

# COURSE SYLLABUS

Data Analysis and Statistical Modeling

Live - Online M/W 6:00 PM - 7:40 PM

Semester Code:0610: Fall 2022

View [How to Be a Successful Student](#) which provides details about success factors and links to the most current version of fluid information, such as the academic calendar.

## WELCOME

*Let me start by telling you that I think this is a very exciting and valuable class that you are about to embark upon. Statistics is a subject that permeates all we do and more importantly all you will do in data analytics. When you have completed the course, I hope that you will find the material invaluable in your pursuit of your degree.*

*I am looking forward to providing you with the tools you need to move to the next level in your degree. I encourage you to express your needs in conjunction with the learning resources I provide.*

## INSTRUCTOR

**Name:** E. Gretchen Gascon

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**Phone:** (727)379-1944

**Office and Online Hours:** Before and after class, or by appointment

**Office Location:** Virtual- ZOOM

**Instructor**

**Webpage:** <https://webapps.spcollege.edu/instructors/id/gascon.gretchen>

# ACADEMIC DEPARTMENT

## Dean

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## Academic Chair

**Name:** Pelagia Kilgore

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# COURSE INFORMATION

## Course Description

This course provides introductory coverage to various statistical topics and incorporates concepts from mathematics, statistics, and computer science. Emphasis is placed on the practical techniques of collecting, analyzing, and interpreting data in the application of descriptive statistics, inferential statistics, and exploratory data analysis. Additional topics, covered include contingency table analysis, regression analysis, analysis of variance, and basic construction of statistical models.

## Course Goals

The goal of this class is to become proficient with statistical methods of analysis using python. The class will consist of lecture and hands on practice. Be sure not to fall behind this schedule as it is difficult to catch up. There are deadlines established to assist you in completing this course in a timely manner.

## Course Objectives

1. The student will utilize programming applications to:

- a. create graphical summaries
  - b. create random data sets.
  - c. analyze data sets.
  - d. construct confidence intervals.
  - e. perform hypothesis tests.
2. **The student will analyze joint frequency distributions by:**
- a. creating contingency tables.
  - b. performing tests of independence.
  - c. normalizing data by rows and columns.
  - d. determining relative frequencies.
  - e. constructing graphical summaries.
  - f. discussing the effects of lurking variables.
3. **The student will apply fundamental concepts of confidence intervals and hypothesis tests to:**
- a. estimate and analyze the proportion, mean, and variance of one population.
  - b. estimate and compare the proportions, means, and variances of two populations.
  - c. state and verify that procedural assumptions have been satisfied.
  - d. interpret confidence interval and hypothesis test results.
  - e. interpret and analyze Type I & II errors.
4. **The student will utilize basic principles of design of experiments and analysis of variance to:**
- a. analyze data from experiments involving a single factor using analysis of variance.
  - b. analyze data from experiments involving several factors using a factorial design approach.
  - c. assess model adequacy with residual plots.
  - d. perform multiple comparisons identifying specific differences between means.
  - e. describe differences between fixed and random effects.
  - f. describe the blocking principle and how it is used to isolate the effects of nuisance factors.
  - g. analyze data from experiments involving the randomized complete block design.
5. **The student will utilize basic principles of linear regression to:**
- a. formulate simple and multiple regression models.
  - b. identify model assumptions and discuss the consequences of their violations.
  - c. perform hypothesis tests of regression coefficients.
  - d. validate the regression model.

- e. identify an appropriate set of explanatory variables and assess their relative importance.
- f. interpret the results of a regression analysis.

The student will have to successfully complete 70% of these objectives on written tests in order to pass the course with a grade of C or better.

### **Prerequisites**

STA 2023 with a minimum grade of C (recommend completion within the last two years)  
AND  
COP 1044 with a minimum grade of C (recommend completion within the last two years)  
or  
Approval of Dean of Mathematics

### **Proctored Testing**

Mid-term and Final

View [Proctored Testing with Honorlock](#).

## **REQUIRED TEXTBOOK & OTHER RESOURCE INFORMATION**

Zy-Book: STA 2041: STA2041 Data Analysis and Statistical Modeling

ISBN: 978-1-394-11014-8

How to Access Text Book:

1. Sign in or create an account at [learn.zybooks.com](https://learn.zybooks.com) (opens in new tab)
2. Enter ZyBook code: **SPCOLLEGESTA2041GasconFall2023**
3. Subscribe

A subscription is \$77. Students may begin subscribing on Aug 28, 2023 and the cutoff to subscribe is Nov 29, 2023. Subscriptions will last until Dec 22, 2023.

Complete directions about the [textbook](#) (opens in new tab)

Each chapter in Zybook is titled to match up with the Module to which it belongs.

In this course, we will use the programming application Python. We will specifically be using Jupyter Notebook. It is the same programming application that was used in the prerequisite COP 1033. Python is a free open-source programming language.

Databases are .csv files that can be viewed in Excel but are not required. Students do not need a calculator, graphing or otherwise, for this course.

## LEARNER SUPPORT

Answers to questions regarding accommodations may be found at the [Accessibility Services](#) site. If you are in need of accommodations, please contact a campus [Accessibility Services Coordinator](#). If you need a Sign Language Interpreter, complete the [Interpreter/Captionist Request Form](#).

### Titans Care

As an SPC student, it's vital that you know Titans Care. You can access resources through SPC's [Student Assistance Program \(SAP\)](#), a collaborative resource for students with mental health or general life issues. SAP provides help and education in suicide prevention, mental health, substance abuse awareness, and more. It is SPC's belief that supporting mental wellness is everyone's charge, and that one loss as a result of substance abuse, mental illness, or suicide is one too many. If you or a loved one are considering suicide, please call the National Suicide Prevention Lifeline at 1-800-273-8255.

View the [Learning Resources](#) site.

View the [Learning Center Tutoring Schedules](#).

View the [Student Services](#) site.

Bookstore: [www.spcollege.edu/textbooks](http://www.spcollege.edu/textbooks)

Library: [www.spcollege.edu/libraries](http://www.spcollege.edu/libraries)

Accessibility: [www.spcollege.edu/dr](http://www.spcollege.edu/dr)

Academic Support Services: [www.spcollege.edu/support](http://www.spcollege.edu/support)

On-Campus Support: [www.spcollege.edu/tutoring/#tab=2](http://www.spcollege.edu/tutoring/#tab=2)

Online Support: [www.spcollege.edu/tutoring/#tab=3](http://www.spcollege.edu/tutoring/#tab=3)

Student Services and Resources: [www.spcollege.edu/services](http://www.spcollege.edu/services)

## IMPORTANT DATES

Course Dates: Enter course beginning and ending dates here OR View the [Academic Calendar](#).

Drop Date: Enter Drop date here OR View the [Academic Calendar](#).

Withdrawal Date: Enter Withdrawal date here OR View the [Academic Calendar](#).

Proctored Testing Dates: [Proctored Testing with Honorlock](#)

Financial Aid Dates: [www.spcollege.edu/pages/dynamic.aspx?id=800](http://www.spcollege.edu/pages/dynamic.aspx?id=800)

College Calendar: <http://www.spcollege.edu/calendar/>

## ATTENDANCE

View the college-wide attendance policy included in [How to Be a Successful Student](#).

The policy notes that each instructor is to exercise professional judgment and define "active participation" in class (and therefore "attendance"), and publish that definition in each syllabus.

**For this class, attendance is defined as :** 1. completing assignments on time. 2. attendance in class. Attendance will be taken at the beginning of each class. If you don't attend (**ALL CLASSES**) during the first two weeks of a term you will automatically be withdrawn from the class and this can cause serious problems if you receive financial aid. In fact, if you withdraw prior to completing 60% of a class and receive any form of federal financial aid (grants or loans) you will be required to repay a portion. So, if you are thinking of withdrawing, please speak with your financial aid counselor.

(Please note that withdrawals from this class can only be initiated by the student. The instructor cannot withdraw you from the class.)

**60% Participation policy for this course:** A check of the student's attendance will also be considered during the week following the 60% point of the term. Attendance taken at this point of the term is also referred to as "active participation". **Active participation for this class is defined as attending class and completing assignments by the required deadlines. (Specifically: non-participation means that you have missed more than 3 classes AND not complete any combination of more than two (>2) of any the assigned Tests, Quizzes, OR not completed the**

**Midterm Exam) by their respective deadlines, then by the 60% point of the term he/she is subject to being classified as not actively participating which would result in being administratively withdrawn from class with a WF )**

If you have not met these requirements, you will be administratively withdrawn from class, and given a WF in the course.

As a bonus, a maximum of 1% will be awarded at the end of the term for attendance. **This BONUS amount will be added AFTER the FINAL EXAM is taken and before final grades are posted.** More than 3 absences or 6 partial attendances **will not be eligible for any bonus regardless of the reason for the absence.**

## GRADING

Your course grade will be determined by the following components and scale.

Homework - 15%

Quizzes - 15%

Midterm and Final - 30%

Individual Projects - 20%

Code Review - Discussions - 20%

Bonus (attendance) =1%

Students must complete all assignments on or before the deadlines listed on the course schedule. A grade of zero will be assigned to any course requirement not completed. No official extra credit assignments are available. There will be no curving or rounding of grades in this class. Final grades will be documented based on the scale above.

Note: A grade of "C" or better must be earned in this course to satisfy the Education Requirements for the respective major.

State policy specifies that students may not repeat a college credit course for which a grade of "C" or higher has been earned except by appeal to the campus Academic Appeals committee. You may repeat a college credit course one time without penalty. At the third attempt, you will pay the full cost of instruction. The full cost of instruction rate for the academic year is stated in the course catalog. In addition, at the third attempt, you may NOT receive a grade of "I," "W," or "X," but must receive the letter grade earned. This grade will be averaged into your overall grade point average.

### How to check your Grades and review feedback:

- [Checking Your Grades](#)
- [Reviewing Dropbox Submissions](#)
- [Checking Discussion Grades and Feedback](#)
- [Reviewing Quiz Submissions](#)

### Grading Scale

A = 90-100%

B = 80-89%

C = 70-79%

D = 60-69%

F = 0-59%

## ASSIGNMENTS

Each of the six modules includes homework assignments that are embedded into the reading material as "practice exercises and challenge questions", a discussion, and a quiz. In addition, there will be a midterm and final. The use of handheld calculators is permitted for assignments and tests, however, understand that coding in Python is the primary source of the statistical analysis. Cell phones, tablets, and computer software will not be permitted during proctored testing.

### LATE ASSIGNMENTS

The following is the late policy for this class.

**Homework:** Any HW (practice exercises and challenge questions) have no late assessment. Students have multiple attempts on all practice exercises. It is strongly advised to keep up with the module assignments as they form the foundation for the discussions and projects. Students may choose their method for the completion of homework calculations - Python, Calculator, or Excel.

**Projects:** Any Project turned in beyond the required submittal date will receive a 10% late assessment.

**Discussion:** Initial posts if no later than 1 week past the due date will receive a 10% late assessment. Responses posted later than the due date will not receive any credit.

**Quizzes:** You will have 3 attempts at each quiz. All quizzes will be taken by the assigned due date. A grace period of 1 week will be given with a 10% late assessment.

**Midterm and Final:** These tests must be completed by the due date using Honorlock. **Any test not completed by the due date will receive a 0. There is NO additional provision for being late.**

## STUDENTS' EXPECTATIONS AND INSTRUCTOR'S EXPECTATIONS



**ALL WORK FOR THIS COURSE MUST BE COMPLETED BY December 3rd, 2023** including the final. NO WORK WILL BE ACCEPTED AFTER THAT DATE for any reason.

For **extenuating circumstances** beyond the control of the student, **with documentation**, the due date of the assignment may be modified. Once modified, you are committed to the new due date. No additional provisions will be made. This option is **ONLY** available to you if you contact me **BEFORE** the assignment is due

### **Required Interaction**

**Student Responsibilities:** This class is a Live-on-line class and as such, each student is expected to be present in class and actively engaged in the class. Each Student web-cam will be turned on for the entire class except for short periods of personal needs. Expect to answer instructor questions and provide additional observations and ideas as appropriate.

All students are expected to respect the rights of other students to learn and communicate with others will be courteous and respectful at all times. If you wish to request accommodations as a student with a documented disability, please make an appointment with the Learning Specialist on campus. In addition, ensure you notify your instructor of your accommodations at the beginning of the semester.

**Instructor Responsibilities:** The instructor is responsible for providing a syllabus on the first day of class that clearly explains all course policies, providing a Student Survey of Instruction, posting grades in MySPC by the end of the semester, creating a learning environment that engages students and facilitates learning, enforcing the right of all students to learn, communicating with students in a courteous and respectful manner at all times, providing clear guidelines and information regarding when assignments are due, the format required, and the procedure for completing and submitting assignments, grading all assignments within 7 days of each due date, and responding to emails within 48 hours.

### **Participation, Conduct, and Netiquette**

SPC has outlined expectations for student behavior and interaction for online discussions, email, and other forms of communication. View the Student Expectations in [How to Be a Successful Student](#).

## Academic Honesty

View the [Academic Honesty Policy](#).

You may have heard of Generative AI (Artificial Intelligence). The best-known example is ChatGPT, a chatbot that allows you to type a question as if you were talking to a real person, and it quickly offers a seemingly meaningful, original answer. Tools like this are powerful and can be useful in many contexts, but we must be aware of their limitations, as they can produce inaccurate, fabricated, and even offensive content. In addition, the work produced is not technically your own. In order to avoid violating SPC's academic integrity policy, students must be sure to follow each professor's course policies regarding the use of artificial intelligence in academic work. If you're unsure of a professor's guidelines, reach out to them to discuss further. My policies for this course can be found below.

You are welcome to use Generative AI (Artificial Intelligence), including ChatGPT and similar AI tools, in your work for this course. However, AI is not a replacement for your own thinking and research. **AI-generated text or other content must be clearly marked and cited properly.** In addition, you are responsible for confirming the veracity of any information or sources produced by artificial intelligence. If you have any questions about this, please reach out to me. I am glad to offer guidance!

## Copyright

Copyrighted material within this course, or posted on this course website, is used in compliance with United States Copyright Law. Under that law you may use the material for educational purposes related to the learning outcomes of this course. You may not further download, copy, alter, or distribute the material unless in accordance with copyright law or with the permission of the copyright holder. For more information on copyright visit: [Copyright.gov](#).

## TURNITIN

The instructor of this course requires the use of Turnitin.com as a tool to promote learning. The tool flags similarity and mechanical issues in written work that merit review. Use of the service enables students and faculty to identify areas that can be strengthened through improved paraphrasing, integration of sources, or proper citation. Submitted papers remain as source

documents in the Turnitin database solely for the purpose of detecting originality. Students retain full copyright to their works. Review the [Turnitin Usage Agreement](#). Students who do not wish to submit work through Turnitin must notify their instructor via course email within the first seven days of the course. In lieu of Turnitin use, faculty may require a student to submit copies of sources, preliminary drafts, a research journal, or an annotated bibliography.

View the [Reviewing a TurnItIn/Originality Report](#) tutorial.

## **STUDENT SURVEY OF INSTRUCTION**

The Student Survey of Instruction is administered in courses each semester. It is designed to improve the quality of instruction at St. Petersburg College. All student responses are confidential and anonymous and will be used solely for the purpose of performance improvement.

## **TECHNOLOGY**

### **Minimum Technology Requirements**

View the [Technical Requirements for MyCourses](#).

SPC offers Microsoft Office software to current students at no additional cost. The software is available for both Windows and Mac computers. View the [How to Download Microsoft Office 2016](#) tutorial.

### **Minimum Technical Skills**

Specify the minimum technical skills expected of the learner: general and course-specific learners must have to succeed in the course.

Students should know how to navigate the course and use the course tools. Dropbox-style assignments may require attachments in either Microsoft Word (.doc or .docx) or Rich Text Format (.rtf) so that they can be properly evaluated. If an attachment cannot be opened by the instructor, students will be required to re-format and re-submit an assignment so that it can be evaluated and returned with feedback.

MyCourses tutorials are available to students new to this LMS and are located at the beginning of the course. Most features on MyCourses are accessible on

mobile devices, although it is recommended that you use a computer for quizzes, tests, and essay assignments.

## Technical Support

Technical support is available via the [SPC Technical Support Center](#).

## Accessibility of Technology

- [MyCourses \(Brightspace by Desire2Learn\) Accessibility](#)
- [Turnitin Accessibility](#)
- [Honorlock Accessibility](#)
- [Google \(YouTube\) Accessibility](#)
- [Ensemble Accessibility](#)
- [Cengage Accessibility](#)
- [McGraw-Hill Accessibility](#)
- [Pearson Accessibility](#)
- [Microsoft](#)
- [Zybooks](#)

## Privacy

- [MyCourses \(Brightspace by Desire2Learn\) Privacy](#)
- [Turnitin Privacy](#)
- [Honorlock Privacy](#)
- [YouTube Privacy](#)
- [Ensemble Privacy](#)
- [Cengage Privacy](#)
- [McGraw-Hill Privacy](#)
- [Pearson Privacy](#)
- [Microsoft](#)
- [Zybooks](#)

## Instructional Continuity Plan

To be prepared in the event of weather or other emergency disruptions, review the [Emergency Preparedness Procedures for Students](#).

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