

Spring Semester 2021

## STAT-285-001, -002, -003 Introduction to Applied Statistics

This syllabus may be revised at any time at the discretion of the instructor.

### Course Content and Bulletin Course Description

STAT285 is an introduction to descriptive and inferential statistics that includes implementation on SPSS. Topics covered: measures of central tendency, measures of variability, histograms, charts, correlation coefficients, reliability and validity, hypotheses, the normal distribution, significance, Type I & II errors, tests of significance, confidence intervals, one-sample z-test, t-tests for independent and dependent means, effect size, ANOVA, factorial ANOVA, MANOVA, testing significance of correlation coefficients, chi-squared test, linear regression, multiple regression, logistic regression, and the reporting of results.

Course description from the Bulletin: 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.

### Course Prerequisites

Prerequisite: MPE  $\geq$  P2 or ACT MATH  $\geq$  20

### General Class Information

Section 001 (IN-PERSON) MWF 9:30-10:20 Eastern Time HYH 133 (Science Complex, Math/Physics Amphitheater).

Section 002 (IN-PERSON) MWF 11:30-12:20 Eastern Time HYH 111 (Science Complex, Math Department)

Section 003 (REMOTE) MWF 9:30-10:20 Eastern Time (Zoom live with Section 001)

Credits: 3

### Covid-19

I love my students and I love working side-by-side with them on math problems. Sadly, I cannot do that this semester. Because we care about each other, all in-person class members will commit to the following. #1-6 are university policies, and #7-8 are my own class policies.

1. Wear a mask that covers your nose and mouth at all times inside the classroom and inside the Science Complex.
2. If you are attending school on campus, use the CampusClear app every morning.
3. Follow the instructions of your teacher and posted signs for entering/exiting the classroom, selecting a seat, and cleaning your area.
4. Always sit in your assigned seat (to facilitate contact tracing).
5. Do not physically attend class if you do not feel well or are exhibiting symptoms or believe you may have been exposed to COVID-19. You will be able to join the Zoom class or watch the lecture video and do your homework online.
6. Do not post class materials (including links to unlisted videos or clips of videos removed from context) to social media or other forums. Disparaging faculty and classmates on social media or in virtual spaces is a breach of Christian ethics and the Andrews University community agreement.
7. Remain at least 3 meters (10 feet) from the teacher. If you need to show me your work or something on the computer, please schedule a Zoom meeting (see Instructor Contact Information below). I am terribly sorry about this! **I have two elderly parents at home and I have to be very careful until they are vaccinated.**
8. Please contact me if any situation arises that interferes with your learning. I understand that some people cannot follow some of these covid guidelines for a variety of reasons. It is okay. In order to respect the others in the class, you can request to join the remote section (-003).

**These COVID-19 policies will be enforced** because we care about each other.

### Lectures and Taking Notes

Remote students will join the 9:30am section live via Zoom. In addition, each lecture will be recorded on video and posted after class on your personal WebAssign homepage under "Announcements". The video will be available to students in all three sections for your review.

Remote students: You need to have a dedicated notebook and dedicated desk space for this class. You should take notes during lecture just as if you were in-person.

Zoom etiquette: Mute your mic and turn on your video so I can see you. I will be sending you the Zoom link and password by email. Please do not share it with non-class members.

All students: If you do not feel well, please stay home and attend the Zoom class at 9:30. If you are unable to attend class via Zoom at 9:30, then take notes as you watch the recorded video of the lecture.

## Instructor Contact Information

Instructor: Dr. Shandelle M. Henson

URL: <http://www.andrews.edu/~henson/current.html> **All class materials are found here** (not on LearningHub).

### How to contact me:

1. **Email** [henson@andrews.edu](mailto:henson@andrews.edu)
2. **WebAssign** Use the “Ask Your Teacher” function for specific homework questions
3. **Appointment on Zoom** Zoom office hours: MW 4:00-5:00 pm Eastern Time. Please sign up for time slot at <http://www.andrews.edu/~henson/current.html>. Sometimes I will have a department meeting during these times, but I will reschedule the office hours on those days. Because of the pandemic, I am so sorry that I will not be able to meet with you face-to-face in my office. But remember, I am here for you.

**Times of availability:** Email and WebAssign questions: You may write to me at any time, and I will answer as soon as I can during this time window: SMTWR 1:00 pm – 7:00 pm Eastern Time. I may or may not be able to answer during other times. Note that, in general, I will not be able to answer homework questions after 7:00 pm the night before the due date.

## Student Contact Information

Make sure you are checking and receiving your Andrews email. You are responsible for any information I send the class from the iVue email system.

## Textbook and Course Materials

### READ THIS CAREFULLY:

All in-person AND remote students are **REQUIRED** to have the following 4 things. (Remote students will be required to have some additional things; please see below.) You will want these items the day class begins.

**1. Calculator:** You do NOT need a scientific calculator for this class. You DO need a simple calculator that does arithmetic, takes square roots, and does natural logs and exponentials (for example, has an “ln” key and an “exp” or “e^x” key). You may use your phone as a calculator. However, during exams you must not use the phone for any other purpose except as a calculator or clock.

**2. Textbook:** Neil J. Salkind & Bruce B. Frey: *Statistics for People Who (Think They) Hate Statistics, Edition 7*. You can buy this through the University Bookstore ([www.andrews.edu/bookstore](http://www.andrews.edu/bookstore)), or you can buy it from an online vendor. Do NOT buy an “international edition” or pirated copy or old edition; the pagination will not be the same. You will need to have the same page numbers as the teacher is using because there will be reading assignments. It is okay to buy or rent the electronic version. If you rent, make sure your rental extends through the final exam date.

**About \$40-\$85**

**ISBN: 9781544381855**

<https://us.sagepub.com/en-us/nam/statistics-for-people-who-think-they-hate-statistics/book259351>

**3. Access to SPSS:** This is a standard professional statistics software program used in many professions. It is installed on lab computers in Chan Shun Hall, Bell Hall, Marsh Hall, James White Library, the Math Center, and the Residence Halls. To buy your own copy so you can do your homework on your own computer at home, you can buy or rent a student version. Please note that Dr. Henson cannot help with installation issues or software problems. If you rent, make sure your rental extends through the final exam date.

**About \$35**

**IBM SPSS Gradpack Base, version 24 or higher**

<https://www.ibm.com/products/spss-statistics-gradpack/details>

**4. 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 subscription from another class. If not, you must buy one. You can buy this through the University Bookstore ([www.andrews.edu/bookstore](http://www.andrews.edu/bookstore)), or you can buy it from WebAssign. It is NOT a good idea to buy it from another vendor, because WebAssign technical support will not help you if the sub doesn’t work and you didn’t buy it from them or the bookstore.

**About \$33**

**ISBN: 9781337827560**

<https://webassign.com/>

When you go into WebAssign, you will need the **CLASS KEY** to get into the correct class:

**Section -001: andrews 9193 5043**

**Section -002: andrews 4243 4289**

**Section -003: andrews 0007 4026**

This allows you to sign up for my class in WebAssign. Please sign up early in order to get on the class roster.

NOTE: When you sign up for WebAssign and join my roster, please **use the SAME NAME that iVue uses for you**. Otherwise there can be a problem mapping between WebAssign and iVue. There is also a space where you can put your “nickname”. For the nickname, please put the name you want me to use for you.

**Remote students need immediate access to:**

1. Zoom camera that can be pointed at your face and hands during exams. (Smart phone is fine for that.)
2. Printer (to print out exams right before taking them). You **MUST** be able to print out a paper copy. Let me know if you have a question about this.
3. Scanner (to scan back in your exams in order to immediately email them as pdf to the proctor). There is a great free app for your phone called CamScanner. You take a photo of the document with your phone and the app turns it into a pdf.
4. Reliable Email and Internet connections
5. A quiet place with good desk space and a zoom screen large enough from which you can take notes during lecture

## Course Objectives

The primary objectives of this course are to:

1. Develop critical thinking skills.
2. Learn how to correctly infer information from data and how to report results.
3. Learn SPSS and list that skill on your resume.

## Homework & Advance Readings (40%)

Homework, which includes Advanced Readings from the textbook, is 40% of your grade and is due at class time. You will do all your homework assignments in WebAssign.

## Exams (30% + 30%)

There will be one 45-minute midterm exam in class, worth 30% of your grade.

There will be a **comprehensive Final Exam** worth 30% of your grade.

**Section -001 and -003: Monday 03 May at 10:30-12:30 Eastern Time**

**Section -002: Tuesday 04 May at 10:30-12:30 Eastern Time**

Every student will take the entire comprehensive Final Exam. It will be organized into 2 parts. Part I will address the material covered on the midterm exam, and Part II will address the material covered after the midterm exam. If the grade on Part I of the Final Exam is greater than the grade on the midterm exam, then the grade on the midterm exam is replaced by the grade on Part I of the Final Exam. For example, if you miss the midterm (and thus get a zero) or you get 68% on it, and you get 92% on Part I of the Final Exam, then your midterm exam grade will become 92%. The replacement does not operate in the opposite direction (your Final Exam score is

what it is and does not change).

## **Make-up Work Policy for both Excused and Unexcused Absences**

1) No make-up homework or readings are accepted for any reason. Instead, I will drop your three lowest homework scores.

**Note: If you are ill for more than a week and are too ill to do your work online, get a note from the doctor or dean and contact the instructor as soon as possible.**

2) No make-up (or early) midterm exams will be given for any reason. Instead, if you miss the midterm exam, you will receive the replacement score from Part I of the comprehensive Final Exam (see explanation of Final Exam in section above).

3) No make-up Final Exams are given. By University policy **you MUST take the final exam at the scheduled time**. If you have a legitimate emergency according to University policy, then you may take an Incomplete and make up the Incomplete at a later time, but only in consultation with the instructor. **If you miss the Final Exam for any other reason, you will receive a zero on the Final Exam.**

## **Assessment and Grading Scale**

A course percentage grade will be calculated from:

Homework & Advance Readings (40%)

Midterm Exam (30%)

Final Exam (30%)

93-100 A; 90-92 A-; 87-89 B+; 83-86 B; 80-82 B-; ... ; 60-69 D; 0-59 F

Here is the University policy on the grade of Incomplete:

An Incomplete can be assigned only if the following stipulations are met:

1. The major portion of the work for the course has been completed
2. The student's work is incomplete because of illness or unavoidable circumstances
3. Incomplete cannot be assigned because of negligence or inferior performance.

## **Integrity and Collaboration**

Homework and Advance Readings: Discussion of homework is fine, but **each student must independently write up his or her own solutions** in his or her own WebAssign account. **It is cheating to have someone else do your assignment in WebAssign or to utilize answers without working the problem yourself. It is cheating to say you did the Reading assignment when you didn't.**

Exams: There is no collaboration on exams. **It is cheating to write an exam for someone else. Both parties are responsible.**

Honesty in all academic matters is a vital component of personal integrity. Any breach in academic integrity is serious. Acts of academic dishonesty are subject to action by the University Integrity Council and will be recorded in your integrity file.

## **Getting Help**

1) Teacher: See Instructor Contact Information above.

2) Student Success Center: [success@andrews.edu](mailto:success@andrews.edu). There are STAT285 tutors on staff who have had this same class. See [http://www.andrews.edu/academics/student\\_success.html](http://www.andrews.edu/academics/student_success.html).

## **Other Course Policies**

### **Disability Accommodation**

If you qualify for special assistance under the American Disabilities Act, please contact the Student Success office at Nethery Hall 100 or [disabilities@andrews.edu](mailto:disabilities@andrews.edu).

### **Professionalism**

We will show respect for each other at all times. Certain behaviors/activities are not professional.

- Cell Phones, Personal Laptops, and Recording devices: **Cell phones should be silenced or on vibrate** in the classroom. **Picture-taking during class and recording devices are allowed only if pre-approved by instructor, and if approved, under no circumstance are pictures or recordings—visual or verbal—to be posted on a public website.** Laptops, iPads, texting, etc. should not be used except by permission of the instructor. It is unprofessional to use these devices inappropriately when someone is speaking to you. Please talk to the teacher if you need to use a device.
- Earbuds: Do not wear earbuds or earphones during class. This is unprofessional.
- Eating in class: Do not eat in class without permission. Water or a hot drink is fine.
- Talking; walking in and out of class: Don't talk when the instructor is talking. Use the restroom before you enter the classroom. It is unprofessional to walk in and out of class unless you have an emergency.
- How will you be perceived as a professional? Active participation in discussions is an essential part of learning to be a professional. Without participating and expressing opinions and thoughts, it is difficult to develop a personal style.
- Get to know your professors; otherwise they will not be able to write strong letters of recommendation for you.
- Being consistently present and on time is a very important part of professional behavior.

### Emergency Protocols

Andrews University takes the safety of its student seriously. Signs identifying emergency protocol are posted throughout buildings. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting that specific location. It is important that you follow these instructions during any evacuation or sheltering emergency.

### If the teacher does not arrive on time to class

If a teacher is detained and will be late, the teacher will send a message, if possible, to the class with directions. If after 10 minutes no message has been received, students may (and should) leave without penalty.

## Instructor Profile

Shandelle Marie Henson is a mathematical ecologist. She has a PhD in Mathematics from the University of Tennessee, Knoxville (partial differential equations) and an MA in Mathematics from Duke University (mathematical logic). She did postdoctoral work at the University of Arizona, Tucson (bifurcation theory). Her research area is dynamical systems, with a focus on bifurcations and chaos as applied to ecology. She is married to Dr. Jim Hayward, Professor of Biology. They do joint research in mathematical behavioral ecology, working with seabirds. They are enthusiastic about hiking, geology, rock collecting, reading, writing, classical music, art, healthful living, and of course, research. Dr. Henson also enjoys oil and pastel painting, cooking/baking, and trail running. She has a passion for understanding what it means to follow Jesus in the 21<sup>st</sup> century.

## Final Notes and Suggestions

- Always bring a **calculator** to class.
- When we begin hypothesis testing, bring your **textbook** to class. We use the tables in the back of the book.
- I suggest dedicating a **bound notebook** (e.g. a lab-type, bound, college-ruled notebook) to this class. I will organize my lectures so that you can take good notes by hand and plan to keep the notebook. When you use statistics in the future, you can simply consult the notebook to recall when and how to use various statistical tests. Many, even most, of you will use these techniques in graduate school or your future careers. Those of you who don't will still use the ways of thinking that we develop.
- Have fun with this stuff! There is no good reason not to! If you feel worried, let me reassure you: You can do this. ☺