BOB JONES UNIVERSITY
BUILD FAITH. CHALLENGE POTENTIAL. FOLLOW CHRIST.

College of Arts and Science
Division of Mathematical Sciences

Ma 220 ~ Mathematical Problem Solving Fall 2019

Instructor:	Dr. David Brown
Office:	Al 74
Office Hours:	MWF 9:00 9:45 am; T 2:00 pm (I may leave if no one comes by 2:15)
Email:	ddbrown@bju.edu
Textbooks:	*Applied Mathematics for the Managerial, Life, and Social Sciences*, 7th edition by Soo Tan. ISBN # 978-1-305-10790-8 https://www.cengagebrain.com/shop/ProductDisplay?langId=-1&storeId=10151&catalogId=10057&productId=705925
Tools:	TI 83/84 (TI 89/Nspire CAS with permission) and Excel, Computer with internet access

Catalog Description:

Discussion of quantitative problem-solving techniques through a variety of mathematical methods such as optimization, introductory statistics, financial mathematics, and introductory calculus.
Prerequisites: Math ACT 20+ or placement into Ma 103.

Course Context: This course supports the following goals of the BJU Core:

BJUC4: Understand the physical world as God's creation, as a stewardship given to man and as the physical expression of His glory.
DM2: Use critical-thinking/analytical skills.
DM3: Understand mathematical/computing problems and design solutions with the aid of appropriate tools.
DM4: Apply an understanding of how mathematics/computing can be used in service to Christ as tools to the examination of the world He created.
DM5: Construct a foundation upon which they, after graduation, can continue the development of their God-given abilities and the learning necessary for work and life.

Course Goals:

CG1: Demonstrate the ability to decipher mathematical notation and use basic mathematical tools.
CG2: Develop the appropriate mathematical solution to applied problems
CG3: Interpret the mathematical solution in the context of the given problem

Course Objectives: The student will be able to

1. Model data using standard mathematical functions and use the standard compound interest model. CG1 (Assessed by Ch 2-4 test, Finance Modeling Project)
2. Develop and solve optimization models. CG1-3 (Assessed by Ch 5-6 test, Optimization Project)
3. Use basic counting and probability rules to answer basic probability questions. CG1-3 (Assessed by Ch 7-8 test, Probability Project).
4. Use basic differentiation and integration techniques to address questions of change. CG1-3 (Assessed by Ch 9-11 test, Calculus Project)
5. Communicate both the stated problem and its solution in a clear and efficient manner. CG1-3 (Assessed on all tests and projects)

Course Requirements and Evaluation:
You will be expected to:

1. Read the text before class each day (be sure to take note of any new definitions, I will be assuming you know these during the lecture).
2. Bring your calculator and/or Excel to class every day (we will use it in class).
3. Work problems in class along with me (do not just copy what I write on the board).
4. Seek help/clarification **as soon as** you are struggling (both in class and out of class).
5. Work the corresponding homework after each lecture (do NOT let it pile up before the exam).

Course work will be composed of at least the following elements:

1. Unit tests covering those topics discussed in class ~ four tests worth 100 points each.
2. Homework sets based on the course lecture ~ four sets worth 10 points each.
3. Announced and unannounced in class quizzes.
4. One projects ~ worth approximately 50 points: Finance Modeling
5. A cumulative final exam ~ worth 150 points.

Grading Scale: Standard ten-point grading scale.
General Policies: Keeping current on all work is the best way to understand the material and hence earn a good grade. Students who make up work after the fact often perform more poorly than students who keep up (and who often do well).

1. All university policies regarding class attendance (including lates, absences, and early departures – any unapproved early departure will be marked as an absence) will be enforced. See the Student Handbook for further details.
2. For planned absences (including University approved absences), you are expected to notify me **a week** ahead of time. Projects and homework should be submitted before your planned absence. Scheduled tests and quizzes should be taken before your planned absence; please contact me to make arrangements for doing so.
3. For absences due to incapacitating illness or emergency, you should contact me asap. As soon as you are able to return to class, please make arrangements for making up any graded work without penalty.
4. In any other circumstances, missed tests and quizzes will be given a 0. Note that skipping a test because you feel unprepared is not acceptable.
5. Homework as posted (see the course webpage) will be turned in at the beginning of the class period when you come to take a test. Your work should be on 8½ 11 paper stapled in the upper left corner. Label all the exercises by **number and chapter section**. Do not use a folder or a paperclip. The effort you put into the homework will generally be reflected in the number of points you get out of 10 and certainly will be reflected in your performance on the exam.