

# BMEN 3341 Course Syllabus – Spring 2022

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## Course Information

BMEN 3341.001/002

Probability Theory and Statistics for Biomedical Engineers

Spring 2022

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## Professor Contact Information

**Instructor**            *Dr. Kathleen Myers*  
**Office Phone**        *972.883.7209*  
**Office Location**    *ECSN 2.222*  
**Email Address**     [kxm156530@utdallas.edu](mailto:kxm156530@utdallas.edu)  
**Office Hours**        *See eLearning*

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## Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre-requisites: MATH 2414 or MATH 2419

Recommended Co-requisite: MATH 2420

Credit cannot be received for both courses, (CS 3341 or SE 3341 or STAT 3341 or ENGR 3341) and BMEN 3341.

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## Course Description

Probability theory, independence, Bayes' rule, normal distribution, central limit theorem. Graphical representation of data. Descriptive and inferential statistics with applications to biomedical engineering, hypothesis testing, confidence intervals, and linear regression. One sample, paired samples, and two independent samples methods.

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## Student Learning Objectives/Outcomes

1. Understand how to represent and compare data using descriptive statistics and graphical methods (ABET SO 6).
  2. Understand probability axioms and calculate basic set probabilities (ABET SO 1).
  3. Understand the Central Limit Theorem and calculate confidence intervals (ABET SO 1).
  4. Apply hypothesis testing to make statistical decisions (ABET SO 6).
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## Required Textbooks and Materials

“Probability and Statistics for Engineers and Scientists” (with MyStatLab Access), Walpole, Myers, Myers, and Ye, 9<sup>th</sup> ed., (ISBN 9780134507248)

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## Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

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## Assignments & Academic Calendar

Date	Chapter	Quiz	Reading Assignment
Jan. 19	Chapter 1: Introduction to Statistics and Data Analysis		1.1-1.7
24	Chapter 2: Probability		2.1-2.2
26			2.3-2.4
31			2.5-2.6
Feb. 2			2.7-2.8
7		Quiz 1	
9	<b>Review</b>		
14	<b>Exam I</b>		<b>Ch. 1-2</b>
16	Chapter 3: Random Variables and Probability Distributions		3.1-3.2
21			3.3
23	Chapter 4: Mathematical Expectation	Quiz 2	4.1-4.2
28	Chapter 5: Discrete Probability Distributions		5.1-5.2
Mar. 2	Chapter 6: Continuous Probability Distributions		6.1-6.3
7		Quiz 3	6.4-6.5
9	<b>Review</b>		
14	<i>Spring Break</i>		
16	<i>Spring Break</i>		
21	<b>Exam II</b>		<b>Ch. 3-6</b>
23	Chapter 8: Sampling Distributions		8.1-8.4
28			8.6
30	Chapter 9: Estimation		9.1-9.5

Apr. 4		Quiz 4	9.8-9.9
6			9.10-9.11
11	Chapter 10: Tests of Hypotheses		10.1-10.3
13			10.4-10.5
18		Quiz 5	10.8-10.9
20	<b>Review</b>		
25	<b>Exam III</b>		<b>Ch. 8-10</b>
27	Chapter 11: Linear Regression		11.1-11.3
May 2		Quiz 6	11.12
4	<b>Final Exam Review</b>		
<b>9</b>	<b>Comprehensive Final Exam (5-7:45pm)</b>		<b>Ch. 1-11</b>

\*\*\*This calendar is subject to change at the discretion of the Professor\*\*\*

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### Grading Policy

Homework/Participation	10%
Quizzes	20% (lowest quiz score dropped)
Midterm Exam I	20%
Midterm Exam II	20% (lowest midterm exam score dropped)
Midterm Exam III	20%
Final Exam	30%

A+	≥97%	B+	89.9 - 87.0%	C+	79.9 - 77.0%	D+	69.9 - 67.0%	F	≤59.9%
A	96.9 - 93.0%	B	86.9 - 83.0%	C	76.9 - 73.0%	D	66.9 - 63.0%		
A-	92.9 - 90.0%	B-	82.9 - 80.0%	C-	72.9 - 70.0%	D-	62.9 - 60.0%		

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### Course & Instructor Policies

#### **Assignments:**

Students are expected to have completed reading assignments BEFORE the associated class period (see Assignments & Academic Calendar above).

All homework assignments will be completed using the MyStatLab link within eLearning. You are required to purchase a **MyStatLab access code** (or a textbook package including the access code) in order to create an account and access MyStatLab. You are allowed to consult with fellow students on homework assignments, but each student is expected to complete and submit the

assignments under their own username. Homework assignments will be posted to eLearning at least one week in advance of the due date allowing students adequate time to complete each assignment. Work on assignments early. If you have any difficulties with submission, **you must email the instructor BEFORE the due date.** Homework will be graded within MyStatLab as the work is completed. The score will be continuously updated as you work on the assignments up until the due date. Grades will be synced with eLearning, but there may be a slight delay as the grades update. **No late homework will be accepted.**

***Participation:***

Regular class participation is expected. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures. In-class participation will be assessed through in-class problem-solving assignments (“Solve-Its”) and other activities. These assignments will be delivered periodically throughout the semester. You will be expected to discuss the problems and collaborate with other students to formulate solutions. Your calculations and solutions will be collected at the end of the class period, and you will receive a completion grade for exhibited participation in the assignment regardless of the correctness of your response.

***Exams:***

Midterm and final exams are designed to assess fundamental comprehension and understanding rather than short term retention. Partial credit will only be awarded for significant progress in solutions and will be solely at the discretion of the instructor.

OSA tests will be administered within two hours prior to the scheduled test time.

*Cheating on exams will absolutely not be tolerated, and all instances will result in an automatic referral to the UTD Office of Community and Student Conduct.*

From the UTD Student Code of Conduct – UTDSP5003 – Subsection 9.6.2:

Cheating: Includes but is not limited to the use, attempted use, or providing of unauthorized materials, information, or study aids in any academic exercise; the use of sources beyond those authorized by the instructor in completing any academic exercise. Any type of discussion about questions and answers on assignments/tests, including those held in social media platforms and other electronic chat groups, may be considered cheating. Failure to submit a test within the timeframe allocated by the professor, whether in the classroom or in the University testing center, may be considered cheating. Academic exercise includes all forms of work submitted for credit or hours.

***Make-Up Exams:***

No make-up exams will be administered except in cases of excused absences. Unexcused absence from exams will result in loss of credit. **Family events, vacation plans, etc. do not constitute a valid excuse for a make-up exam.**

For cases of medical illness, signed documentation from a medical doctor excusing the student from activities on the date in question must accompany the make-up request which will be submitted prior to the exam deadline. The student is responsible for providing satisfactory evidence to the instructor to substantiate the request for a make-up exam. If the absence is foreseeable, this evidence will be provided and acknowledged by the instructor ahead of the excused absence. In the case of a medical emergency, the student will provide satisfactory evidence to the instructor **within 48 hours** for the absence to be considered for excusal by the instructor on an individual case basis. COVID-related absences (isolation and/or quarantine) must be verified by the Dean of Students to qualify as an excused absence.

The date and time for the final exam is to be set by the Office of the Registrar and will occur on one of the designated final exam dates (Saturday, May 7 – Friday, May 13, 2022). Do not make any travel arrangements to be away from campus during this time until the exam date is announced. **Scheduled travel will NOT be an acceptable excuse for a makeup final exam.**

***Grade Discrepancies:***

Requests to have an exam or assignment regraded must be made within one week of receiving the graded item back. You must provide a clear explanation of how it was graded incorrectly. Unsubstantiated requests for additional partial credit will not be accepted. **No grade changes will be considered after the one week deadline has passed.** *Keep in mind that the entire assignment is subject to re-grading when it is submitted for consideration.*

***eLearning:***

All MyStatLab assignments will be accessible via eLearning. Students are expected to access eLearning (<https://elearning.utdallas.edu>) on a daily basis to check for course announcements and posted assignments. MyStatLab assignments will be submitted by students via the MyStatLab website (accessed via eLearning) by the due date designated on MyStatLab and on the eLearning calendar.

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**Classroom Conduct Requirements Related to Public Health Measures**

UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester to the extent allowed by state governance. Texas Governor Greg Abbott's Executive Order [GA-38](#) prohibits us from mandating vaccines and face coverings for UT Dallas employees, students, and members of the public on campus. However, we strongly encourage all Comets to get vaccinated and wear face coverings as recommended by the CDC. Check the [Comets United: Latest Updates webpage](#) for the latest guidance on the University's public health measures. Comets are expected to carry out [Student Safety](#) protocols in adherence to the Comet Commitment. All students will be expected to complete the [Required Daily Health Screening](#). Those students who

do not comply will be referred to the Office of Community Standards and Conduct for disciplinary action under the [Student Code of Conduct – UTSP5003](#).

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### **Class Attendance**

Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. Absence from participation exercises and/or exams will result in loss of credit except under unavoidable and clearly documented medical reasons or in the case of required COVID-related absences verified through the Dean of Students.

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### **Recommendation Letters**

Requests for letters of recommendation will not be considered from students with any unexcused absences. A minimum 2-weeks notice is required for all recommendation letter requests.

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### **Class Recordings**

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

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### **Accommodations**

It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for this course, please discuss it with me and allow at least one-week advance notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact the Office of Student AccessAbility for a confidential discussion. OSA is located in the Administration Building, suite 2.224. They can be reached by phone at 972- 883-2098, or by email at [studentaccess@utdallas.edu](mailto:studentaccess@utdallas.edu).

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### **Comet Creed**

*This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:*

*“As a Comet, I pledge honesty, integrity, and service in all that I do.”*

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### **Academic Support Resources**

The information contained in the following link lists the University’s academic support resources for all students.

Please see <http://go.utdallas.edu/academic-support-resources>.

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### **UT Dallas Syllabus Policies and Procedures**

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus. Please review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

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*The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.*