Texas A&M University-Corpus Christi  
Department of Mathematics and Statistics  
MATH 1325.002/003 Business Calculus  
Fall 2014 (8/27 ~ 12/02/2014)

I. Course Information:

Instructor: Dr. Ping-Jung “Charlene” Tintera  
Office: CI-368  
Phone: 825-3483  
Class meeting: Math 1325.002 MW 3:30 ~ 4:45 pm OCNR-130  
Math 1325.003 M 7 ~ 9:30 pm CI-109  
Final Exam: Math 1325.002 12/10 (W) 1:45 ~ 4:45 pm OCNR-130  
Math 1325.003 12/08 (M) 7:15 ~ 9:45 pm CI-109  
Email: ptintera@tamucc.edu

II. Course description:

This is a non-traditional math course with applications in business. It involves group projects, oral presentations, and written reports, using Excel to solve math problems, and the use of Power Point and the equation editor in Word. We will develop the fundamentals of business calculus and optimization using technology. This includes Graphing Functions, Trend Lines, Demand, Revenue, Cost, and Profit, Differentiation (Rate of Change) and its applications, Using Solver, Integration (Area under the Curve) and its application, Normal Distributions, Marketing Analysis, Distributions in General, Variance, The Sample Mean, Normal Distributions, Simulating Normal Random Variables, and Hospital Administration.

III. PREREQUISITES FOR THE COURSE:

Math 1324 Business Mathematics or placement into Math 1325.

IV. TEXT AND OTHER SUPPLIES REQUIRED:


V. STUDENT LEARNING OUTCOMES:

This course is designed to enable students to understand and work comfortably with:

- Problem solving skills will be combined with by using Excel spreadsheets and by hand and analyzing graphs,
- Conceptual understanding of mathematics in business fields,
- Using technology in industrial and business,
- Combining technology and mathematics terms in business world.

VI. Instructional methods and activities:

Methods and activities for instruction include:

- Instructional presentation of new material and concepts,
- Class discussion and problem solving analysis using critical thinking techniques,
- Individual written assignments to enhance understanding of new concepts,
• Discovery method techniques supported by a graphing utility to view the effects of shifting and translation concepts on the functions,
• Optional 1-to-1 discussion time between students and instructor during office hours.

VII. Evaluation and grading polices:

| Attendance     | MANDATORY |
| Tests          | 75% (top 3 test scores out of 4 test , 25% each) |
| Final exam     | 25% (comprehensive) |
| Grading scale  | A: 90 – 100, B: 80 – 89.99, C: 70 – 79.99, D: 60 – 69.99, F: 59.98 and below |

VIII. Class policies:

• Attendance is mandatory. Attendance will be checked each class period and each absence after 2 times will result in one letter grade lower (5th absence will result in two-letter- grade lower). Please save absences for emergencies.
• Homework will be given each class period and discussed at the beginning of next class period.
• Cell phone using is prohibited in any circumstances.
• Cheating is strongly prohibited. If I caught someone cheating during any test, students may drop the class without my permission. If not, normally it is an “F” for the semester grade.
• You are the only person responsible to drop the class and responsible to stay inform for any changes for tests and room changes. All the changes will be announced in the class.
• You may email me for help any time but not the night before the scheduled test neither the possible chance to postpone the test.
• I respect your request by email and I will answer it in my best convenient time.
• Makeup test will be given once per student with appropriate documentation provided. Please save the opportunity for the emergencies.
• **There is no makeup for any test which includes the final exam.** Without taking final exam, it will be an “F” for the semester grade regardless.
• Help: CASA has many quality tutors to help you while you need someone beside my office hours. Welcome to visit those tutors at the second floor of library. Please find out their schedule first before you make a plan to go for this semester. I will be happy to work with you anytime during my office hours and also email me for your special needs. Good luck to everyone in the class.
• **This syllabus is a contract between students and the instructor. If you have no any question regarding to this class, this syllabus will be activated from now and through this semester.**

IX. Tentative schedule:

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Work/Assignment</th>
<th>Fall 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify basic functions and their properties. Construct graphs and evaluate piece-wise defined functions</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>find cost, revenue, and profit function and applications to determine a company’s Break-Even points</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Understand exponential and logarithmic functions and TEST 1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Understand the limit definition of the derivative and calculate derivatives of various functions using the limit definition and differentiation formulas</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Algebraically calculate by hand to determine the average rate of change and explain how it relates to the business.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Algebraically determine where a function is increasing/decreasing, has relative extrema, is concave upward/downward</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Find Inflection points by interpreting its first and second derivatives. Find the</td>
<td></td>
</tr>
</tbody>
</table>
relative/absolute extrema of functions including optimization applications AND TEST 2
8 Find the relative/absolute extrema of functions including optimization applications.
9 Compute anti-derivatives and understand the concept of integration as it relates to area
10 Use Fundamental Theorem of Calculus to evaluate integrals, including the method of substitution and TEST 3
11 Introducing the upper and lower bounds and apply integration as it relates to area between curves and accumulated change, and the average value of a function
12 Introducing the average value of a function by using the definite integral and the applications in the business
13 Applications to business such as consumers’ and producers’ surplus
14 Understand functions of two variables and their application in business and TEST 4
15 Review and Final exam

Suggested Topics to be covered for MATH-1325
10.1 Introduction to Limits & 10.2 Infinite Limits and Limits at Infinity
10.3 Continuity
10.4 The Derivative
10.5 Basic Differentiation Properties
10.6 Differentials
10.7 Marginal Analysis in Business and Economics
11.2 Derivatives of Exponential and Logarithmic Functions
11.3 Derivatives of Products and Quotients
11.4 The Chain Rule
11.5 Implicit Differentiation
11.6 Related Rates
12.1 First Derivative and Graphs
12.2 Second Derivative and Graphs
12.3 L’Hopital’s Rule
12.5 Absolute Maxima and Minima
12.6 Optimization
13.1 Antiderivatives and Indefinite Integrals
13.2 Integration by Substitution
13.3 Differential Equations; Growth and Decay
13.4 The Definite Integral
13.5 The Fundamental Theorem of Calculus
14.1 Area Between Curves
14.2 Applications in Business and Economics
14.3 Integration by Parts
14.4 Other Integration Methods

*Notice to Students with Disabilities: Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

** Grade Appeals
A student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is on the student to demonstrate the appropriateness of the appeal. A student with a complaint
about a grade is encouraged to first discuss the matter with the instructor. For complete details on the process, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, consult Texas A&M University-Corpus Christi University Procedure 13.02.99.C2.01 Student Grade Appeal Procedures (http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school or the College of Science and Engineering Dean’s Office.

About the Family Educational Rights and Privacy Act (FERPA) Under FERPA, a student has the right to:

1. **Inspect and review their education records**
   Students can inspect and review their education records within 45 days of the day the University receives a request for access. A student should submit to the registrar, dean, head of the academic department, or other appropriate official, a written request that identifies the record(s) they wish to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

2. **Request to amend their education records**
   Students can request to amend any of their education records that they believe are inaccurate, misleading, or otherwise in violation of the student’s privacy rights under FERPA. A student who wishes to ask the University to amend a record should write the University official responsible for the record, clearly identify the part of the record the student wants changed, and specify why it should be changed. If the University decides not to amend the record as requested, the University will notify the student in writing of the decision and the student’s right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. **Some control over the disclosure of their education records**
   Students have the right to provide written consent before the University discloses personally identifiable information from their education records, except to the extent that FERPA authorizes disclosure without consent. The University discloses education records without a student’s prior written consent under the FERPA exception for disclosure to school officials with legitimate educational interests. A school official is
   - A person employed by the University in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff)
   - A person or company with whom the University has contracted as its agent to provide a service instead of using University employees or officials (such as an attorney, auditor, or collection agent)
   - A person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks.
   - A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibilities for the University. Upon request, the University also discloses education records without consent to officials of another school in which a student seeks or intends to enroll.

4. **File a complaint if they feel any of these rights have been violated**
   Students can file a complaint with the U.S. Department of Education concerning alleged failures by the University to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:

   Family Policy Compliance Office  
   U.S. Department of Education  
   400 Maryland Avenue, SW  
   Washington, DC 20202-5901