Course Syllabus

Site: Rose-Hulman Institute of Technology
Course: MA223 Engineering Statistics I
Book: Course Syllabus

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Table of contents

Course Overview

Instructor Information

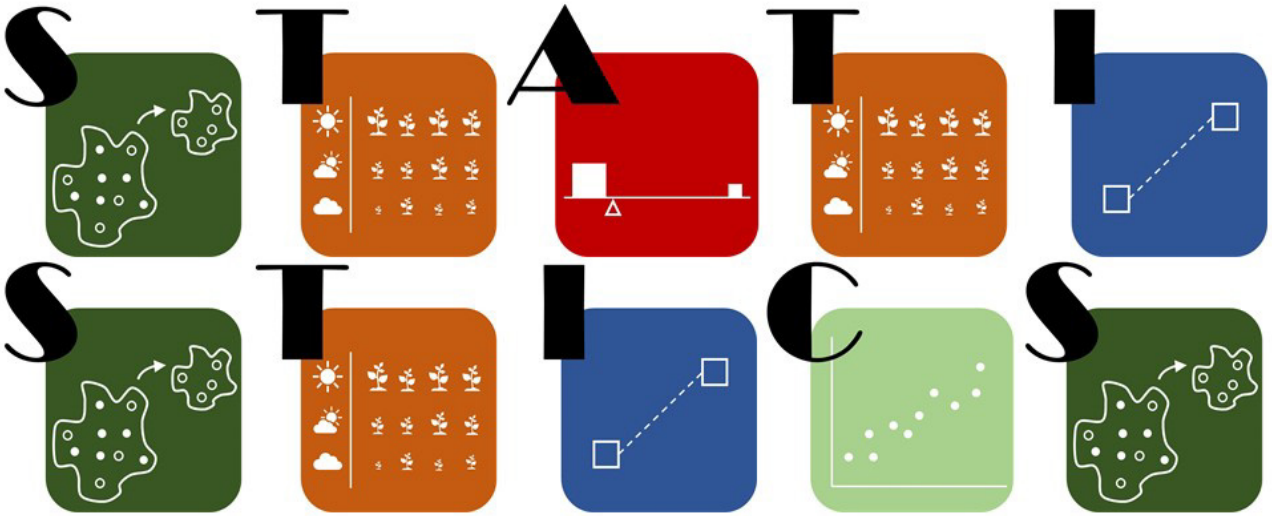
Course Materials

Course Policies

Suggested Schedule

Institute Policies

MA223 Engineering Statistics I



Course Description:

We will introduce statistical concepts in the context of engineering, the physical, and the biological sciences. The course emphasizes statistical literacy (interpretation and clear communication of statistical methods, results, and concepts) and statistical reasoning (defining the need for data to address questions, modeling variability in a process, and choosing the appropriate methodology to address a question of interest). We describe approaches to collecting data, summarizing the information contained within the data, building a model to address a question of interest, using the data to estimate the unknowns in the model, assessing the model, and interpreting the results based on the model.

Learning Objectives:

Decisions need to be made in industry and science. This course discusses the collection and use of data for the purpose of decision-making in the presence of variability. The course is built on the following five fundamental ideas:

I. A research question can often be framed in terms of a parameter that characterizes the population. Framing the question should then guide our analysis.

II. If data is to be useful for making conclusions about the population, a process referred to as drawing inference, proper data collection is crucial. Randomization can play an important role in ensuring a sample is representative and that inferential conclusions are appropriate.

III. The use of data for decision-making requires that the data be summarized and presented in ways that address the question of interest.

IV. Variability is inherent in any process, and as a result, our estimates are subject to sampling variability. However, these estimates often vary across samples in a predictable way; that is, they have a distribution that can be modeled.

V. With a model for the distribution of a statistic under a proposed model, we can quantify the likelihood of an observed sample under that proposed model. This allows us to draw conclusions about the corresponding parameter, and therefore the population, of interest.

At the end of this course, you should be able to perform the following tasks:

(A) Given a problem description, **identify** the population and parameter(s) of interest as well as the statistic(s) from the sample appropriate for estimating the parameter(s). If appropriate, **formulate** an appropriate set of statistical hypotheses that address the research goal.

(B) **Describe** the importance of considering the data collection scheme when interpreting the results of a study, including potential confounding, replicability, and generalizability. Given a problem description, **identify** potential reasons for variability in the observed response and the limitations of the data collection scheme.

(C) **Construct** and **interpret** graphical and numerical summaries of data to address a given question of interest.

(D) **Describe** general techniques for modeling the sampling distribution of a statistic, and **discuss** the role of a sampling distribution in inference.

(E) Given a question of interest, **conduct** an appropriate statistical analysis (using either confidence intervals or p-values) in order to aid in decision making, and given a statistical analysis, **interpret** the results of the analysis in the context of the problem.

(F) **Comment** on the adequacy of a statistical method for addressing a given question of interest by **assessing** the conditions underlying the method.

(G) **Develop** a question of interest; then, **design** and **implement** a study to address the question.

(H) **Identify** the value of statistical methodology in the advancement of science as well as **recognize** its limitations.

(I) **Collaborate** with others to **conduct** data collection and a statistical analysis and **communicate** the results appropriately.

(J) **Support** a decision using graphical and/or numerical data.

As you progress through the course, objectives specific to each module will be given; accomplishing these module-level objectives will help you succeed in accomplishing the course-level objectives.

Overview of Course Topics

The following topics are included in the course.

- Study design, including random sampling schemes as well as a comparison of observational studies and controlled experiments.

- Graphical and numerical summaries for a single quantitative variable, the relationship between a quantitative and a categorical factor, and the relationship between two quantitative variables.
- Compare and contrast the distribution of the population, the sample, the sampling distribution, and the null distribution.
- Models for describing the sampling distribution of a statistic, including bootstrapping and parametric models.
- Confidence intervals for a single mean and parameters of a simple linear regression model.
- Hypothesis testing for a single mean, comparing multiple means across two or more groups, and the parameters of a simple linear regression model.

Course Prerequisites

MA111 (Calculus I) and RH131 (Rhetoric and Composition) are prerequisites for this course.

In particular, from calculus, you should be familiar with the concepts of differentiation (for determining an optimal solution) and integration (integrals provide the area under a curve). Similarly, you should be familiar with summation notation. This course will not require computational methods within these areas but will make use of these concepts.

Rhetoric and Composition is a prerequisite due to the amount of technical communication required in this course. You should be able to distinguish between verb tenses and clearly communicate responses in paragraph form at the collegiate level.

Contact Information

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Contacting the Instructor:
I do not have regular office hours dedicated to this class. If you have questions, feel free to email or message me on Teams. I keep my Outlook calendar and Teams status up to date. Alternatively, you may always email me to schedule an appointment to meet in person or remotely.

While I try to be prompt with responses, I will respond to emails within 1 business day. Note that this means that emails received after 5 PM (Terre Haute time) will, in general, not be addressed until the following business day. I am, in general, not available in the evening or on weekends, as these times are reserved for my family.

Instructor Biography

After graduating from Rose-Hulman Institute of Technology in 2006 with a degree in Mathematics and Economics, I attended graduate school at North Carolina State University where I earned my Ph.D. in Statistics under the direction of Dr. Dennis Boos and Dr. Len Stefanski. My primary interest is biostatistics - the application of statistical methodology to medical research. As a former participant in the NHLBI Integrated Biostatistical Trainee Program for CVD Research, I spent five years as an intern at the Duke Clinical Research Institute serving as a statistical consultant under the direction of Karen Pieper.

My research interests include methods for variable selection (the process of discerning which variables are useful for predicting a response), statistics education (how to teach my discipline in a way that gives the best student learning experience), and alternate assessment (grading techniques that promote learning and are more equitable).

I was hired into the math department to teach primarily statistics. I teach Engineering Statistics each term (often multiple sections); I consistently work to improve the class because I love teaching it, and I believe it is important for every student on campus to be statistically literate. In addition to teaching statistics, I am the faculty adviser for the InterVarsity Christian Fellowship chapter on campus.

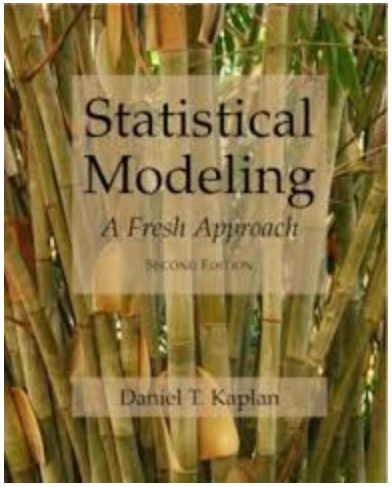
Textbook (Required)

- **Title:** Statistical Foundations for Engineers and Scientists (**Course Textbook**)

The textbook is **required**. This text is completely free and was written specifically for this course by the instructor. It provides coverage of the concepts assessed in the course. Regular reading will be assigned from this text. A link to the course text is available in the Key Resources section at the top of the course Moodle page. The text is completely electronic; for those that prefer a hard copy, you can download a PDF version from the textbook site.

Additional Textbook (Optional)

- **Title:** Statistical Modeling: A Fresh Approach
- **Author:** Daniel Kaplan
- **ISBN:** 978-0-9839658-7-9



The textbook is **optional**. This text was chosen because it provides an excellent reference for learning about statistics from a model-based perspective. For those that learn well from textbooks, this can be an excellent companion to the course. However, homework problems and reading assignments will not be made from the text. The text is freely available **online**.

Course Notes

Each module in the course includes reading assignments from the **course textbook** and video supplements. These are accompanied by a guided course note packet. There is one guided note packet per module. The guided notes highlight the key ideas from the readings and video supplements but are not meant to replace a textbook. The notes are simply a tool for organizing the course content.

Software

- **RStudio:** R is a freely available statistical computing language. **RStudio** provides a nice interface to the computing language. While you can obtain a copy from the website for your machine, Rose-Hulman faculty, staff, and students have access via a web interface; the link to this interface is provided under the Key Resources block at the top of the course page. No familiarity with R/**RStudio** is assumed.

Additional Technology Requirements

This course will be structured as a "hybrid classroom," which means that some of the content will be delivered online requiring additional technology. At a minimum, you should be able to perform the following tasks *prior* to beginning the course:

- Navigate Moodle and interact with activities posted in Moodle (such as discussion forums and quizzes).
- Have access to a high-speed internet connection for viewing instructional videos, downloading course note packets and data, and submitting course assignments.
- Be connected to the Rose-Hulman network either by being on campus or connecting to the **Rose-Hulman VPN**.

You will need dependable internet access (on-campus wireless internet will be sufficient) to successfully complete this course. **If you plan to be in a location during the course that does not have reliable internet access or restricts access to Google products (such as Google Chrome), you may be unable to successfully complete aspects of the course.**

Grading Procedures

Statistics is a unique discipline in that it exists solely to aid decision-makers in other fields. This course seeks to improve your statistical literacy and reasoning such that you could successfully collaborate on a small research study. This course can also serve to launch you into further statistics coursework to eventually contribute to the analysis of a study. In order to assess your progress toward the course goals, several types of assignments are given throughout the course. Each type of assignment assesses a different aspect of the course; some skills are best learned in groups while others should be developed individually. As a result, the grading scheme uses a mix of components as well. In order to help you achieve the objectives of the course, I will be implementing a non-traditional procedure for assigning grades in the course. While perhaps unconventional, this policy comes out of my desire to (a) set clear expectations for you, (b) evoke your best work, (c) provide you with flexibility, and (d) encourage you to own your learning experience.

Instead of taking a weighted average of points earned on a series of assignments throughout the term (the classical style of grading), course grades will be earned by establishing sustained proficiency in three areas (Statistical Literacy, Statistical Reasoning, and Statistical Analysis) across a variety of contexts (in the form of modules in the course).

The following table gives the number of assignments that you must successfully complete in order to obtain a particular course grade:

Grade	Basic Engagement				Major Assessments			Sustained Proficiency		
	Reflection Forums	Portfolio Problems	Homework (Group)	Labs (Group)	Literacy Lessons	Concept Checks	Analysis Tasks	Literacy Sustained Proficiency Stars	Concept Sustained Proficiency Stars	Analysis Sustained Proficiency Stars
A	7	32	9	2	9	9	9	7	7	7
B	7	32	9	2	8	8	8	5	5	5
C	7	32	9	2	7	7	7	3	3	3
D	7	32	9	2	6	6	6	0	0	0

A grade is earned by meeting **all requirements** for a particular row. For example, if you only complete 6 of the reflection forums, you would not receive a passing grade in the course, regardless of your performance in any of the remaining areas. These requirements were established so that

- Earning a D in the course means you have exposure to all course content and have completed approximately 66% of course objectives, all with the help of the instructor.
- Earning a C in the course means you have exposure to all course content and have completed approximately 77% of course objectives, just under half of which were completed unsupervised.
- Earning a B in the course means you have exposure to all course content and have completed approximately 88% of course objectives, over half of which were completed unsupervised.
- Earning an A in the course means you have exposure to all course content and have completed all course objectives, the vast majority of which were completed unsupervised.

Note the use of "successfully complete" when describing progress toward grades. **Assignments are not graded on a point system; instead, each assignment is compared to a set of requirements, and an assignment is "successfully completed" when it meets or exceeds those requirements; partial credit is not awarded in this course**. Very clear expectations will be provided with each assignment to ensure you have every opportunity to successfully complete a task. Be aware that "successful completion" does not equate to "perfect," but the expectations will often demand your work meet high standards.

Revision Policy

We all have different priorities, and at times those priorities may not align with the timing of class assignments. Further, learning necessarily involves making attempts and revising based on the feedback we receive. Creating satisfactory work begins with starting assignments early, continues with referring to the stated expectations frequently, and includes responding to feedback provided, all while engaging with the material regularly.

To help with the learning process:

- Any *Literacy Lesson*, *Concept Check*, *Analysis Task,* or *Lab* may be revised and resubmitted as often as necessary until it meets the requirements (or until any posted revision deadlines).
- It is *highly encouraged* that you submit revisions as soon as possible, ideally prior to the following Module's homework due date, in order to correct misconceptions prior to completing the next set of major assessments.

This policy is not a license to submit sub-standard work in hopes of being given the correct answer; nor would it be wise to not take major assessments seriously. **Note that any grade of C or better requires a "sustained proficiency" component demonstrating you can meet expectations without instructor guidance in the form of revisions (see below)**. The policy is meant to reward hard work, acknowledge that mistakes are part of the learning process, and convey that I sincerely believe you have the potential to succeed and am unwilling to settle for less than your best work. Please understand that while I believe this policy to be beneficial, it is also very costly --- both to you as a student in terms of time spent performing revisions as well to me as the instructor in terms of time spent providing feedback.

Basic Engagement Assignments

You are expected to engage with the course content regularly to establish foundational knowledge and gain exposure to the material. Basic engagement means successfully completing

- 7 of 9 Reflection Forums
- 32 of 36 Portfolio Problems
- 9 of 9 Homework Assignments (completed in groups)
- 2 of 2 Lab Reports (completed in groups)

Major Assessments

Beyond basic engagement with the course content, course grades are determined by meeting the course objectives in the areas of statistical literacy, statistical reasoning (concepts), and statistical analysis. To pass the course, you must successfully complete 6 of 9 assignments in each of these three areas. Successfully completing more assignments in all areas makes progress toward higher grades in the course.

Sustained Proficiency

As stated above, meeting the requirements in the three Major Assessment areas can be accomplished through the use of the course revision policy. However, your grade in the course also depends on establishing "sustained proficiency" in the areas of statistical literacy, statistical reasoning (concepts), and statistical analysis. Any grade of C or better requires this sustained proficiency. Sustained proficiency can be earned in one of two ways:

- Successfully completing a major assessment *without* revisions earns a sustained proficiency star in the associated area. For example, successfully completing a Concept Check without the use of a revision will earn one "Concept Sustained Proficiency Star."
- Successfully completing a problem on the Final Exam earns two sustained proficiency stars in the associated area. For example, successfully completing a Literacy problem on the Final Exam earns two "Literacy Sustained Proficiency Stars."

Earning sustained proficiency means that in addition to putting in work, you are meeting the objectives on your own --- demonstrating proficiency in the course content. This policy rewards those who are disciplined in their studies and become competent with the content early in the course (potentially avoiding the Final Exam) as well as those who learn at a different pace but eventually attain competency with the content (using the Final Exam to demonstrate proficiency of previous concepts).

Plus Grades

A "plus" grade is earned in one of two ways, assuming you have met the Basic Engagement requirements:

- Completing the requirements for Major Assessments at one grade level while meeting the Sustained Proficiency requirements at a higher grade level.
- Completing the requirements for Sustained Proficiency at one grade level while meeting the Major Assessments requirements at a higher grade level.

For example, if you complete the Basic Engagement requirements and successfully complete all 9 Literacy Lessons, all 9 Concept Checks, and all 9 Analysis Tasks, but are only able to obtain 5 sustained proficiency stars in each of the three areas, you would earn a B+. In this case, you met all the requirements for a B in the course but met the Major Assessment requirements for a higher grade.

Description of Course Assignments

The course is broken into nine modules. Each module will consist of an opportunity to demonstrate progress toward the course learning objectives. Some types of assignments accompany every module, while other assignments occur only periodically throughout the course. The assignments are described below.

Reflection Forums

There will be a reflection forum within each module (for a total of 9 forum discussions). Forum discussions encourage students to reflect on their learning during the module and identify areas of confusion. In order to successfully complete a forum discussion, the following criteria must be met:

- Post a single "reply" in the forum (either to the initial prompt or to a response from one of your peers).
- If you are posting a reply to the initial prompt, you must post a *unique* answer to *one* of the initial prompts provided; that is, you should not duplicate an existing post.
- If you are posting a reply to a peer, you should contribute more than "I agree" or "I disagree." You could expand on a particular aspect (e.g., by providing an example of what your peer described), attempt to clarify a course concept to your peer, or explain how you have been processing the same ideas. Essentially, this is a discussion; adding to that discussion will result in a successful completion.

Homework

One homework assignment will be given for each module (for a total of 9 assignments). Homework is to be completed in the course software (**RStudio**) and submitted electronically using the corresponding Moodle dropbox on the course page. **Each assignment is to be completed in your Homework/Lab Group**. Only one submission is required from each group. Your group may use any resource available to you on Moodle, including other students/groups, when completing the assignment. Each assignment will consist of a mix of questions. In order to successfully complete an assignment, the following criteria must be met:

- Every problem on the assignment must be attempted in good faith. This means that every problem is attempted and the solution, even if incorrect, attempts to address the problem using the material discussed in class.

Homework is designed to elicit discussion among the members of your group and with the instructor. This helps resolve misconceptions with subtle concepts. As practice for the larger assignments, you are encouraged to use the **Rubric for Completing Homework Questions** to practice answering questions consistent with the high standards demanded on other assignments. Note: while this assignment is completed as a group, every individual is responsible for the entirety of the work submitted.

Portfolio Problems

Each module will contain 4 questions (for a total of 36 questions during the term) that assess key concepts or computational tasks related to the course learning objectives corresponding to that module. Across all modules, this provides an opportunity to demonstrate your progress toward meeting the course objectives stated in the syllabus. You may consult any resource available to you on Moodle as well as other students in the completion of your

portfolio, **but each student must submit their own responses**. You have as many opportunities to complete the portfolio problems as needed prior to their due date.

Lab Reports

There will be two opportunities to complete a *Lab Report* during the term. Labs are an opportunity to apply the concepts in the course to answer research questions and engage in the research process from start to finish in a collaborative environment. Labs are to be completed in the course software (**RStudio**) and submitted electronically using the corresponding Moodle dropbox on the course page. **Lab assignments are to be completed in your Homework/Lab Groups**. Only one report is required per group. Each lab report will consist of a set of 10 short answer questions. Successful completion of the lab report requires the following criteria to be met:

- Successful completion of 9 of the 10 questions.
- Each question will be assessed using the **Rubric for Completing Homework Questions**.

You will have an opportunity to revise your lab report if you do not successfully complete it on the first attempt.

Literacy Lesson

Each module will have 1 Literacy Lesson (for a total of 9 assignments). These assignments assess foundational terminology, interpretation, and concepts in the course which are required to be successful on other assignments. There are 5 multiple-choice questions in each Literacy Lesson. In order to successfully complete a Literacy Lesson, the following criteria must be met:

- 4 of the 5 questions must be answered correctly.

Successfully meeting these criteria on your first attempt will earn you one Literacy Sustained Proficiency Star. You may use any resources available to you on this assignment. **This is an individual assignment. You are not permitted to discuss this assignment with anyone other than the instructor.** Because this assignment is auto-graded, you may complete a revision immediately. Revisions of this assignment should be completed prior to the deadline for this assignment in each module.

Concept Check

Each module will have 1 Concept Check (for a total of 9 assignments). These assignments assess core concepts in statistical reasoning and design. Each assignment consists of a single free-response question asked in Moodle. Criteria for successfully completing a Concept Check are unique to each prompt and are provided alongside the assignment.

Successfully meeting these criteria on your first attempt will earn you one Concept Sustained Proficiency Star. You may use any resources available to you on this assignment. **This is an individual assignment. You are not permitted to discuss this assignment with anyone other than the instructor.**

Analysis Task

Each module will have 1 Analysis Task (for a total of 9 assignments). These assignments assess analytical skills and require the use of the course software (**RStudio**). Each assignment consists of one or more prompts within a single context. Criteria for successfully completing an Analysis Task are unique to each prompt and are provided alongside the assignment.

Successfully meeting these criteria on your first attempt will earn you one Analysis Sustained Proficiency Star. You may use any resources available to you on this assignment. **This is an individual assignment. You are not permitted to discuss this assignment with anyone other than the instructor.**

Final Exam

The Final Exam is comprehensive and is coordinated with other sections of the course, if applicable. The exam consists of a series of multiple-choice and short-answer questions. The final exam can be used to establish Sustained Proficiency in the course (see the Sustained Proficiency section above). Note that the Final Exam cannot negatively impact your course grade. Details on the exam will be provided during the last week of the term.

Academic Misconduct Penalty

Expectations for upholding academic integrity, and the importance of academic integrity within the institution, as well as the departmental policy on academic integrity, can be located in the last chapter of the course syllabus (Institute Policies). In this section, we simply outline the penalty for academic misconduct. Academic misconduct is essentially the act of falsely portraying work as your own; this includes, but is not limited to, the use of unauthorized aids during an assignment as well as copying another student's *ideas*. If a student commits academic misconduct on an assignment, the following action will be taken by the instructor:

- A letter will be sent to the student, the Head of the Department of Mathematics, and the Dean of Students outlining the incident and the penalty applied.
- **Department Policy** mandates that you receive a 0 on the assignment in question. As a result, a revision on the assignment no longer makes sense; further, a 0 prevents me from both observing your proficiency with the subject and from providing meaningful feedback. Therefore, you will be given an alternative assignment to demonstrate your progress in the course; further, the alternate assessment cannot be used to establish sustained proficiency.
- Depending on the type of misconduct, you may be required to complete further assessments in a supervised environment.

This policy is consistent with the **Mathematics Department's Academic Integrity Policy**. To ensure you are not found in violation of the standards of academic integrity, you are encouraged to read the **Student Handbook**.

Attendance Policy

The health (both physical and mental) and safety of those on campus is something for which we are each responsible. As part of this effort, your grade in the course is not directly linked to your attendance in class. I encourage you to shift from thinking of "being in class" as your goal and instead shift toward a focus on "engaging with course content." In-class activities are meant to help explain course content, but no new information is shared during those times.

- If you are experiencing symptoms of an illness, do not come to class.
- Communicating your circumstances to me can make all the difference.

If for any reason you will be unable to attend a class, we can arrange for you to engage remotely during the lesson. Let go of perfectionist expectations of yourself and others; be open-minded about course delivery, virtual office hours, remote gatherings with classmates, etc.

While in class, you are expected to adhere to all guidelines stated in the Rose Ready document. If you display a pattern of disregard for these guidelines, I will inform the Dean of Students of your behavior and recommend disciplinary action consistent.

Expectations for Professionalism within a Group

Whether working in industry or academia, engineers and scientists will primarily make use of statistical ideas in a collaborative setting. Further, we believe learning some of the abstract ideas in this course is best done within a group setting. As a result, some portions of this course require collaborative work. I expect each student to act professionally within their group. Group members will have different levels of proficiency in the course content and different skill sets. As a result, a healthy group does not necessarily mean "equal participation" of group members. However, every group member is responsible for the work submitted by the group; therefore, every group member is expected to act professionally - which includes active participation in meetings and aiding in the construction of final documents. At a minimum, professionalism includes:

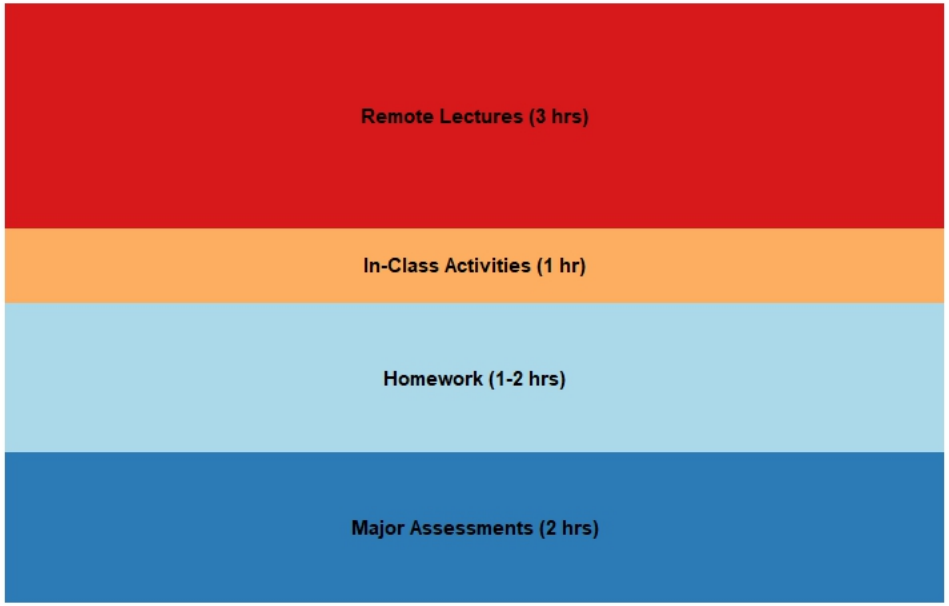
- No one is done until everyone is done.
- You have the right to ask anyone in your group for help.
- You have the duty to assist anyone in your group who asks for help to the best of your abilities.
  - Helping peers means explaining thinking; it does not mean giving answers or doing the work for them.
  - Provide justification when you make a statement to another member of the group.
  - If one individual would like to complete the group portion of the final exam, all group members are required to participate.
- If the group has a question, it is appropriate to ask the instructor.
  - The group has a question when everyone shares the question.
  - The group has a question when an individual is uncertain after consulting with other members of the group and receiving their responses.

You are expected to resolve typical issues of group dynamics; the instructor can help with this as needed. If you feel a member of your group is not acting in a professional manner to the extent that you do not feel comfortable with that individual's name attached to the work submitted, please contact the instructor in writing (via email) immediately.

Course Engagement

This course is designed with a remote learning component; in-class discussions reinforce the material presented outside of class. In such an environment, the key to success is regular engagement with course material, and that is accomplished through remaining disciplined with your schedule. Here are the biggest lies you can tell yourself about this course:

1. *I can get everything done over the weekend*. The truth is that you might get the work done, but you most likely will not retain it well enough to perform adequately on major assessments. If you try to take shortcuts to learning (starting with homework and only looking at worked examples instead of doing the reading and gaining proficiency with the deeper concepts), you will most likely find yourself saying "I feel like I understand it on the homework but mess up on the larger assessments." Proficiency requires regular engagement throughout the week through the various activities in the course.
2. *I do not need to fill in the note packets*. While you will always have access to the course text and videos, filling in note packets is a form of active listening instead of passive listening. When you are active in the learning process, it increases retention. More often, filling in the notes means you are less likely to need to hunt through the textbook and videos later when you need a concept.
3. *The best way to study is to "look over" my notes*. The more active role you take in your education, the more you will retain. "Looking over" notes or homework solutions is generally a poor study technique. It is better to create a cheat sheet (even if an assessment is open notes or the cheat sheet is not allowed). If the cheat sheet is not allowed, it produces a good study tool. If you are allowed your notes, use the cheat sheet to highlight the key ideas as well as where you should look in the notes and text for more information quickly. The cheat sheet is more than definitions, it is a place to draw connections between topics.
4. *I just need examples*. This is not a math class; this is more like a humanities course. You will spend more time explaining your logic and discovering the subtleties in others' logic than making computations. You will not survive the course using pattern recognition. That is, you cannot learn the material by seeing several examples and mimicking that approach. Similarly, doing well on an exam is not about finding a similar problem on the homework and mimicking the approach. Success requires you to spend time outside of the homework thinking about the concepts - drawing connections, being able to explain them in different ways, and recognizing them in the description of a study design. Think of it like preparing a report over a book you read; you want to know the plot, how the characters connect, what the story is trying to illustrate, and even how it relates to your personal narrative. Success in a statistics course is similar. Often, the major assessments pull on the *ideas* illustrated during the homework assignments but may ask you to engage with them from a different perspective. It is not about mimicking, it is about mastering.



At a minimum, you will be expected, *each week*, to put 3 hours into notes/lectures, an additional hour on learning activities, 1-2 hours on homework assignments, and an additional 1-2 hours preparing for major assessments. This includes the time spent in class. Each student has different commitments during the term. Most of you have a full course load; some are working; others are involved in groups across campus; some may be caring for family members. And, let's face it, you never know when your life will experience some significant disruptions! Therefore, the schedule that works best for you will vary, but I can offer you some advice by way of the **Course Calendar**. While the due dates are firm, the **Course Calendar** also provides advice for when to begin assignments and when to complete lecture readings.

Here are a few additional thoughts:

- You should be able to complete the note packet with 2-3 evenings' worth of light work (an hour or less each evening).
- Work on homework assignments individually (expect 1 hour of individual work) prior to meeting with your group.
- Work as a group to agree on homework solutions using your individual copies as a starting point for discussion.
- Make use of the homework days in class to ask questions (on the homework or general concepts).
- Compare your homework solutions with the posted solutions and be sure to note any differences prior to completing the major assessments.

There is definitely a rhythm to the course. It helps to develop a consistent routine during the first module and continue that throughout the term.

Students with Accessibility Needs

Rose-Hulman is committed to working with students who have special needs or disabilities. Such students may be eligible to receive accommodations that provide equal access to learning, the living and learning environment, and college activities. Visit the **Accessibility Services website** for more information. Requests for academic accommodations must be documented with and approved by the Accessibility Services office before they can be implemented in this course.

Student Handbook

This course adheres to all policies described in the **Student Handbook**. A few key sections are briefly outlined below. In brief, Rose-Hulman expects its students to be responsible adults and to behave at all times with honor and integrity. All students are expected to abide by this code and to aid in its enforcement by reporting violations of it.

Dropping the Course

You are responsible for understanding the university's policies and procedures regarding withdrawing from courses found in the current catalog. You should be aware of the current deadlines according to the **Rose-Hulman Academic Calendar.** More information for Drops and Adds can be found on the **Registrar's site here**.

Academic Integrity

Academic integrity is an integral part of the Rose-Hulman community. It is important that all members of our community learn to properly acknowledge the important contributions of others in our respective fields, both within Rose-Hulman and external to Rose-Hulman. Understanding how to work in collaboration with others and how to incorporate their work into your own, and then appropriately acknowledging them, demonstrates your intellectual maturity and a high degree of professionalism. Academic integrity refers to maintaining a high standard of honesty in academic conduct. All students and faculty are encouraged and required to show academic integrity at all times. In contrast, academic misconduct is a failure of academic integrity. Specifically, academic misconduct is cheating, plagiarism, or interfering with the academic progress of other students.

The **Academic Rules and Procedures document** provides extensive rules and procedures for academic and other misconduct. The Mathematics Department **follows these rules seriously**. The minimum penalty for such misconduct is for the instructor to award zero credit for the assessment on which the misconduct occurs, even if it results in a lowered or failing grade. A report of the misconduct will be sent to the Dean of Students and the Mathematics Department Head. Faculty members may exact a higher penalty, up to and including failure in the course if they feel the misconduct warrants such action. Students may appeal the sanctions to the rules and discipline committee, per the cited web page.

Plagiarism is a serious offense, and students are expected to adhere to the Rose-Hulman policy on plagiarism and cheating. It is your responsibility to know the Rose-Hulman policy on academic honesty, including plagiarism, cheating, dishonest conduct, and collusion. This not only includes misrepresenting others' work as your own, but also the use of any other material in your work without appropriate citations and references. Using the same work for multiple courses is also dishonest. If you have any questions concerning rules, procedures, or about academic honesty, plagiarism, cheating, dishonest conduct or collusion, especially with regard to this class, please speak with me.

Diversity Statement

Rose-Hulman is committed to being an **inclusive community** in which the multiplicity of values, beliefs, intellectual viewpoints, and cultural perspectives enrich learning and inform scholarship. The design of this course is meant to celebrate diverse backgrounds.