WICHITA STATE UNIVERSITY

IME 724 – Statistical Methods for Engineers
Fall 2023

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Office Hours:	T 5:30 – 6:30 pm or by appointment
Classroom, Days/Time:	**Wallace Hall**, Room 123, TR 4:10 – 5:25
PM **Prerequisites:**	Math 243. Calculus II
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How to use this syllabus
This syllabus provides you with information specific to this course, and it also provides information about important university policies. This document should be viewed as a course overview; it is not a contract and is subject to change as the semester evolves. Changes will be posted on the course Blackboard.

Students with Disabilities
A disability is something that affects a major life activity. These life activities include, but are not limited to, learning, walking, breathing, hearing, and seeing, in addition to many other physical, sensory functions, and psychological disabilities.
If you are a student with a disability, or believe you might have a disability, which requires accommodations, please contact the Office of Disability Services (ODS) www.wichita.edu/ods to discuss reasonable and appropriate accommodations and eligibility requirements. It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, ODS will review your concerns and determine, with you, what academic accommodations are necessary and appropriate for you. For example, adaptions of teaching methods, class materials or testing may be made on a case-by-case basis if warranted, as required by the Americans with Disabilities Act (ADA). All information and documentation of your disability is confidential and will not be released by ODS without your written permission.

Respect for Diversity
Wichita State University is committed to being an inclusive campus that reflects the evolving diversity of society. To further that goal, Wichita State University does not discriminate in its employment practices, educational programs or activities on the basis of age (40 years or older), ancestry, color, disability, gender, gender expression, gender identity, genetic information, marital status, national origin, political affiliation, pregnancy, race, religion, sex, sexual orientation, or status as a veteran. Retaliation against an individual filing or cooperating in a complaint process is also prohibited. Students from all diverse backgrounds and perspectives are welcome in this Course and the diversity that students bring to this course should be viewed as a resource, strength, and benefit. All materials and activities are presented with the intent to be respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

Course Description

This course is designed for graduate students majoring in engineering. Course coverage will allow students to study and model real-life engineering problems and draw reliable conclusions through applications of probability theory and statistical techniques.

Measurable Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- Apply descriptive methods to organize and summarize sets of data.
- Choose appropriate distribution models to characterize the performance of processes and systems.
- Estimate performance parameters and test claims regarding their values.
- Calculate the sample size required to estimate and compare performance parameters.
- Quantify the risks involved when making decisions based on sample information.
- Construct and interpret linear regression models.
- Test claims regarding values of two or more parameters using the analysis of variance.

Required Texts/Readings Textbook

William Mendenhall and Terry Sincich, Statistics for Engineering and the Sciences, 6th edition, Taylor and Francis, (2016), ISBN 9781498728850.

Other Equipment/Materials

You are required to install STATGRAPHICS ®, Centurion 19, on your computer or laptop. Instructions on how to download the software using the WSU License are provided in **Appendix A**. If you are a MAC – Apple user, please use the computer Lab located at the John Bardo Center, Room 328.

Class Protocol

You are expected to read assigned text material prior to class meetings. Homework will not be collected on a regular basis. However, some assignments may be collected, and you will be notified of this at the time of the assignment. Every Tuesday (unless otherwise stated), the class will start with a short quiz. The subject content in each quiz will be the material covered in previous week. Any missed quiz will be automatically graded as zero. Three computer projects will be given during the semester. You will be instructed to use the STATGRAPHICS software to perform the analysis. Three regular in-class exams will be administered based on the material covered. All tests and quizzes will be open-book and only class notes will be allowed. You will need a calculator with simple statistical functions.

Contact Policy

Although you may attempt to reach me by phone, email communication is always preferred. Feel free to email me any questions or concerns following these guidelines:

- Always use the course name in the subject line of the email.
- Remember to sign your name.
- Always email me from your WSU email address. Email sent from personal email servers like Gmail, Yahoo, etc., tend to end up in my spam folder, and I never see them. You may also email me through Blackboard via the Email My Instructor tab. I also offer zoom meetings, which allows you to ask questions and receive immediate answers.
- You should NOT contact me for tech support. Any technical problems involving your computer, or issues regarding the course blackboard, should go through the OneStop. You can contact them at 316-978-3909. You can also fill out a request for help form at their website.

Response Time

I will do my best to respond to your e-mails within two days of the week. I will respond to e-mails received during the weekend by Monday of the following week. In response to your e-mail, you may receive a simple answer to your question or an invitation to join a zoom meeting for a detailed explanation.

Feedback on Assignments
Feedback on all quizzes, exams, and projects will be made available on Blackboard within one week of their due dates.

Grading Scale
WSU uses a +/- grading scale for final grades and to calculate grade point averages. In this class, grades are assigned according to the following chart.

Percentages	Letter grade	Grade Points	Interpretation
95%	A	4.00	*The A range denotes excellent performance.*
90%	A-	3.70	
87%	B+	3.30	
84%	B	3.00	*The B range denotes good performance.*
80%	B-	2.70	
77%	C+	2.30	
74%	C	2.00	*The C range denotes satisfactory performance.*
70%	C-	1.70	
67%	D+	1.30	
64%	D	1.00	*The D range denotes unsatisfactory performance.*
60%	D-	0.70	
Below 60%	F	0.00	*F denotes failing performance.*

Assignments: *Your final grade will be distributed as follows:*

Exam 1	25%	Thursday, Oct 5
Exam 2	25%	Thursday, Nov 9
Final Exam	25%	Thursday, Dec 7
Computer Projects	15%	TBD
Quizzes	10%	Weekly

Late Assignments
Computer projects will specify due dates for submission on Blackboard. The submission link will expire on the due date. You will need special permission from the instructor to submit your project after the due date. If granted, a delay penalty of 5 out of 15 points per day may be used for late submissions.

Missed Assignments and Exams
No make-up exams or quizzes will be given without prior arrangement with the instructor. In case of an emergency, you will need to contact the instructor before the exam or quiz, submit a written request, and provide supporting documents of the emergency.

Definition of a Credit Hour
Success in this 3-credit hour course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course for instruction and preparation/studying or course related activities for a total of 135 hours.

Syllabus Policies and Student Resources

All students should familiarize themselves with the course-related policies and student resources that can be found at: www.wichita.edu/syllabuspolicies

Tentative Schedule:

Week of	Topics (Section #)
Aug 21 & Aug 28	Introduction (1.1 - 1.4) Descriptive Statistics (2.1- 2.8)
Sept 4 & Sept 11	Theory of Probability (3.1- 3.6) Discrete Random Variables & Mass Functions (4.1 - 4.10) **Computer Assignment #1**
Sept 18 & Sept 25	Continuous Random Variables & Density Functions (5.1 - 5.9) Sampling Distributions (6.7 – 6.11)
Oct 2 & Oct 9	**Exam 1** (Thursday, October 5) Parameter Estimation (7.1 – 7.11)
Oct 16 & Oct 23	Test of Hypotheses (8.1 – 8.12) **Computer Assignment #2**
Oct 30 & Nov 6	Categorical Data Analysis (9.1 - 9.5) **Exam 2** (Thursday, November 9)
Nov 13 & Nov 20	Simple Linear Regression (10.1 -10.9) Multiple Regression Analysis (11.1 – 11.10) **Computer Assignment #3**
Nov 27 & Dec 4	The Analysis of Variance (14.1 – 14.6)
Dec 7	**Final Exam**

Appendix A
Installing STATGRAPHICS® on your PC

1) Go to https://www.statgraphics.com/download19
2) Select the language (English) and the version (32-bit or 64-bit)
3) Download the software
4) Run the software as **Administrator** and select **Activate**
5) Enter the necessary information (fields with an *). Of course, use your name and YOUR WSU EMAIL ADDRESS and your phone number. You do not enter the Product key – it is created when you enter the Serial number field.
6) Enter this Code into the Serial number field: **NGB0-0B0A-10E4-YK0E-1EM0** then click on "1. Press Here" and an email will be generated for your computer and sent to your WSU email address. DO NOT CLOSE THIS WINDOW! Cut and paste that number from the email into the Activate area below and then click on the Activate button to the right. If you don't find the e-mail your Inbox check the Junk e-mail folder.