# MATH 3680 (Fall 2025): Applied Statistics INET Syllabus

## Instructor Information

**Name:** Dr. Kiko Kawamura

**Office Location:** GAB 433, NTDP E245B

**E-mail:** kiko.kawamura@unt.edu

**Office Hours:**

* Tuesday and Thursday: 11:30am - noon (NTDP E245B),
* Wednesday: 2-3pm (GAB 433)

If you would like to schedule a Zoom appointment, please submit your request at least 24 hours in advance by E-mail.

## How to Communicate with Your Instructor

1. If you have a question about a **specific WebAssign homework problem**, click “**Ask Your Teacher**” near the top of the page and follow the prompts. This will allow me to see both your message and your previous attempts to solve the problem.
2. If you have a general question about the course material, please send me a Canvas message or an email with “**MATH 3680.XXX**” in the subject line. *To protect your privacy, I will only reply to emails sent from your UNT account.*
3. If you would like to schedule a Zoom appointment, please submit your request at least 24 hours in advance by E-mail.

I will check my messages every day (**except weekends and holidays**) and will make every effort to respond within 24 hours.

## Course Description

3 hours, Descriptive statistics, elements of probability, random variables, confidence intervals, hypothesis testing, correlation, linear regression, contingency tables.

## Course Structure

This is a 15-week online course that will be delivered via Canvas and WebAssign, which you will access directly from Canvas. The course is divided into eleven modules. You are expected to study approximately one module per week. Each module requires you to read certain sections of the eBook (available in WebAssign), watch a few lecture videos, and complete a homework assignment in WebAssign. There will also be three exams and a comprehensive final exam.

## Course Prerequisites

MATH 1710 and MATH 1720 (may be taken concurrently). Students should have mastered differential and integral calculus of a single variable, including integration by parts.

## Course Objectives

By the end of this course, students will be able to:

* Examine how to make intelligent judgments and informed decisions in the presence of uncertainty and variation.
* Investigate randomness and uncertainty.
* Develop probability models for a single discrete/continuous random variable.
* Examine confidence intervals and hypothesis-testing procedures for single data set.
* Examine confidence intervals and hypothesis-testing procedures for two sets of paired/unpaired data.
* Analyze if two variables are related and how strong that relationship is.

## F-1 Visa Regulations

Federal regulations state that students may apply only 3 fully-online semester credit hours (SCH) to the hours required for full-time status for [F-1 Visa (DOC)](https://digitalstrategy.unt.edu/clear/files/clear_f1_online_student_procedures_rev2018_10_08.doc) holders. Full-time status for F-1 Visa students is 12 hours for undergraduates and 9 hours for graduate students.

## How to Succeed in this Online Course

The best way to ensure you pass this course is to work consistently throughout the semester. In mathematics courses topics always build one upon the other making it very difficult to catch up later if you fall behind. To master the course material, you must exert consistent effort throughout the semester:

* Read the relevant section of the textbook prior to each lecture video. Don’t expect that watching a few lecture videos is enough to learn all the material. The lecture videos help you to focus on the most important topics, though.
* Start working on each homework assignment as soon as possible after the corresponding lecture videos.
* When studying for exams, make a good-faith effort to solve all the review problems before watching the video solutions.

UNT strives to offer you a high-quality education and a supportive environment, so you learn and grow. As a faculty member, I am committed to helping you be successful as a student. To learn more about campus resources and information on how you can be successful at UNT, go to [unt.edu/success](https://www.unt.edu/success/) and explore [unt.edu/wellness](https://wellness.unt.edu/). To get all your enrollment and student financial-related questions answered, go to [scrappysays.unt.edu](http://scrappysays.unt.edu/).

There are many academic resources available to help you succeed in this course:

* [Navigate’s Study Buddy](https://navigate.unt.edu) (https://navigate.unt.edu)
* [Math Lab](https://math.unt.edu/mathlab) (https://math.unt.edu/mathlab)
* [UNT Learning Center](https://learningcenter.unt.edu/) (https://learningcenter.unt.edu/)
  + [Tutoring](https://learningcenter.unt.edu/tutoring) (<https://learningcenter.unt.edu/tutoring>)

Online Course System

The University is committed to providing a reliable online course system to all users. However, part of working in the online environment involves dealing with the inconveniences and frustration that can arise when technology breaks down or does not perform as expected. Here at UNT we have a Student Help Desk that you can contact for help with Canvas or other technology issues.

**UIT Help Desk**: [UIT Student Help Desk site](https://www.unt.edu/helpdesk) (https://www.unt.edu/helpdesk)

**Email**: [helpdesk@unt.edu](mailto:helpdesk@unt.edu)

**Phone**: 940-565-2324

**In Person**: Sage Hall, Room 130

**Walk-In Availability**: 8am-9pm

**Telephone Availability**:

* Sunday: noon-midnight
* Monday-Thursday: 8am-midnight
* Friday: 8am-8pm
* Saturday: 9am-5pm

**Laptop Checkout**: 8am-7pm

For additional support, visit [Canvas Technical Help](https://community.canvaslms.com/docs/DOC-10554-4212710328) (https://community.canvaslms.com/docs/DOC-10554-4212710328)

### ADA Accommodation Statement

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the [Office of Disability Access](https://studentaffairs.unt.edu/office-disability-access/) (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodation at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the [Office of Disability Access](https://studentaffairs.unt.edu/office-disability-access) website (https://studentaffairs.unt.edu/office-disability-access). You may also contact ODA by phone at (940) 565-4323.

## Creating an Inclusive Learning Environment

Every student in this class should have the right to learn and engage within an environment of respect and courtesy from others. We will discuss our classroom’s habits of engagement and I also encourage you to review UNT’s student code of conduct so that we can all start with the same baseline civility understanding ([Code of Student Conduct](https://policy.unt.edu/policy/07-012)) (<https://policy.unt.edu/policy/07-012>).

## Required Course Materials

This course has digital components. To fully participate in this class, students will need internet access to reference content on the [Canvas Learning Management System](https://clear.unt.edu/supported-technologies/canvas/requirements) (https://clear.unt.edu/supported-technologies/canvas/requirements).

Students will be expected to bring to class (including exams) a graphing calculator with statistical functions or a laptop computer with a spreadsheet or statistical analysis program installed. I will demonstrate how to perform various statistical functions using a TI-83/84 Plus or [Microsoft Excel](https://it.unt.edu/installoffice365) (https://aits.unt.edu/support/office365apps).

**Textbook (Required):** Devore, Jay L. *Probability and Statistics for Engineering and the Sciences*, 9th edition. Cengage, 2016. **It is available online through WebAssign platform.**

* WebAssign (6 months = $128.75)
* Cengage Unlimited (4 months = $139.99, 1 year = $214.99)

**Cengage WebAssign Required:** WebAssign is an online delivery platform accessed directly through Canvas. WebAssign access includes all online homework assignments, the e-textbook and additional learning resources. **Use the link in Canvas to register immediately.** You must register in WebAssign by the 2nd class day of the semester.

## Technical Requirements & Skills

### Minimum Technology Requirements

* Computer
* Reliable internet access
* Speakers
* Microphone
* Webcam
* Graphing calculator with statistical functions and/or spreadsheet program
* [Canvas Technical Requirements](https://clear.unt.edu/supported-technologies/canvas/requirements) (<https://clear.unt.edu/supported-technologies/canvas/requirements>)

### Computer Skills & Digital Literacy

Students are expected to be proficient at:

* Using Canvas
* Using email with attachments
* Using a graphing calculator and/or spreadsheet program. I will demonstrate how to perform various statistical functions using a TI-83/84 Plus and/or Microsoft Excel.

## What You Should Do Immediately

Log in to Canvas and click the WebAssign link at the top of the module page. Please use **your UNT E-mail address** to register for this course. See [Video Tutorial: Access WebAssign from Canvas](https://www.webassign.net/manual/student_guide/t_s_vt_canvas.htm) for more information. WebAssign grants **no-cost temporary 14-day access**. You must purchase your access before the temporary access expires. Students who do not purchase WebAssign by the end of the temporary access period may lose credit for all work previously completed with the possibility of no refund.

I strongly encourage you to get started with Enhanced WebAssign as soon as possible. If you delay, you run the risk of unforeseen technical problems that could prevent you from completing the first assignment.

### Course Topics

The following chapters and sections of the textbook will be covered according to the projected schedule below. Dates may change as events warrant.

Chapter 1: Overview and Description Statistics

1.1 Populations, Samples and Processes

1.2 Pictorial and Tabular Methods in Descriptive Statistics

1.3 Measures of Location

1.4 Measures of Variability

Chapter 2: Probability

2.1 Sample Spaces and Events

2.2 Axioms, Interpretations, and Properties of Probability

2.4 Conditional Probability

2.5 Independence

Chapter 3: Discrete Random Variables and Probability Distributions

3.1 Random Variables

3.2 Probability Distributions for Random Variables

3.3 Expected Values

3.4 The Binomial Probability Distribution

3.5 Hypergeometric and Negative Binomial Distributions

Chapter 4: Continuous Random Variables of Probability Distributions

4.1 Probability Density Functions

4.2 Cumulative Distribution Functions and Expected Values

4.3 The Normal Distribution

4.6 Probability Plots

Chapter 5: Joint Probability Distributions and Random Samples

5.4 The Distribution of the Sample Mean

5.5 The Distribution of a Linear Combination

Chapter 7: Statistical Intervals Based on a Single Sample

7.1 Basic Properties of Confidence Intervals

7.2 Large-Sample Confidence Intervals for a Population Mean and Proportion

* 1. Intervals Based on Normal Population Distribution

Chapter 8: Test of Hypotheses Based on a Single Sample

8.1 Hypotheses and Test Procedures

8.2 *z-*Tests for Hypotheses about a Population Mean

8.3 The One-Sample *t* Test

8.4: Tests Concerning a Population Proportion

Chapter 9: Inferences Based on Two Samples

9.1 *z* Tests and Confidence Intervals for a Difference Between Two Population Means

9.2 The Two Sample *t* Test and Confidence Interval

9.3 Analysis of Paired Data

9.4 Inferences Concerning a Difference Between Population Proportions

Chapter 12: Simple Linear Regression and Correlation

12.1: The Simple Linear Regression Model

12.2: Estimating Model Parameters

12.5 Correlation

## Tentative Course Schedule

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Lecture/Assignment** | **Sections** | **Topic** |
| **Week 1** | | | |
|  | Lecture video 1, 2, 3 | 1.2, 1.3, 1.4 | * Graphical Representation of Data * Mean and Standard Deviation * Trimmed Mean |
|  | **Homework 0, 1** | 1.2, 1.3, 1.4 |  |
| **Week 2** | | | |
|  | Lecture video 4, 5, 6 | 2.2, 2.4 | * Probability: Axioms and Multiplication Rule * Probability: Addition Rule * Independence and Mutually Exclusive |
|  | **Homework 2** | 2.2, 2.4, 2.5 |  |
| **Week 3** | | | |
| 9/1/2025 | **Labors Day (No class)** |  |  |
|  | Lecture video 7, 8, 9 | 3.1, 3.2, 3.3, 3.4, 3.5 | * Discrete Random Variables and Probability Distributions * Independence and Mutually Exclusive * Binomial and Hypergeometric Distribution |
|  | **Homework 3** | 3.1-3.5 |  |
| **Week 4** | | | |
|  | Review for Exam 1 | Chapter 1 -3 | * Review sheet for exam 1, * Practice Exam 1 |
| 9/15/2025 | **Exam 1** |  |  |
|  | **Homework 4** | Review for Calculus I |  |
| **Week 5** | | | |
|  | Lecture video 10, 11, 12, 13 | 4.1, 4.2. 4.3 | * Continuous Random Variables * The Normal Distribution * Continuity Correction * Approximating Bin (n, p) with the Normal Distribution |
|  | **Homework 5** | 4.1, 4.2, 4.3 |  |
| **Week 6** | | | |
|  | Lecture video 14, 15 | 4.6, 5.4, 5.5 | * Probability Plots * The Central Limit Theorem |
|  | **Homework 6** | 4.6, 5.4, 5.5 |  |
| **Week 7** | | | |
|  | Lecture video 16, 17 | 7.1, 7.2 | * Confidence Intervals: Large Samples * Confidence Intervals: One-Sided for Means and Two-Sided for Proportions |
|  | **Homework 7** | 7.1, 7.2 |  |
| **Week 8** | | | |
|  | Lecture video 18, 19, 20 | 7.3, 8.1 | * Confidence Intervals: Small Samples * Introduction to Hypothesis Testing * Hypothesis Testing: The z-Test, P-value Method |
|  | **Homework 8** | 7.3, 8.1 |  |
| **Week 9** | | | |
|  | **Review for Exam 2** | Chapter 4, 5, 7 | * Review sheet for exam 2 * Practice exam 2 |
| 10/20/2025 | **Exam 2** |  |  |
| **Week 10** | | | |
|  | Lecture video 21, 22 | 8.2, 8.3, 8.4 | * Hypothesis Testing: Power of Test, Sample Size * Hypothesis Testing: The t-Test and Proportions |
|  | **Homework 9** | 8.2, 8.3, 8.4 |  |
| **Week 11** | | | |
|  | Lecture video 23, 24 (part 1 and part 2) | 9.1, 9.2, 9.3, 9.4 | * Two-Sample Data: Unpaired Large Samples (MO-9.1) * Two-Sample Data: Unpaired Small Samples and Proportions; Matched Pairs |
|  | **Homework 10** | 9.1, 9.2 |  |
|  | **Homework 11** | 9.3, 9.4 |  |
| **Week 12** | | | |
|  | Lecture video 25 | 12.5 | * Correlation |
|  | **Homework 12** | 12.5 |  |
| **Week 13** | | | |
|  | **Review for Exam 3** | Chapter 8, 9 | * Review sheet for Exam 3 * Practice exam 3 |
| 11/17/2025 | **Exam 3** |  |  |
| 11/24/2025-11/29/2025 | **Thanksgiving holiday**  **(No class)** |  |  |
| **Week 14** | | | |
|  | Lecture video 26 | 12.1, 12.2 | * Linear Regression |
|  | **Homework 13** | 12.1, 12.2 |  |
| **Week 15** | | | |
|  | **Review for comprehensive final exam** |  |  |
| 12/9/2025 | **Final exam** |  |  |

## Emergency Notification & Procedures

UNT uses a system called [Eagle Alert](https://www.unt.edu/eaglealert.html) to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to the UNT Learning Management System (LMS) for contingency plans for covering course materials.

## Assessing Your Work

|  |  |
| --- | --- |
| WebAssign Homework | 25% |
| Three regular exams and Final exam | 75% |
| **Total** | **100%** |

## Grading

A = 90–100 % B = 80–89.9% C = 70–79.9% D = 60–69.9% F = below 60%

Grades are based on mastery of the content. As a rule, I do not grade on a “curve” because that is a comparison of your outcomes to others. I do, however, encourage you to find opportunities to learn with and through others. Please come to office hours or take advantage of the academic resources listed above if you find yourself struggling.

If you need to pass this course because it is your last semester, your financial aid depends on it, your scholarship depends on it, or your parent/guardian has threatened you in some manners then do yourself a favor and start studying right away. **I will not entertain any pleas for extra credit or offers to do additional work at the end of the semester.**

Use of Generative AI Tools

Generative AI tools (e.g., ChatGPT, Microsoft Copilot) are *not* permitted on exams. When working on homework, I encourage you to take advantage of the many available resources: my office hours, email, the Math Lab, and other approved support options. These are all designed to help you learn and understand the material more effectively.

While AI might seem helpful, it is often unreliable for learning math and statistics and can produce incorrect or misleading results. More importantly, one of the key goals of this course is to strengthen your critical thinking and problem-solving abilities—skills.

### Academic Integrity Standards and Consequences

According to UNT Policy 06.003, [Student Academic Integrity](https://policy.unt.edu/policy/06-003) (https://policy.unt.edu/policy/06-003), academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

### Examination Policy

There will be 3 midterm exams and a comprehensive final exam that require you to use LockDown Browser and Respondus Monitor with your WebCam. After the exam is graded, you have 48 hours to appeal your grade. I will not listen to any appeal after this 48-hour period. You may ask me to go over exam problems with you. However, all decisions on partial credit are final and not open for discussion.

**Your lowest exam score will drop.** If you are happy with your scores on the 3 midterms, then you may choose to omit the final exam.

**Make-up Policy:** Make up exams will NOT be given for any reason after the fact. I drop the lowest exam score to cover emergencies which may arise unexpectedly. An exam may be taken prior to the scheduled date if you have a conflict with another obligation and can provide documentation. I require notification a week in advance for this accommodation.

**Academic Dishonesty:** Cheating will not be tolerated. Any student caught cheating will receive a “0” on the exam and a report will be filed with the Office of Academic Integrity.

I reserve the right to test you on problems that are generalizations of material covered in the class and/or in the text. In short, the problems may not look exactly like the ones in the book. Everything that is covered in the course content is fair game for exam material. You will be responsible for everything unless I advise you to the contrary.

### Homework Policies

Homework assignments can be accessed via [WebAssign](http://www.webassign.net) (http://www.webassign.net).

* When you log in, you will be able to see the due dates.
* Cooperation on homework assignments is encouraged.
* You have **4 submissions** for most questions. Your last submission will count as your final answer.

If you use a help option (Read it, Watch it and Talk to a Tutor), it will count as 1 submission.

* You can save your work without using a submission.
* Some exercises will be randomized. In other words, it’s possible that every student will have slightly different questions with different answers.
* **A 5% bonus will be awarded** to students who complete their homework more than 48 hours before the due date.

When computing grades, I will **drop ONE lowest homework grade** before computing the homework average. Therefore, in principle, you could get a 100% homework score and not turn in an assignment during the semester. I have this policy in case you get sick, a family emergency arises, etc., during the semester. You will still be responsible for the material in such assignments during the examinations. **Requests for manual extensions will NOT be granted.**