding of the mathematical concepts underlying them. Its goal is to prepare students to go on to more advanced mathematics. More precisely, it aims to teach the students the following topics:

1. Continuous and differentiable functions.
2. Application to derivatives.
3. Riemann sums and definite integrals.
5. Vectors.

Course Learning Outcomes

At the end of this course, the students should be able to:

1. Describe some concepts, definitions and theorems in calculus and analytic geometry.
2. Implement the theories in problem solving.
3. Identify, formulate and solve problems.
4. Consider problems that could be solved by applying appropriate theories, principles and concepts relevant to functions, continuity, derivatives, analytic geometry and vectors.

Schedule

<table>
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<tr>
<th>Week</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>Preliminaries: Trigonometric functions, Limits and continuity, Differentiation</td>
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<tr>
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<tr>
<td>3</td>
<td>Extreme values of a function. The mean value theorem, Rolle’s theorem and Intermediate value theorem.</td>
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</table>
4. The mean value theorem, Rolle’s theorem and Intermediate value theorem.

5. Curve sketching. + Quiz 1

6. Curve sketching + Riemann sums and definite integrals with application to areas between curves and lengths of plane curves.

7. Riemann sums and definite integrals with application to areas between curves and lengths of plane curves.

8. Analytic geometry in space.

9. Analytic geometry in space

10. Parametric equations + Quiz 2


12. Vectors in plane and space, vector functions and their derivatives, dot and cross product.

13. Vectors in plane and space, vector functions and their derivatives, dot and cross product.


15. Applications of vector products.

16. Final Exam

Student Assessment

Student Assessment Methods

| Quizzes: to assess the student skills in presenting facts, applications, theories and calculations. |
| Final-Term Examination: to assess the student skill in presenting facts, applications, theories and calculations. |

Assessment Schedule

| Week 5: 5th week Quiz |
| Week 10: 10th week Quiz |
| Week 16: Final-Term Examination |

Weighting of Assessments

| Quiz One | 30 |
| Quiz Two | 30 |
| Final-Term Examination | 40 |
| Total | 100 |

Policies

Attendance Policy: Attendance is mandatory.

Professionalism Policy: Mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

Grades of "Incomplete": The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed the next semester. Your instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished by the first week of the subsequent semester or the “I” will automatically be recorded as an “F” on your transcript.
Grades of "WF": As set by BAU regulations, and specified in Student Manual, students who miss more than one-fifth of the sessions of any course in the first ten weeks of the semester will be required to withdraw from the course with a grade of “WF”.

Academic Conduct Policy: Academic dishonesty in any form will not be tolerated. If you are uncertain as to what constitutes academic dishonesty. Violations of these rules will result in a record of the infraction being placed in your file and receiving a zero on the work in question AT A MINIMUM. At the instructor’s discretion, you may also receive a failing grade for the course. Confirmation of such incidents can also result in expulsion from the University.

List of References:

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<tr>
<th>Instructors</th>
<th>Office Hours</th>
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<tr>
<td>Dr. Hala Farouk Idriss</td>
<td>Monday 1:00 – 3:00, Tuesday 10:00 – 12:00 &amp; Wednesday 8:00 – 10:00</td>
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