

**Course Syllabus**  
**STAT 416-70: Mathematical Statistics II**  
**Department of Mathematical Sciences**  
**Central Connecticut State University**  
**New Britain, CT 06050**  
**Spring 2019**

***Class Meeting Times:*** Tuesday and Thursday: 12:15 – 01:30 PM; Maria Sanford Hall 223

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**READ THIS SYLLABUS CAREFULLY. YOU ARE RESPONSIBLE FOR KNOWING THIS INFORMATION!**

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***Instructor:*** Dr. K.K. Saha  
***Office:*** Marcus White Hall 109  
***Phone:*** (860) 832 2840  
***Email:*** [saharkk@ccsu.edu](mailto:saharkk@ccsu.edu)

***Office Hours:*** Tuesday & Thursday: 10:05 AM– 11:35 PM; Wednesday: 1:00 PM – 3:00 PM.

***Textbook:*** *Probability and Statistical Inference* (9th edition) by Hogg, Tanis & Zimmerman  
ISBN: 978-0-3-2192327-1

***Topics Covered:*** Chapters 4 through 9 of this textbook will be covered in this course. See details in the tentative course schedule section.

***Course Description:*** Continuation of theory and applications of statistical inference. Elements of sampling, point and interval estimation of population parameters, tests of hypothesis, and the study of multivariate distributions. This material can be found in Sections 4.1-4.5, 5.1-5.7, 6.4, 6.6-6.7, 7.1-7.4, 8.1-8.5 and 9.1-9.2 in the text.

***Prerequisite:*** STAT 315, Mathematical Statistics I

***Course Requirements:*** For this course, the expectation is at least 6 hours of work outside of class each week to complete the reading materials and problem sets. However, a general rule for any course is that you are expected to put in at least 2 hours of work outside of class for every “hour” (50 minutes) in class. You are expected to attend and participate in all of the class sessions. If you are going to miss a class for a legitimate reason, please call or e-mail me in advance. You are expected to understand and use the concepts in the first three chapters of the assigned text. You are responsible to complete satisfactorily all of the reading material, the content of the text and lectures and all assignments whether you are attendant or not. You must complete at least all the odd numbered problems in the sections covered each week. It is essential for understanding the methodology and passing the tests. Note that you are also responsible for completing all even numbered problems. You are encouraged to work with others on these problems, and to utilize any resources available. You are responsible to take all the quizzes and exams at their scheduled times.

***Important Dates:*** See the academic calendar at <http://www.ccsu.edu/calendar/>

**Withdrawal Policy:** After April 22, withdrawals are allowed only under extenuating circumstances and require approval of the course instructor, department chair, and dean of the School of Arts and Sciences.

**Blackboard Learn:** Learn will be used to supplement this course. You will be able to access to Learn through CCSU Central Pipeline. This will also be used to post course syllabus, your marks, solutions, distribute documents, and make other materials available to you. Make sure to activate your CCSU computer account. For help, call 832 1720.

**Course Contents:** The tentative outline of the course is given below.

Week	Start Date	Topics	Readings
1	Jan. 22	Distributions of 2 RVs The Correlation Coefficient	Section 4.1 Section 4.2
2	Jan 29	Conditional Distributions Bivariate Normal Distribution	Section 4.3 Sections 4.4-4.5
3	Feb. 5	Functions of a RV	Section 5.1
4	Feb. 12	Transformations of RVs	Section 5.2
5	Feb. 19	Several Independent RVs	Section 5.3
		<b>Exam-I (Feb 21st)</b>	<b>Sections 4.1-4.4, 5.1-5.2</b>
6	Feb. 26	MGF Technique Functions of Normal RVs	Section 5.4 <b>Section 5.5</b>
7	March 5	Central Limit Theorem Normal Approximation to Binomial and Poisson Distributions Point Estimation	Section 5.6 Section 5.7 Section 6.4,6.6-6.7
	March 12	<b>Spring Recess – No Classes</b>	
8	March 19	Confidence Intervals for Means	Sections 7.1-7.2
9	March 26	Confidence Intervals for Variances/Proportions	Section 7.3
10	April 2	Confidence Intervals and Sample Size	Section 7.4
		<b>Exam-II (April 4th)</b>	<b>Sections 5.3-5.7, 6.4,6.6, 6.7,7.1-7.4</b>
11	April 9	Hypothesis Testing about Means	Sections 8.1-8.2
12	April 16	Hypothesis Testing about Proportions/ Power of a Statistical Test	Sections 8.3 Section 8.5
	April 23	Chi-Square Goodness-of-Fit Test	Section 9.1
13	April 30	Contingency Tables Review	Section 9.2 Chapters 4-8
15			
		<b>Final Examination May 14th, 10:30AM-12:30PM in class</b>	<b>Chapters 4-9</b>

**Evaluation:** Minimum averages have been established for each of these grades:

A 93% A- 90% B+ 87% B 83% B- 80% C+ 77% C 73% C- 70% D+ 67% D 63% D- 60%

**Grading Assessment:** The final grade for this course will be calculated based on the following weights.

Class Activities	5%
Homework	10%
Exams I and II	25% and 25%
Final Exam (comprehensive)	<u>35%</u>
Total	100%

**Attendance and Class Participation:** Classroom attendance is viewed as a very important part of the learning process. Students are advised that excessive absenteeism may result in the student being disbarred from the exams. So, attendance will be taken during the class session and **attendance sheet will be given beginning of each lecture, and you will be responsible to sign this sheet; no exceptions.** In addition, you are encouraged to raise questions during class and try to answer questions that are being asked during the class session. **Moreover, some questions will be assigned during the class and you should try those in class as well. This would be considered as class activities.**

As said earlier, regular class attendance is essential. Due to the nature of this class, continuous or excessive absences may result in poor performance in the course. **In the event that you must miss a class, please notify me in advance. Students are permitted to have three unexcused absences, including those due to minor emergencies and illnesses. After the 3rd absence, you will be penalized as follows: (i) I will subtract 1, 2, and 3 points from your overall course total for the 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> unexcused absences, respectively; (ii) I will subtract 4 points from your overall course total for every unexcused absence beyond six.** For example, suppose your overall course total at the end of the semester is 90 (A- grade), and you have 5 unexcused absences. Then, your overall course total due to 2 additional unexcused absences will be  $90 - 1 - 2 = 87$ , and your final letter grade will be a B+, instead of A-.

**Homework:** Homework problems will be posted online at the beginning of the semester. **Some of the homework problems will be graded and you must turn in those graded homework parts by the due date.** Photocopies or e-mail copies are not acceptable. Loose pages will not be accepted. You must use a staple. Actively solving these assignments is strongly recommended and the best way to learn the course material. Also, they will help in answering the questions in exams, please keep in mind that your grade will be determined by your exam scores, which you must do by yourself.

**Exams:** The two one-period exams will be given based on the material covered in **Sections (4.1-4.5, 5.1-5.2) and (5.3-5.7, 6.4, 6.6-6.7, 7.1-7.4)** in the text. I will announce in advance for any changes in the exam material and exam date. All these exams will be closed book, but you will be permitted to bring one sheet of formulas. The schedules for the exams are as follows:

**EXAM-I: February 21st; EXAM-II: April 12th.**

**Final Exam:** The one 2-hour comprehensive final exam will be given in December as scheduled by the Registrar as follows:

**May 14th, 10:30 AM - 12:30 PM.**

**NO MAKE UPS WILL BE GIVEN:** If you miss one of the *hour exams*, **contact me immediately** (preferably in advance). If you have a **good reason** for not being able to take the test as scheduled, I will substitute your final exam score for that test when computing your final grade. Otherwise a **grade of zero** will be recorded for the missed exam. I will do this only for the first missed test. Subsequent missed tests will be recorded with a **grade of zero**.

**Incomplete Grade:** An “I” will be assigned if and only if (all must apply) (i) the student is not currently failing the class; (ii) there is no substantial quantity of work yet to be completed; (iii) there is no extra work required of the instructor beyond the normal duties of grading the paper/exam; and (iv) there is no need for the student to attend the class in subsequent terms. An “I” grade must be made up according to the university guidelines.

**Cell Phones Prohibited:** The use of cell phones during class time or exam for any purpose is prohibited. Make sure to turn off your phone before entering the classroom.

**E-mail Policy:** E-mail should be used only to provide me with information or to ask a question that requires a brief response – “What did I miss in class today?” does NOT count. For more lengthy discussions, you will be encouraged to raise questions during class or during office hours, or make a separate appointment if necessary. Please note that when you send an e-mail, make sure you put the course number with section or class meeting times in the subject.

**Disclaimer:** The instructor reserves the right to adjust the scope of the course, including number and timing of exams, as necessary.

**Disability Statement:** *Please contact me privately to discuss your specific needs if you believe you need course accommodations based on the impact of a disability, medical condition, or if you have emergency medical information to share. I will need a copy of the accommodation letter from Student Disability Services in order to arrange your class accommodations. Contact Student Disability Services, **W201, Willard Hall** if you are not already registered with them. Student Disability Services maintains the confidential documentation of your disability and assists you in coordinating reasonable accommodations with your faculty.*

**University Policies:** You are responsible for understanding and abiding by the University’s policy on academic integrity. Information on the policy may be found at <http://www.ccsu.edu/AcademicIntegrity/>. This policy is rigorously enforced by the Department of Mathematical Sciences.

**Resources Available:**

1. If you need help, take advantage of your instructor's office hours. Do not wait until just before the first test to do so.
2. The Learning Center is located in **Room D316, Diloreto Hall**. Free tutoring is available in the Learning Center, and at other locations on campus. A schedule for hours the Center is open will be posted soon after the beginning of the semester.
3. Form a study group with other students in your section. Explaining solutions to homework problems to each other is a good way to learn.
4. A list of private tutors for hire is available in the math department office, Room 128 Marcus White, 832-2835.

**Title IX Statements:** Central Connecticut State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon age; ancestry, color; gender identity and expression; intellectual disability; learning disability; mental disorder; physical disability; marital status, national origin; race; religious creed; sex, (including pregnancy, transgender status, sexual harassment and sexual assault); sexual orientation; or any other status protected by federal or state laws. Any student who has concerns about this should contact the Office of Diversity and Equity (ODE) at 860-832-1652, Student Affairs at 860-832-1601, or his/her faculty member. The ODE is located in Davidson Hall, Room 102