School of Distance Education
Andrews University

SYLLABUS

STAT 285 Introduction to Applied Statistics

202241

STAT285 Introduction to Applied Statistics
School of Distance Education

Self-Paced Format
This course follows a self-paced online format. This format allows you to set your own pace of study. While you have 180 days from your start date to complete the course with Andrews University, it is your responsibility to meet any deadlines set by your home institution. The last day to withdraw with a full refund is 15 days after your start date. See more withdrawal details here.

Instructor Contact
Please refer to course in Learning Hub for the teacher contact information.

Communication with the Instructor
It is important to remember that while the Internet is available 24 hours a day, your instructor is not. You can expect that your instructor will respond to e-mail message to you within *2 business days* during the week and may not be available to respond on weekends.

Other Assistance

Username and password assistance	helpdesk@andrews.edu	(269) 471-6016
Technical assistance with online courses	dlit@andrews.edu	(269) 471-3960
Exam requests and online proctoring	sdeexams@andrews.edu	Call: (269) 471-6566
Distance Student Services - any other questions	sdestudents@andrews.edu	Text: (269) 397-4477

Part 1: Course Information

Course Description
A data-driven study of basic descriptive and inferential statistics. Concepts such as null distributions, hypotheses, test statistics, and p-values are emphasized while applying standard statistical tests including logistic regression.

Prerequisites
Math Placement Exam score of P2 or better.

Required Text/Material
1. Salkind, N.J., & Frey, B.B. (2019). *Statistics for People Who (Think They) Hate Statistics, 7th Edition.* Thousand Oaks, CA: Sage Publishing, Inc.
   Caution 1: If you purchase an international copy or an older edition then the pagination will be different which will cause difficulties for the required reading assignments.
   Caution 2: If you rent the book then be certain you have access through the time of the final exam.
2. jamovi Access: This is an open source statistical package that you can download here: https://www.jamovi.org
3. WebAssign Subscription: This is the platform where you will do your homework. You need a "Homework Only, 1-Term Subscription". (The company is Cengage). Some of you may already have a paid WebAssign or Cengage subscriptions from another class. **Only connect through WebAssign link in the course space**

4. A calculator with at least parentheses, exponentials, natural logarithms, and roots is required for this class. Fancier functions may be interesting or may be clutter for you. Recommended (if purchasing): TI30XS Multiview

Credit Hour and Commitment

This course is offered for 3 semester credits; therefore it is expected that you will spend 135 total hours on this course. This course has 16 modules with 15 lessons, 2 exams, homework assignments that will be completed in WebAssign, 7 discussion forums and a final paper. It is recommended that you budget 9 hours for studying and completing the activities for each module. There are suggested schedules to accomplish this work including in this syllabus.

Institutional Outcomes

Demonstrate competence in intellectual, affective, and practical skills to prepare for careers in the twenty-first century, lifelong learning and service.

These skills include information literacy, quantitative literacy, engaging diverse perspectives, ethical reasoning, analytical inquiry in the form of problem solving and creative thinking, communication, wellness and transferable life skills.

Program Learning Outcomes

Think logically and critically. Understand mathematical concepts and identify quantitative relationships. Draw inferences from tables, graphs, and functions. Appreciate the value and application of mathematics in real world systems.

Student Learning Outcomes

SLO 1: Develop critical thinking skills.
SLO 2: Learn how to correctly infer information from data and how to report results.
SLO 3: Be able to use Jamovi statistical analysis software and list that skill on your resume.
Assessment: Two Exams, WebAssign HW Assignments, Final Project

Part 2: Course Methods and Delivery

Methods of Instruction

Methods of instruction include assigned readings from the textbook and the course material, video tutorials on Jamovi skills, interactions with the instructor via Learning Hub discussions, instructor help on WebAssign homework, and two exams. Regular participation in the course is essential to good performance.

Technical Requirements

- Computer: PC (Win 7 or newer) or MAC (10.6 or better)
- A webcam with microphone, and speakers (or plug in headset)
- Internet: 2.4 Mbps or faster DSL, cable or Wi-Fi connection
- Browser: Current version of Chrome or Firefox
- Software: MS Office 2013 or newer (student copy here)

LearningHub Access

This course is delivered online through LearningHub at http://learninghub.andrews.edu

Your username and password are your Andrews username and password. You need to activate your username and password to access LearningHub.

Please do this online here: https://vault.andrews.edu/vault/pages/activation/information.jsp if you haven't already. If you need assistance, call or email us: (296) 471-6016 or mailto:helpdesk@andrews.edu.

If you need technical assistance at any time during the course, or to report a problem with LearningHub, please email dlit@andrews.edu or call (269) 471-3960.

Part 3: Course Requirements

Important Note: This online class is **not** self-paced. You can arrange your schedule flexibly during each week, but you MUST participate each week. You are expected to "show up" to class by interacting in the discussion forums a minimum of two times per week. In addition, assignments are due regularly each week. Adequate Internet access during the duration of the course is critical for your participation. To be successful, plan to spend time daily on the course.

Assessment Descriptions

Learning Hub Discussions: Discussion between students and instructor.
Midterm and Final Exam: Multiple choice, short answer, and open response.
Final Project: The student answers their research question about variable(s) in a dataset of their choice by performing an appropriate hypothesis test.

Discussion Forums

Discussion forums are opportunities for you, the course instructor and your classmates to engage in robust online conversations. In some instances, where one student is enrolled in a course, discussions will be with the instructor. Those conversations are most often based on academic topics and questions. They are integral to the course and provide avenues for enriching knowledge as well as constructing knowledge through thoughtful dialogue with peers and instructors.

Some discussions are formal in nature and call for thorough scholarship. They hold to the same academic standards for originality and honesty as other academic work (e.g. papers, essays, quizzes and exams). Whenever appropriate, any idea or statement in a discussion forum that is not your own original work should be referenced, according to the style guide adopted by your academic discipline (e.g. APA, MLA, Chicago, etc.).

There may also be forums in the course in which the discussions are informal. Such discussions may include personal introductions and opportunities to know more about other participants in the course as well as academic topics. Informal forums are great for sharing interests, observations and encouragements with classmates.

Rubrics   Final Project

4=Superior, 3=Proficient, 2=Basic, 1=In Progress, 0=Unacceptable	Notes
Were the variables clearly described? **4** **3** **2** **1** **0**	
Was assumption testing done? **4** **3** **2** **1** **0**	
How were the missing data handled? **4** **3** **2** **1** **0**	
Were the degrees of freedom, test statistic, p-value, confidence interval (if appropriate, and effect size presented? **4** **3** **2** **1** **0**	
Was the interpretation of the confidence interval(s) and effect size(s) included (if appropriate)? Was the research question answered? **4** **3** **2** **1** **0**	
Clear communication and organization? **4** **3** **2** **1** **0**	
Mechanics: Grammar, punctuation, spelling? **1** **0.5** **0** 1=acceptable, 0.5=Some errors, 0=unacceptable	
Total: _____ **out of 25 = _____%**	

Exams

There are 2 exams in this course. The midterm, or first exam covers material from Week 1-8, is in two parts. Part 1 is take-home done with notes and jamovi help. Part 1 is to be submitted in Learning Hub. Part 2 is proctored and made up of multiple-choice questions and short answer. You will be allowed 120 minutes to take this exam. This exam is worth 25% of your grade. The final or second exam covers material from Week 1-16, is made up of multiple-choice questions and short answer. You will be allowed 150 minutes to take this exam. This exam is worth 25% of your grade. All exams (except the take home part of the midterm) must be taken under supervision of a proctor.

Follow prompts in the course space to set up your exam session. In each module that contains an exam, you will find what to review and what materials are allowed (if any) during the exam.

Please read the important information about taking exams and how online proctoring works at www.andrews.edu/distance/students/exams.html. Follow the instructions that apply to your situation on the exam request form to set up your exam session.

Please note that an exam code is never released to the student. All students must present photo identification before each exam session. Exams can only be proctored after a deadline with approval directly from the instructor to the Testing Center (sdeexams@andrews.edu or 269-471-6566). No exam is returned to the student for review. To aid studying for future exams, you may request the instructor to provide summary feedback on an exam.

Suggested schedule for completion in 8 weeks

Modules	Lessons	Readings	Assignments	Outcomes Met
Intro	These items will need to be completed before you will have access to the rest of the course	Orientation Course Overview Introductions Academic Integrity	Schedule Introduce Yourself Academic Integrity Quiz Academic Integrity Statement	

1	Lesson 1: Introduction, Measures of Central Tendency & Measures of Variability	**Textbook:** *Statistics for People Who (Think They) Hate Statistics, 7e*
		  Read Ch. 1
		  Read Ch. 2
		  Read Ch. 3
			WebAssign
			  HW 1, HW 2, HW 3
			LearningHub
			  Discussion #1
				SLO 1
				SLO 3

	Lesson 2: Histograms, Charts & Correlation Coefficients	**Textbook:**
		  Read Ch. 4
		  Read Ch. 5
		Study:
		  Correlation Scatterplots Handout
			WebAssign
			  HW 4, HW 5, HW 6, HW 7
				SLO 1
				SLO 3

2	Lesson 3: Reliability and Validity & Hypotheses	**Textbook:**
		  Read Ch. 6
		  Read Ch. 7
		Study:
		  Jamovi Dataset: p112 Internal Consistency
		  Reliability 6-1
			WebAssign
			  HW 8, HW 9
				SLO 1
				SLO 3

	Lesson 4: The Normal Distribution	**Textbook:**
		  Read Ch. 8
		  Read Error on p. 159: Study the picture—Kurtosis diagram p159 correction
			WebAssign
			  HW 10, HW 11
			LearningHub
			  Discussion #2
				SLO 1
				SLO 2
				SLO 3

3	Lesson 5: Significance Level, Type I & II Errors & Inferential Statistics, Tests of Significance & Confidence Intervals	**Textbook:**
		  Read Ch. 9
		Study:
		  Notes HT and CI Handout
		  Summary of Errors in Hypothesis Testing Handout
		  Type I and Type II Consequences & Answers Handout
			WebAssign
			  HW 12, HW 13, HW 14
			LearningHub
			  Discussion #3
				SLO 1
				SLO 2
				SLO 3

	Lesson 6: One Sample t-test & Z scores	**Textbook:**
		  Read Ch. 10
		Study:
		  T-Distribution Explanation Handout
		  Z test & t Test notes Handout
		  Jamovi Dataset: p.192 example
			WebAssign
			  HW 15, HW 16
			LearningHub
			  Discussion #4
				SLO 1
				SLO 2
				SLO 3

4	Lesson 7: t-Test for Independent Means	**Textbook:**
		  Read Ch. 11
		Study:
		  Independent Samples t-Test with Examples
		  Jamovi Dataset - #5 p.212
		  Jamovi Dataset - Smiles and Leniency
		  Jamovi Dataset - Words Remembered p203
			WebAssign
			  HW 17
			LearningHub
			  Discussion #5
				SLO 1
				SLO 2
				SLO 3

Modules	Lessons	Readings	Assignments	Outcomes Met
	Lesson 8: Midterm	Review all readings from first half of course	**WebAssign** Review First Half of Course (Extra Credit) **LearningHub** Open Notes Midterm Exam Part 1 **PROCTORED Midterm Exam Part 2**	SLO 1 SLO 2 SLO 3
5	Lesson 9: Paired Sample T-test	**Textbook:** Read Ch. 12 **Study:** Jamovi Dataset - Class Example Dependent Samples T-Test Jamovi Dataset - Example p. 219 **Resources for Final Project:** Conditions for HT Handout Hyp Test Flow Chart Handout	**WebAssign** HW18, HW19 **LearningHub** Dataset & Research Question for Final Project	SLO 1 SLO 2 SLO 3
	Lesson 10: Analysis of Variance (ANOVA)	**Textbook:** Read Ch. 13 **Study:** 1-Way ANOVA ANOVA Boxplots & F distribution	**WebAssign** HW20, HW21	SLO 1 SLO 2 SLO 3
6	Lesson 11: Two-Way ANOVA & Factorial ANOVA	**Textbook:** Read Ch. 14 **Study:** Factorial ANOVA Notes Handout Jamovi Dataset - Ch 14 Factorial ANOVA example	**WebAssign** HW22, HW23	SLO 1 SLO 2 SLO 3
	Lesson 12: Correlation, Linear Regression & Multiple Regression	**Textbook:** Read Ch. 15 Read Ch. 16 **Study:** Jamovi Dataset - HS College GPA p277 Data Jamovi Dataset - Marriage Parent Child p265 Visualizations of Different Correlations Handout Reporting Statistics (Dr. Henson's notes) Final Project Exemplar	**WebAssign** HW24, HW25, HW26 **LearningHub** Discussion #6	SLO 1, 2, 3
7	Lesson 13: Chi-Square Test of Independence & Chi-Square Goodness of Fit	**Textbook:** Read Ch. 17 **Study:** Jamovi Dataset - Example p298 Jamovi Dataset - Example p302 Chi Square Distribution Handout	**WebAssign** HW27, HW28, HW29 **LearningHub** Discussion #7	SLO 1, 2, 3

Modules	Lessons	Readings	Assignments	Outcomes Met
	Lesson 14: MANOVA & Multiple Regression	**Textbook:** Read Ch. 18 **Study:** MANOVA & Mult Regression Notes Handout Jamovi Dataset - MANOVA Plant Result Jamovi Dataset - Sleep Caffeine on Scores	**WebAssign** HW30, HW31	SLO 1, 2, 3
8	Lesson 15: Logistic Regression	**Read:** Logistic Regression Introduction Henson Outline Logistic Regression Henson Handout **Online Articles (Links on LH Lesson Page):** Interpret Interactions in Linear Regression Introduction to Logistic Regression Statistics for clinicians: An introduction to logistic regression **Study:** Jamovi Dataset - Remediation Reading Logistic Regression	**WebAssign** HW32, HW33 **LearningHub** Which Test—Extra Credit	SLO 1, 2, 3
	Final Module	Review all readings from course	**WebAssign** Review for Final (Extra Credit) **LearningHub** Final Project	
	PROCTORED COMPREHENSIVE FINAL EXAM			SLO 1, 2, 3

Suggested schedule for completion in 16 weeks

Modules	Lessons	Readings	Assignments	Outcomes Met
Intro	These items will need to be completed before you will have access to the rest of the course	Orientation Course Overview Introductions Academic Integrity	Schedule Introduce Yourself Academic Integrity Quiz Academic Integrity Statement	
1	Lesson 1: Introduction, Measures of Central Tendency & Measures of Variability	**Textbook:** *Statistics for People Who (Think They) Hate Statistics, 7e* Read Ch. 1 Read Ch. 2 Read Ch. 3	**WebAssign** HW 1, HW 2, HW 3 **LearningHub** Discussion #1	SLO 1 SLO 3
2	Lesson 2: Histograms, Charts & Correlation Coefficients	**Textbook:** Read Ch. 4 Read Ch. 5 **Study:** Correlation Scatterplots Handout	**WebAssign** HW 4, HW 5, HW 6, HW 7	SLO 1 SLO 3

Modules	Lessons	Readings	Assignments	Outcomes Met
3	Lesson 3: Reliability and Validity & Hypotheses	**Textbook:** Read Ch. 6 Read Ch. 7 **Study:** Jamovi Dataset: p112 Internal Consistency Reliability 6-1	**WebAssign** HW 8, HW 9	SLO 1 SLO 3
4	Lesson 4: The Normal Distribution	**Textbook:** Read Ch. 8 Read Error on p. 159: Study the picture—Kurtosis diagram p159 correction	**WebAssign** HW 10, HW 11 **LearningHub** Discussion #2	SLO 1 SLO 2 SLO 3
5	Lesson 5: Significance Level, Type I & II Errors & Inferential Statistics, Tests of Significance & Confidence Intervals	**Textbook:** Read Ch. 9 **Study:** Notes HT and CI Handout Summary of Errors in Hypothesis Testing Handout Type I and Type II Consequences & Answers Handout	**WebAssign** HW 12, HW 13, HW 14 **LearningHub** Discussion #3	SLO 1 SLO 2 SLO 3
6	Lesson 6: One Sample t-test & Z scores	**Textbook:** Read Ch. 10 **Study:** T-Distribution Explanation Handout Z test & t Test notes Handout Jamovi Dataset: p.192 example	**WebAssign** HW 15, HW 16 **LearningHub** Discussion #4	SLO 1 SLO 2 SLO 3
7	Lesson 7: t-Test for Independent Means	**Textbook:** Read Ch. 11 **Study:** Independent Samples t-Test with Examples Jamovi Dataset - #5 p.212 Jamovi Dataset - Smiles and Leniency Jamovi Dataset - Words Remembered p203	**WebAssign** HW 17 **LearningHub** Discussion #5	SLO 1 SLO 2 SLO 3
8	Lesson 8: Midterm	Review all readings from first half of course	**WebAssign** Review First Half of Course (Extra Credit) **LearningHub** Open Notes Midterm Exam Part 1 **PROCTORED Midterm Exam Part 2**	SLO 1 SLO 2 SLO 3
9	Lesson 9: Paired Sample T-test	**Textbook:** Read Ch. 12 **Study:** Jamovi Dataset - Class Example Dependent Samples T-Test Jamovi Dataset - Example p. 219 **Resources for Final Project:** Conditions for HT Handout Hyp Test Flow Chart Handout	**WebAssign** HW18, HW19 **LearningHub** Dataset & Research Question for Final Project	SLO 1 SLO 2 SLO 3

Modules	Lessons	Readings	Assignments	Outcomes Met
10	Lesson 10: Analysis of Variance (ANOVA)	**Textbook:** Read Ch. 13 **Study:** 1-Way ANOVA ANOVA Boxplots & F distribution	**WebAssign** HW20, HW21	SLO 1 SLO 2 SLO 3
11	Lesson 11: Two-Way ANOVA & Factorial ANOVA	**Textbook:** Read Ch. 14 **Study:** Factorial ANOVA Notes Handout Jamovi Dataset - Ch 14 Factorial ANOVA example	**WebAssign** HW22, HW23	SLO 1 SLO 2 SLO 3
12	Lesson 12: Correlation, Linear Regression & Multiple Regression	**Textbook:** Read Ch. 15 Read Ch. 16 **Study:** Jamovi Dataset - HS College GPA p277 Data Jamovi Dataset - Marriage Parent Child p265 Visualizations of Different Correlations Handout Reporting Statistics (Dr. Henson's notes) Final Project Exemplar	**WebAssign** HW24, HW25, HW26 **LearningHub** Discussion #6	SLO 1, 2, 3
13	Lesson 13: Chi-Square Test of Independence & Chi-Square Goodness of Fit	**Textbook:** Read Ch. 17 **Study:** Jamovi Dataset - Example p298 Jamovi Dataset - Example p302 Chi Square Distribution Handout	**WebAssign** HW27, HW28, HW29 **LearningHub** Discussion #7	SLO 1, 2, 3
14	Lesson 14: MANOVA & Multiple Regression	**Textbook:** Read Ch. 18 **Study:** MANOVA & Mult Regression Notes Handout Jamovi Dataset - MANOVA Plant Result Jamovi Dataset - Sleep Caffeine on Scores	**WebAssign** HW30, HW31	SLO 1, 2, 3
15	Lesson 15: Logistic Regression	**Read:** Logistic Regression Introduction Henson Outline Logistic Regression Henson Handout **Online Articles (Links on LH Lesson Page):** Interpret Interactions in Linear Regression Introduction to Logistic Regression Statistics for clinicians: An introduction to logistic regression **Study:** Jamovi Dataset - Remediation Reading Logistic Regression	**WebAssign** HW32, HW33 **LearningHub** Which Test—Extra Credit	SLO 1, 2, 3

Modules	Lessons	Readings	Assignments	Outcomes Met
16	Final Module	Review all readings from course	**WebAssign** Review for Final (Extra Credit) **LearningHub** Final Project	
		PROCTORED COMPREHENSIVE FINAL EXAM		SLO 1, 2, 3

Completing Assignments

All assignments for this course will be submitted electronically either through WebAssign or LearningHub unless otherwise instructed.

Part 4: Grading Policy

Graded Course Activities

Percent	Description
30%	WebAssign HW assignments
8%	Learning Hub Discussions
12%	Final Project
25%	MidTerm Exam
25%	Comprehensive Final Exam
100%	Total Percent Possible

Viewing Grades in Moodle
- Click into the course.
- Click on the **Grades** link in Administration Block to the left of the main course page.

Letter Grade Assignment

Letter Grade	Percentage
A	93-100%
A-	90-92%
B+	88-89%
B	83-87%
B-	80-82%
C+	78-79%
C	73-77%
C-	70-72%
D	60-69%
F	0-59%

Part 5: Course Policies

Withdrawal and Incomplete Policies
The current withdrawal policy can be found online at
https://www.andrews.edu/distance/students/gradplus/withdrawal.html. The incomplete policy
is found online at http://www.andrews.edu/weblmsc/moodle/public/incompletes.html.

Maintain Professional Conduct Both in the Classroom and Online
The classroom is a professional environment where academic debate and learning take place.
Your instructor will make every effort to make this environment safe for you to share your
opinions, ideas, and beliefs. In return, you are expected to respect the opinions, ideas, and
beliefs of other students—both in the face-to-face classroom and online communication.
Students have the right and privilege to learn in the class, free from harassment and disruption.

Academic Accommodations
Students who require accommodations may request an academic adjustment as follows:
1. Read the Andrews University Disability Accommodation information
   at https://www.andrews.edu/services/sscenter/disability/
2. Download and fill in the disability form
   at http://www.andrews.edu/services/sscenter/disability/accommodationsreqform.pdf .
   Preferably type answers. To save a digital copy, 1) print to file and save or 2) print and
   scan. Email the completed form and disability documentation (if any)
   to success@andrews.edu or fax it to (269) 471-8407.
3. Email sdestudents@andrews.edu to inform the School of Distance Education that a
   disability has been reported to Student Success.

Commitment to Integrity
As a student in this course, and at the university, you are expected to maintain high degrees of
professionalism, commitment to active learning, participation in this course, and integrity in
your behavior in and out of this online classroom.

Commitment to Excellence
You deserve a standing ovation based on your decision to enroll in, and effectively complete this
course. Along with your pledge of "commitment to Integrity" you are expected to adhere to a
"commitment to excellence." Andrews University has established high academic standards that
will truly enhance your writing and communication skills across the disciplines and in diverse
milieu with many discourse communities in the workplace.

Honesty
Using the work of another student or allowing work to be used by another student jeopardizes
not only the teacher-student relationship but also the student's academic standing. Lessons may
be discussed with other students, tutors may help to guide a student's work, and textbooks,
encyclopedias and other resource materials may be used for additional assistance, but the actual
response must be the student's own work. A student who gives information to another student
to be used in a dishonest way is equally guilty of dishonesty.

Any violation of this policy will be taken before the Higher Education Academic and Curriculum
Committee for appropriate punitive action.