7 Aug 2019

MEMORANDUM FOR STUDENTS ENROLLED IN MATH 356

FROM: HQ USAFA/DFMS (Lt Col New)

SUBJECT: Math 356 Course Letter, Fall 2019

1. **INTRODUCTION.**

*“An approximate answer to the right problem is worth a good deal more than an exact answer to an uncertain problem.”* – John Tukey

In a world full of uncertainty, the question becomes how “certain” must we be to make reasonably informed decisions. Perfect information is rarely attainable, so in that vein the mere exposure to the ideas, techniques, and applications in this course will help you both make better decisions as well as help you better inform your decision makers. You will gain experience by characterizing ill-defined problems, implementing your solutions, and interpreting your results. The processes and techniques you learn in this course will serve you well throughout your career regardless of your AFSC.

2. **GOALS.** Upon completion of this course, you will be able to:

1. Communicate using commonly used statistical terms and ideas.
2. Analyze scenarios and determine which statistical techniques are appropriate.
3. Correctly apply appropriate statistical techniques to a given scenario.
4. Evaluate statistical arguments and assess the validity of the statistical reasoning.
5. Generate statistical analysis on real-world data using techniques learned throughout the course.

NOTE: This course is a primary contributor to the development and assessment of the Critical Thinking USAFA outcome.

3. **COURSE MATERIALS.**

1. The course textbook is *Introduction to Probability and Statistics*, 15th ed., by Mendenhall, Beaver, & Beaver. This course requires WebAssign from Cengage.
   1. You can choose to purchase a Math 356 WebAssign code with eBook access for $90. OR
   2. You can choose to access course material through Cengage Unlimited—a subscription that provides access to ALL Cengage eBooks and digital learning products for $119.99 per term (extended subscriptions also available.) One Cengage Unlimited subscription can be used across all courses where Cengage products are assigned, at no added cost, and it can be purchased in bookstores and at cengage.com
   3. You’ll be eligible for a print rental when you activate WebAssign and subscribe to Cengage Unlimited. The cost is $7.99 (with free shipping). You may also purchase a loose-leaf version of the textbook at a discount through Cengage Unlimited.
   4. To access your course materials, log into Blackboard and click on the link that says WebAssign. When prompted, log in with your Cengage account or create a new one and follow the prompts to complete the registration process.
   5. Textbooks must be accessible for every lesson. Wireless internet must work in class for cadets using the electronic text.
   6. The following link has video and written instructions on how to login to WebAssign from Blackboard: [WebAssign Student Registration Information](https://www.cengage.com/student-training/webassign/blackboard/ia-no/)
2. You **MUST** purchase a copy of the supplemental textbook ($20 on Amazon) we’ll be using which is:

*OpenIntro Statistics, 4th Edition*, by Diez, Barr, & Çetinkaya-Rundel.

1. The software program we’ll primarily be using is *R* with some Microsoft *Excel*. No previous *R* experience is required.

4. **GRADES.** This is a contract course. To guarantee an “A” grade, you must earn at least 90% of the total points. Likewise, at least 80% is needed to guarantee a “B”, and so forth. If you finish below a 60% average, you will most likely fail the course. The distribution of the course points is shown below.

|  |  |  |
| --- | --- | --- |
| **Graded Event** | **Points** | **Overall Percent** |
| CTA 1 | 30 | 2.3% \* |
| CTA 2 | 30 | 2.3% \* |
| Homework Block 1 (Lessons 1-12) | 30 | 2.3% \* |
| Milestone 1 | 60 | 4.5% \* |
| Graded Review 1 | 150 | 11.4% \* |
| CTA 3 | 30 | 2.3% \* |
| CTA 4 | 30 | 2.3% |
| Homework Block 2 (Lessons 15-24) | 30 | 2.3% |
| Milestone 2 | 60 | 4.5% |
| Graded Review 2 | 150 | 11.4% |
| CTA 5 | 30 | 2.3% |
| Homework Block 3 (Lessons 27-34) | 30 | 2.3% |
| Milestone 3 | 60 | 4.5% |
| Graded Review 3 | 150 | 11.4% |
| Presentation + Paper | 120 | 9.1% |
| Final Exam | 330 | 25.0% |
|  | \*Grades included for Prog | |

5. **HOMEWORK.**  Homework assignments are accomplished using Enhanced WebAssign (EWA) accessed via Blackboard (Blackboard login, click on “WebAssign” (midway down the left side)).

You will need the registration code you received when you purchased Enhanced WebAssign access. Most of the lessons are accompanied by a set of homework problems. The homework set for the entire block will be available starting at the beginning of the block and due the night before that block’s exam. It is incumbent upon you to finish the homework in a timely manner. You have unlimited attempts to correctly answer a question using unlimited resources (i.e. you may collaborate), but ***you*** must be the one to physically type in the answer. Once available, the homework questions will remain visible through the end of the course. However, no credit will be given for problems completed after the online due date. Because of the automated nature of the questions let me stress that any benefit derived from homework is completely dependent on your use of the provided questions. To do well on the graded events, it is essential that you understand the mechanics and concepts behind the questions.

NOTE: A document titled “Blackboard\_WebAssign Quick Start Guide” can be found on the course Blackboard site in the “Syllabus & Resources” section.

6. **PROJECT.** Throughout the course you will be working in small groups (no larger than 4) on a project. The project is composed of 3 Milestones and 1 presentation + paper near the end of the semester. The Milestones are composed of work on your chosen dataset. The presentation + paper represent the culmination of your work.

7. **CRITICAL THINKING ASSESSMENTS, GRADED REVIEWS, and FINAL EXAM.** All critical thinking assessments (CTAs), graded reviews (GRs), and the final exam are closed-bookgraded events. You will be allowed to use two sides of a **handwritten** 4” x 6” index card, of your own creation, for each GR and CTA. Unless otherwise directed, you will be allowed to use any calculator, a blank Excel spreadsheet, and *R* for all graded events. You will not be allowed to use any other statistics software and wireless internet must be turned off during all events.

With the exception of excused absences, your performance on all events will be evaluated by what you complete at the designated location during the designated time. If you arrive late, you will only be allotted the remaining time to complete the graded event. If you miss (unexcused absence) the GR or final exam, you will be given a make-up with a 25% penalty in addition to issuance of a AFCW Form 10 in accordance with Paragraph 3.3 in FOI 35-173 dated 16 Sep 06.

8. **GRADE CHANGES.** Feedback is essential in the learning process and thus you are highly encouraged to review your graded work. Upon return of a graded event, thoroughly review comments and you will have two lessons to bring any issues with the graded event to your instructor’s attention.

9. **EXTRA INSTRUCTION (EI).** I encourage you to make an appointment with your instructor for EI any time you have questions. When you arrive for EI you are expected to be prepared by re-reading the section(s) you are struggling with and bring examples of homework problems you are finding difficult. EI is a privilege; if you arrive to an EI session unprepared, you will be asked to reschedule. If your instructor is not available, feel free to seek assistance from other instructors in the course. The instructors this semester are:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Instructor** | **Teaching Sections** | **Classroom** | | **Office** | **Phone** | **e-mail** |
| Lt Col New (CD) | M4, M6 | | 5D56 | 6D-226 | 333-8023 | [Jon.new@usafa.edu](mailto:Jon.new@usafa.edu) |
| Lt Col Carson | T4, T6 | | 5D45 | 6D-214 | 333-6898 | [Christopher.carson@usafa.edu](mailto:Christopher.carson@usafa.edu) |
| Dr. Kelly Avery | T2, T3, T5 | | 5D45 | 6D-184 | 333-8028 | [Kelly.avery@usafa.edu](mailto:Kelly.avery@usafa.edu) |
| Dr. Calli Holaway | T1 | | 5D45 | 4K-25C | 333-3994 | [Calli.holaway@usafa.edu](mailto:Calli.holaway@usafa.edu) |
| Capt Forbes | M1, M2, M3 | | 5D56 | 6D-190 | 333-3099 | [Jacob.forbes@usafa.edu](mailto:jacob.forbes@usafa.edu) |

10. **POLICY ON LATE WORK and DOCUMENTATION.** Professional conduct requires all work be submitted on time and with proper documentation. “On time” means on or before the due date at the beginning of class. If you know you are going to miss class, make arrangements for your assignment to be submitted on time. If an assignment is turned in late, the default penalty will be 20% of the total points available on the assignment per lesson, although a more severe penalty is possible based on the circumstances (no credit given for a late homework). Your instructor will make the final call based on the circumstances. An assignment turned in without a documentation statement is late, and a grade will not be assigned until the documentation is complete. Documentation will be provided on the last page of an assignment and should include EI, solutions materials, and any other help received.

11. **ACADEMIC STANDARDS.** In accordance with the Dean’s Policy on Academic Integrity and Documentation and USAFA Instruction 36-157, *Violations of Academic Standards*, violations of academic standards will result in an academic penalty. The default penalty in DFMS will be a zero on the graded event. Penalties deviating from this default may be considered on an individual basis. Academic penalties are independent of the Cadet Honor System.

//SIGNED//

JON C. NEW, Lt Col, USAF

Math 356 Course Director