MATH 0120 Business Calculus

University of Pittsburgh, Summer 6W2 2019

Time and Place:
Recitation: MoTuWeTh 8:00 am - 8:50 pm at PUBHL A216.
Lecture: MoTuWeTh 9:00 pm - 10:45 pm at PUBHL A216.

Instructor: Ivan Ramirez-Zuniga
e-mail: ivr3@pitt.edu
Personal Website: https://www.ivanrazu.github.io//
Office Hours: TBD. They will be held at the MAC (or by appointment).
The MAC is located at the O'Hara Student Center, Room 215, 4024 O'Hara Street

TA: Yujie Ding
e-mail: yud39@pitt.edu
Office Hours: TBD.

Overview:
This course is designed for students in business, economics, and other social sciences. It introduces the basic concept of limit and its application to continuity, differentiation, integration, maximization, minimization and partial derivatives. Applications to the social sciences, especially business and economics, are stressed. The calculus of trigonometric functions is not covered. The goal is to prepare you to make use of calculus as a practical problem-solving tool.
This is a 6-weeks summer class on which the material covered during a regular semester will be covered in only 6 weeks. For this reason, the peace of the class will be around 3 times as fast than during a regular semester. Therefore, in order to keep up with the material you are expected to work around 3 times more per week as you normally do during a regular semester.
Finally, it is your responsibility to attend every lecture and recitation. Missing classes is crucial during such a short term, and it will negative affect your performance and your grade.

Textbook: Brief Applied Calculus, Seventh Edition, by Geoffrey C. Berresford and Andrew M. Rockett; Brooks/Cole CENGAGE Learning.

Grading procedure:
Quizzes: 25%
Presentations: 20%
Homework: 25%
Final Exam: 30%

Grading scale: A/A-:90-100%, B/B±: 80-89%, C/C±: 70-79%, D/D+: 60−69%, F:<60%.

Quizzes, presentations, and final exam: These assessments are to be completed in class at the assigned times. There will be at least 5 quizzes in total. *There will be NO make up quizzes or exams.* The **only exception** to this policy is as follows: if you have a legitimate medical or academic conflict that will prevent you from being in class for a quiz, exam, or presentation, then contact me well ahead of time to discuss alternative arrangements.

Homework: Homework will be done online. You can find it at https://www.webwork.math.pitt.edu/webwork2/Math0120-10279. Alternatively, you can go to https://www.webwork.math.pitt.edu and select your course from a list of available courses. You will need to log on with your Pitt username and password. Once you log on, you will see a list of available homework assignments and due dates. There will be **no due date extensions** for these assignments, unless you have a valid justification.
The homework in this course is a **learning tool**, the point of the homework is to give you a chance to practice important methods and **to learn**. Very few students can learn this material without plenty of practice. Please feel free to come ask me questions about homework and other course material during office hours or to contact me to schedule alternative appointments. **Your questions are always welcome**.

Presentations: To obtain full credit in this rubric, you must attend every lecture and recitation where you will

present on the board a correct solution of a problem picked by your TA. The problems are going to be chosen from the list of suggested exercises given by your instructor. The presentations will take place on the last day of classes of every week with the exception of week 6.

Tutoring: Walk in tutoring is available in the Calculus/Engineering Lab and in the Math Assistance Center (MAC) in room 215 of the O'Hara Student Center. Tutoring hours will be posted outside the lab and the MAC, as well as on the web at https://www.calculus.math.pitt.edu.

Academic Integrity: The University of Pittsburgh Academic Integrity Code is available at http://www.provost.pitt.edu/info/acguidelinespdf.pdf. The code states that "A student has an obligation to exhibit honesty and to respect the ethical standards of the academy in carrying out his or her academic assignments." The website lists examples of actions that violate this code. Students are expected to adhere to the Academic Integrity Code, and violations of the code will be dealt with seriously.

Disability Resource Services: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services, 140 William Pitt Union, 412-648-7890 as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Schedule: The following is an approximate schedule for lectures and is subject to change.

Week 1: June 24-27:

Monday June 24:
Functions
1.1 Real Numbers, Inequalities, and Lines
1.2 Exponents
1.3 Functions: Linear and Quadratic

Tuesday June 25:
Functions (continued)
1.3 Functions: Linear and Quadratic (continued)
1.4 Functions: Polynomial, Rational, and Exponential

Wednesday June 26:
Functions (continued)
4.1 Exponential Functions
4.2 Logarithmic Functions

Thursday June 27:
** Presentation 1 ** during recitation

4.2 Logarithmic Functions (continued)
Limits and Continuity
2.1 Limits and Continuity

Week 2: July 1-3

Monday July 1:
** Quiz 1 ** during recitation

Derivatives and their uses
2.2 Rates of Change, Slopes and Derivatives
Derivatives and their uses (continued)
2.3 Some Differentiation Formulas

Tuesday July 2
Derivatives and their uses (continued)
2.4 The Product and Quotient Rules
2.5 Higher-Order Derivatives

Wednesday July 3:
** Presentation 2 **

2.6 The Chain Rule and the Generalized Power Rule
2.7 Nondifferentiable Functions

Thursday July 4:
Independence day NO CLASS

Week 3: July 8-11

Monday July 8:
** Quiz 2 ** during recitation

Applications of Derivatives
3.1 Graphing Using the First Derivative
3.2 Graphing Using the First and Second Derivatives

Tuesday July 9
Applications of Derivatives (continued)
3.3 Optimization
3.4 Further applications of Optimization

Wednesday July 10
3.5 Optimizing Lot size and Harvest Size
3.6 Implicit Differentiation and Related Rates

Thursday July 11
** Presentation 3 **

Exponential and Logarithmic Functions revisited
4.3 Differentiation of logarithmic functions and exponential functions
4.4 Two Applications of Economics: Relative rates and Elasticity of Demand

Week 4: July 15-19

Monday July 15
** Quiz 3 ** during recitation

Integration and its applications
5.1 Antiderivatives and Indefinite Integrals
5.2 Integration using Logarithmic and Exponential Functions

Tuesday July 16
Integration and its applications (continued)
5.3 Definite Integrals and Areas
5.4 Further Applications of Definite Integrals

Wednesday July 17
Integration and its applications (continued)
5.5 Two Applications to Economics
5.6 Integration by Substitution

Thursday July 18
** Presentation 4 **

Integration Techniques
6.1 Integration by Parts
6.2 Integration using tables

Week 5: July 22-25

Monday July 22
** Quiz 4 ** during recitation

6.5 Differential Equations
Calculus of Several Variables
7.1 Functions of Several Variables

Tuesday July 23
Calculus of Several Variables (continued)
7.2 Partial Derivatives
7.3 Optimizing Functions of Several Variables

Wednesday July 24
7.5 Lagrange Multipliers

Thursday July 25
** Presentation 5 **

Week 6: July 29 - August 1

Monday July 29
** Quiz 5 ** during recitation

Review

Tuesday July 30
Review

Wednesday July 31
Review

Thursday August 1

** FINAL EXAM **