ENGT 3510. Advanced Statistics in Engineering Technology
Valdosta State University
Fall 2026, Credit Hour: 3

Department:	Computer Science and Engineering Technology
Instructor:	Arup Dey, PhD
Office:	Nevins Hall Room 2067
Email:	adey@valdosta.edu
Classroom; Days; Time:	Nevins Hall 2035, Tuesday and Thursday; 2:00 -3:15 PM
Office Hour:	Tuesday & Thursday: 11:00 AM-12:30 PM
	Or by appointment
Preferred Methods of Contact:	Email (will respond within 24 hours) and office hours
Modality:	Face-to-Face (F2F)
Course material:	BlazeVIEW
Software:	SPSS/MS Excel/MATLAB
Prerequisites:	ENGT 2510

Course Description

Use statistical theory to solve industrial and manufacturing problems, including chi-squared contingency tables and goodness of fit tests, regression analysis, one-way and two-way ANOVA, multiple range tests, and experimental design.

Course Objectives

After successfully completing the course, students should be able to:

- Describe and apply statistical techniques used in manufacturing and industrial engineering applications.
- Grasp fundamental concepts of hypothesis testing and confidence interval.
- Perform ANOVA to compare group means and assess factor effects on measured outcomes.
- Analyze data to identify whether linear regression models are appropriate for a dataset.
- Construct and interpret simple and multiple linear regression models.
- Use ANOVA and t-test to assess the statistical significance of independent variables of regression models.
- Design, implement, and analyze experiments using principles of statistical experimental design
- Learn different advanced statistical techniques (e.g., Goodness of fit test)

Textbook

Applied Statistics and Probability for Engineers, 7th Edition; Montgomery & Runger; 2018; John Wiley & Sons, Inc., ISBN 978-0-470-05304-1 (or any older editions).
Design and Analysis of Experiments, 8th Edition; Montgomery, John Wiley & Sons, Inc., ISBN 978-1118-14692-7

Tentative Schedule – Lesson Plan

Remember that all lesson plans and exam dates are **TENTATIVE** and **may be subjected to CHANGE** for various reasons as the semester progresses. Please use this schedule to approximate your study planning and preparation for this course.

Week	Topic
Week 1	Introduction and Recap from ENGT 2510 course
Week 2	Chapter 4. Continuous Random Variables & Probability Distributions
Week 3	Chapter 5. Joint Probability Distributions
Week 4	Chapter 5. Joint Probability Distributions
Week 5	Chapter 7. Point Estimation of Parameters and Sampling Distributions
Week 6	Chapter 9. Tests of Hypotheses for a Single Sample
Week 7	Chapter 9. Tests of Hypotheses for a Single Sample
Week 8	October 8 (class time) Mid Term
Week 9	Chapter 10. Statistical Inference for Two Samples
Week 10	Chapter 10. Statistical Inference for Two Samples
Week 11	Chapter 11. Simple Linear Regression and Correlation
Week 12	Chapter 11. Simple Linear Regression and Correlation
Week 13	Chapter 12. Multiple Linear Regression
Week 14	Chapter 12. Multiple Linear Regression
Week 15	ANOVA & Experimental Design
Week 16	Experimental Design
Final Week	**Final Exam** 09 December Wednesday 2:45 – 4:45 PM

Course Structure

Learning the material in this course is accomplished through three key components: 1) ***Lecture notes***, 2), ***Textbook*** for additional practice problems and in-depth concepts, and 3) ***Assessments*** in the form of Assignment, Quizzes and Exams. The course covers an extensive amount of advanced-level material within a single semester. This setting may be overwhelming to some students due to variations in students' learning pace. Thus, to reduce unwanted outcomes, **additional self-study time** must be devoted to the learning process.

To gain the most out of the learning experience, **students are thus highly encouraged** to:

1. **View the lecture materials** according to the lesson plan provided
2. **Read the textbook,** and **practice similar problems from the textbook** after reviewing the respective chapter.

If students are having difficulties with any material, please do not hesitate to contact the instructor or post the practice problem questions on the discussion board on BlazeView.

Grading Policy

Final grades for the course will be assigned based on the standard VSU grading scale, as follows:

Score (out of 100)	Letter Grade	Grade Points
90-100	A	4.00
80-89	B	3.00
70-79	C	2.00
60-69	D	1.00
0-59	F	0.00

Tasks	
Assignments	25%
Quizzes	25%
Mid-term Exam	25%
Final Exam	25%
Total	100%

Assignments & Quiz Policy

- All work must be completed individually. Sharing materials or calculators is strictly prohibited, and any form of cheating will not be tolerated.
- The quiz date will be announced at least two days in advance.
- Assignments in this course will be given for each chapter or two assignments for large chapters. You will be given at least one week to complete each assignment after we have finished covering the material included in that assignment.
- Assignments should be submitted either through Blazeview or as a printed/handwritten copy.
- Please ensure that your assignment is well-written and clear, whether handwritten or printed. If the copy is unclear or difficult to read, you may be required to explain the solution to the instructor.
- **Twice** during the term, you may submit an assignment up to 2 days (48 hours) late and still receive full marks. To use this grace period, you must notify me at least 24 hours before the original due date and provide a reason for the delay.
- Make-up Quiz: Any make-up quizzes will be determined solely by the instructor and may differ from the original quizzes.

Exam Policy

- All exams will be conducted in-person.
- Make-up exams will not be permitted without a properly documented emergency situation. Any make-up exams will be determined solely by the instructor and may differ from the original exam.
- The use of phones and the internet is prohibited during exams.

Attendance and Engagement Statement

A student with more than 20% of unexcused absences may receive an 'F' in the course. Each student is responsible for all materials covered in class and assigned assignments regardless of absence. Be sure to meet the following expectations:

- Submit work on time.
- Keep your instructor informed of your status.
- Review your instructor's feedback carefully and learn from it.

Use of Electronic Devices

The use of mobile phones, laptops, tablets, and similar devices is strictly prohibited during class sessions, exams, and other course-related activities unless explicitly authorized by the instructor for academic purposes. All devices should be silenced or turned off to avoid disruptions.

Accommodations Statement

Students with disabilities who are experiencing barriers in this course may contact the Access Office (https://www.valdosta.edu/student/disability/) for assistance in determining and implementing reasonable accommodations. The Access Office is located in University Center Room 4136 Entrance 5. The phone

numbers are 229-245-2498 (V), 229-375-5871. For more information, please visit VSU's Access Office or email: access@valdosta.edu. To request reasonable accommodations for pregnancy and childbirth, contact Ms. Myia Miller, Title IX Compliance Officer, at maburden@valdosta.edu. Please note, you will be required to provide documentation from an appropriately licensed medical professional indicating the requested accommodations are medically necessary.

Non-Discrimination and Title IX Statement

Valdosta State University (VSU) upholds all applicable laws and policies regarding discrimination on the basis of race, color, sex (including sexual harassment and pregnancy), sexual orientation, gender identity or expression, national origin, religion, age, veteran status, political affiliation, or disability. The University prohibits specific forms of behavior that violate Title IX of the Education Amendments of 1972. Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of sex in education programs and activities that receive federal funding. VSU considers sex discrimination in any form to be a serious offense. Title IX refers to all forms of sex discrimination committed against others, including but not limited to: sexual harassment, sexual assault, sexual misconduct, and sexual violence by other employees, students or third parties and gender inequity or unfair treatment based on an individual's sex/gender. The designated Title IX Coordinator for VSU is Ms. Selenseia Holmes. To view the full policy or to report an incident visit: https://www.valdosta.edu/administration/student-affairs/title-ix/

VSU Integrity Statement

Academic integrity is the responsibility of all VSU faculty and students. Students are responsible for knowing and abiding by the Academic Integrity Policy as set forth in the Student Code of Conduct and this syllabus. All students are expected to do their own work and to uphold a high standard of academic ethics. Any violations of this policy may result in the academic penalties outlined in the syllabus and may also be referred to Student Affairs for further disciplinary action.

Plagiarism or any form of academic dishonesty will result in a grade of zero for the specific assessment on the **first instance** for all students involved. **A second instance** will result in a final course grade of F for all students involved.

AI Statement

VSU's Academic Student Conduct Code states that "no student shall engage in plagiarism, which is presenting the words or ideas of another person as if they were the student's own." Content generated by an Artificial Intelligence third-party service or site (AI-generated content) without proper citation is another form of plagiarism. If you are unsure about whether something may be plagiarism or another form of academic dishonesty, please reach out to me as soon as possible.

Turnitin Statement

By taking this course, you agree that all required course work may be subject to submission for textual similarity review to Turnitin, a tool within BlazeVIEW. For more information on the use of Turnitin at VSU see Turnitin for Students (https://www.valdosta.edu/academics/academic-affairs/turnitin-for-students.php)

Intellectual Property Statement

Materials in this course are presented to students in an educational context for their personal use and study only and should not be shared, distributed, or sold in print, or digital formats, outside the course without the express written permission of the instructor.

Academic Support Center Statement

The Academic Support Center (ASC) provides **unlimited**, **in-person**, **free peer tutoring** in core courses such as math, English/writing, sciences, social sciences, and languages. Students looking for additional assistance outside of the classroom are advised to consider working with a peer tutor through Knack. VSU has partnered with Knack to provide students with access to verified peer tutors who have previously aced this course. To view available tutors, visit vsu.joinknack.com and sign in with your student account. Please drop by our space in Odum Library, 2nd floor, or call 229-333-7570, email asc@valdosta.edu, or visit the website www.valdosta.edu/asc for more information.

Student Success Coaching Statement

The Student Success Team provides dedicated student support through one-on-one success coaching, programming designed to support students along their academic journey. Students can schedule 1:1 coaching appointments or attend one of the many workshops they will be offering during the semester. Please drop by our space in Odum Library, 2nd floor, or call 229-333-7570, email success@valdosta.edu, or visit the website to schedule a meeting and for helpful tips.

BIT (Behavioral Intervention Team) Team Syllabus Statement

If you, or someone you know, needs support, is distressed, or exhibits concerning behavior, help by making a referral to the BIT Team. The VSU BIT Team's purpose is to promote a safe and productive learning, living, and working environment by addressing the needs of students. As your professor, I may contact the BIT Team to seek support for you. I encourage you to fill out a referral if you or a classmate are in need of help. There are several ways to contact the BIT Team: 1) For more information about the BIT Team at https://www.valdosta.edu/administration/student-affairs/bit.php; 2) Email your concern to vsubit@valdosta.edu; or 3) Fill out the anonymous Concerning Behavior Reporting Form at https://www.valdosta.edu/administration/student-affairs/student-conduct-office/our-services.php

*Syllabus subject to change by the instructor